R G B WH GR BL Grey Scale #13 C M Y K
DANES-PICTA.COM
A 1 2 3 4 5 6 M 8 9 10 11 12 13 14 15 B 17 18 19

WŁADYSŁAW OSTROWSKI
MAJOR

KARABINY MASZYNOWE

OD CZASÓW NAJDAWNIEJSZYCH
DO WYNALAZKÓW OSTATNIEJ DOBY

ATLAS

WARSZAWA 1930
WOJSKOWY INSTYTUT NAUKOWO-WYDAWNICZY

Colour Chart #13
Inches Centimetres
Blue Cyan Green Yellow Red Magenta White 3/Color Black
DANES-PICTA.COM

WŁADYSŁAW OSTROWSKI
MAJOR

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OD CZASÓW NAJDAWNIEJSZYCH
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ATLAS

WARSZAWA 1930
WOJSKOWY INSTYTUT NAUKOWO-WYDAWNICZY

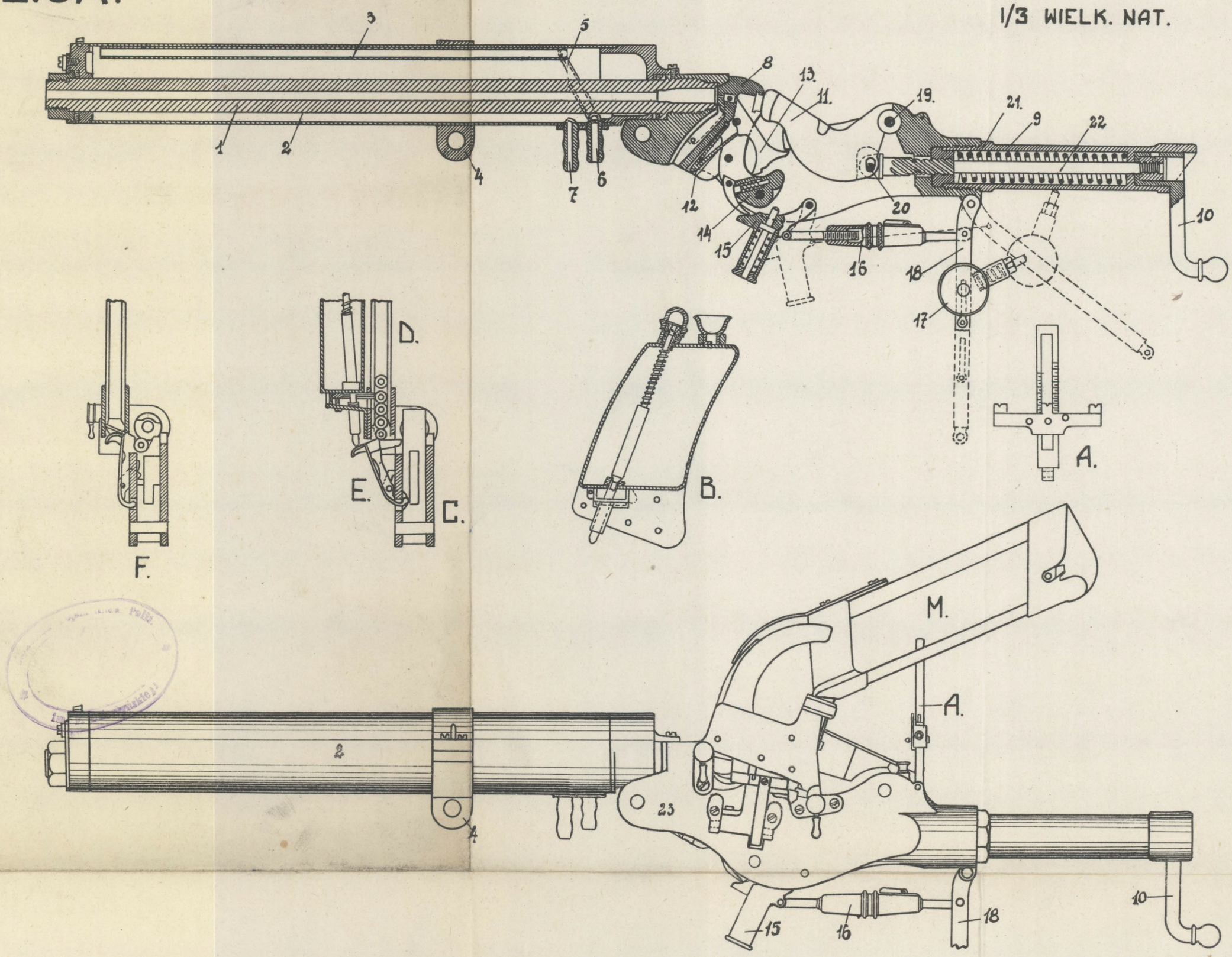
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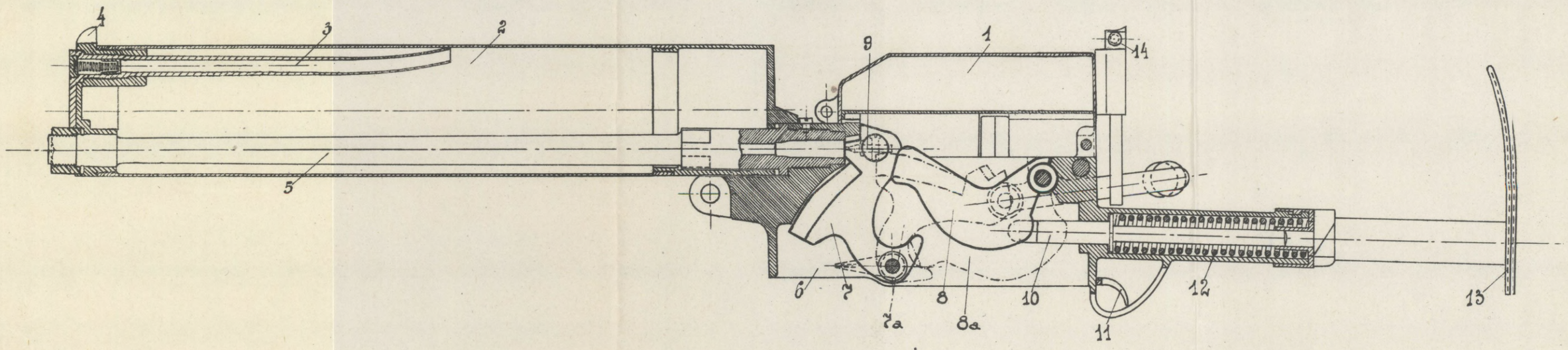
32357/2

1/3 WIELK. NAT.



2 TABLICA.

LUFA ZARYGLOWANA. RYGIEL PODPIERA TRZON ZAMKOWY. 1/3 WIELK. NAT.



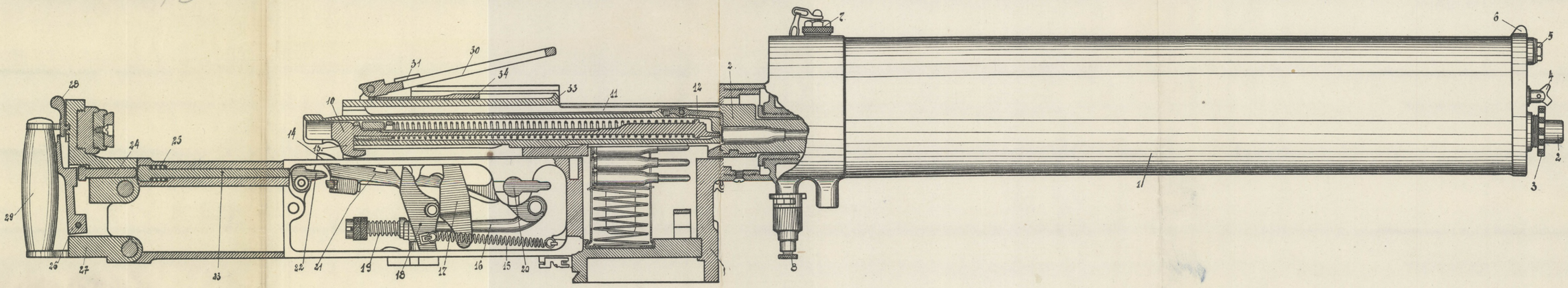
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32357/2

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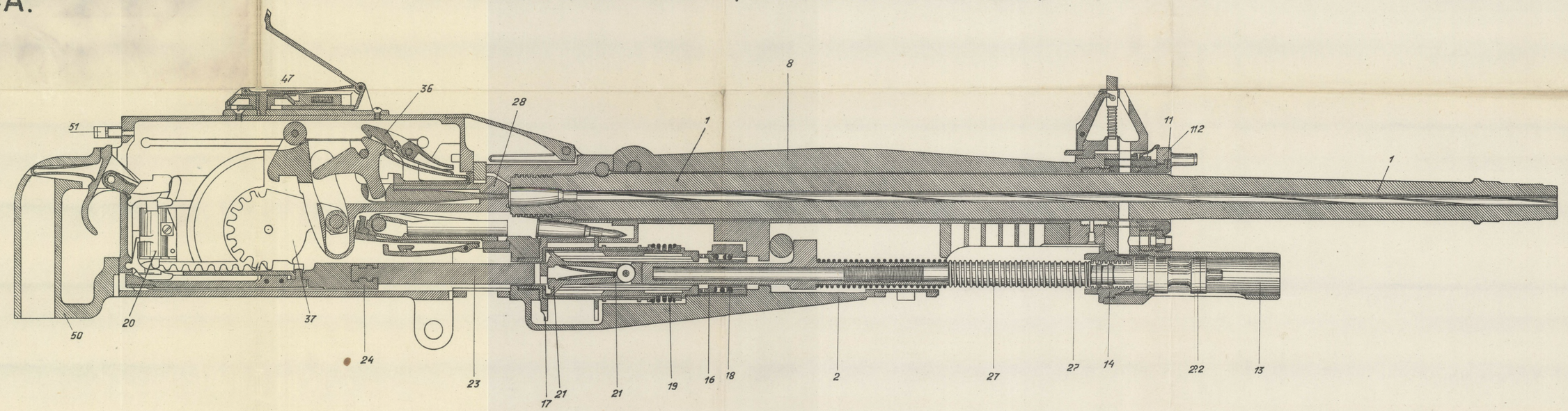
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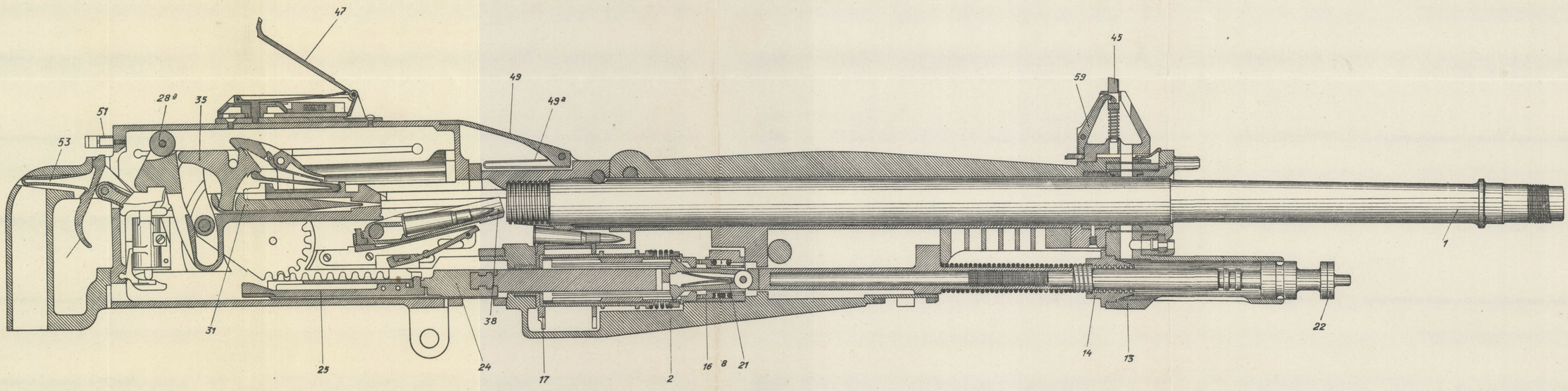
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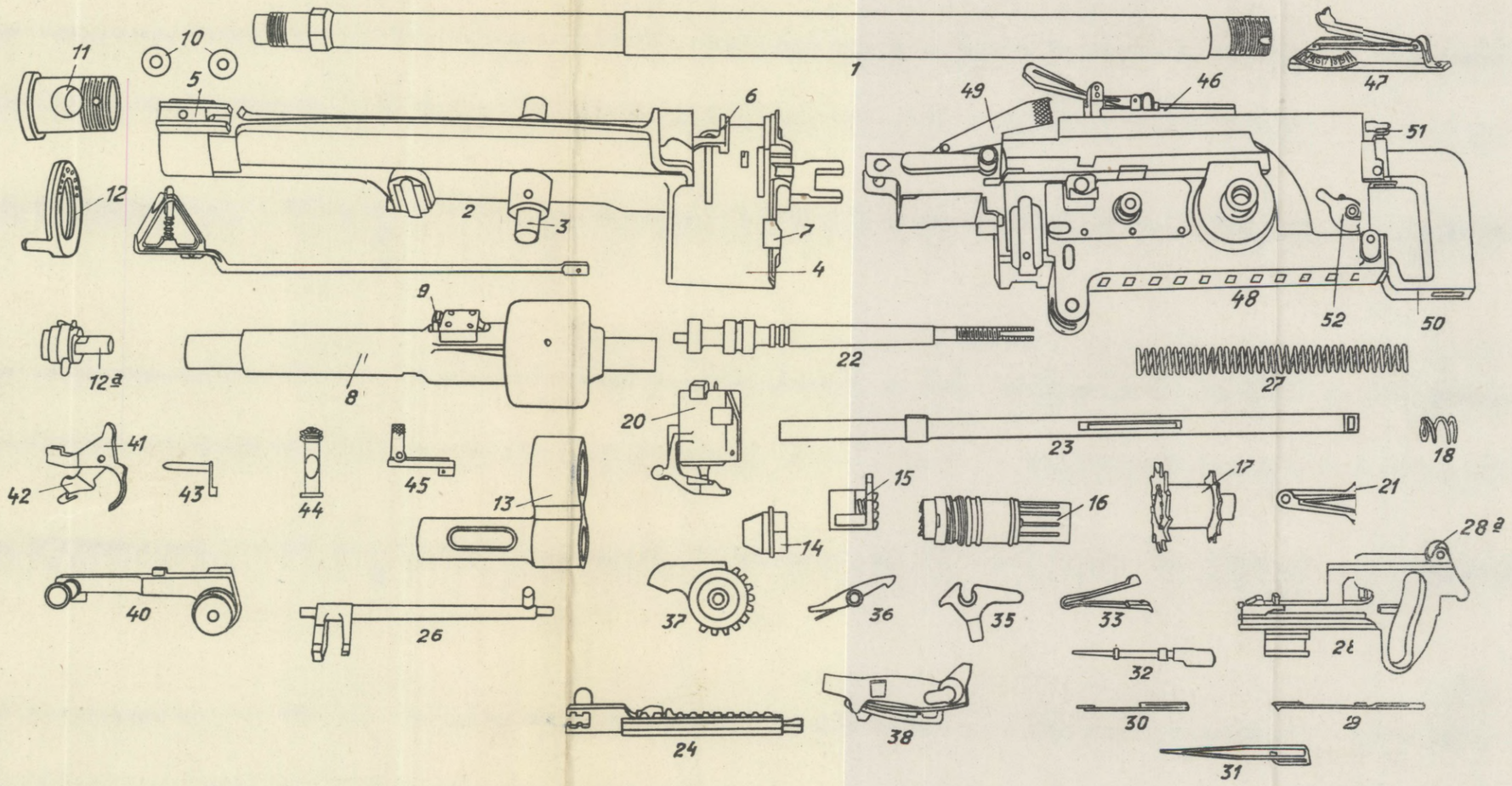


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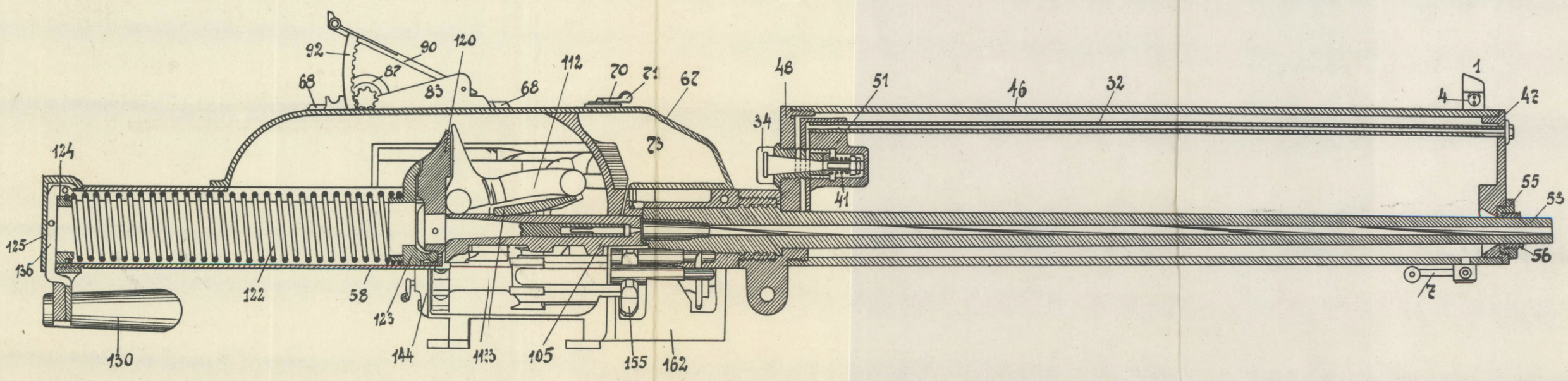
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6 TABLICA.

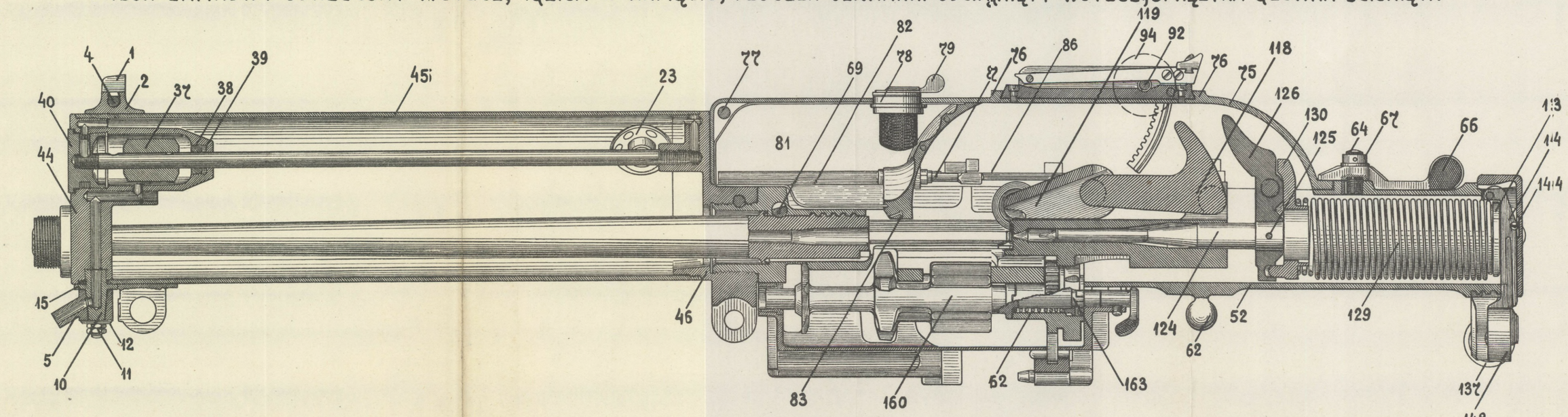
ZAMEK W POŁOŻENIU PRZEDNIEM, IGLICA ZWOLNIONA. 3/8. WIELK. NAT.



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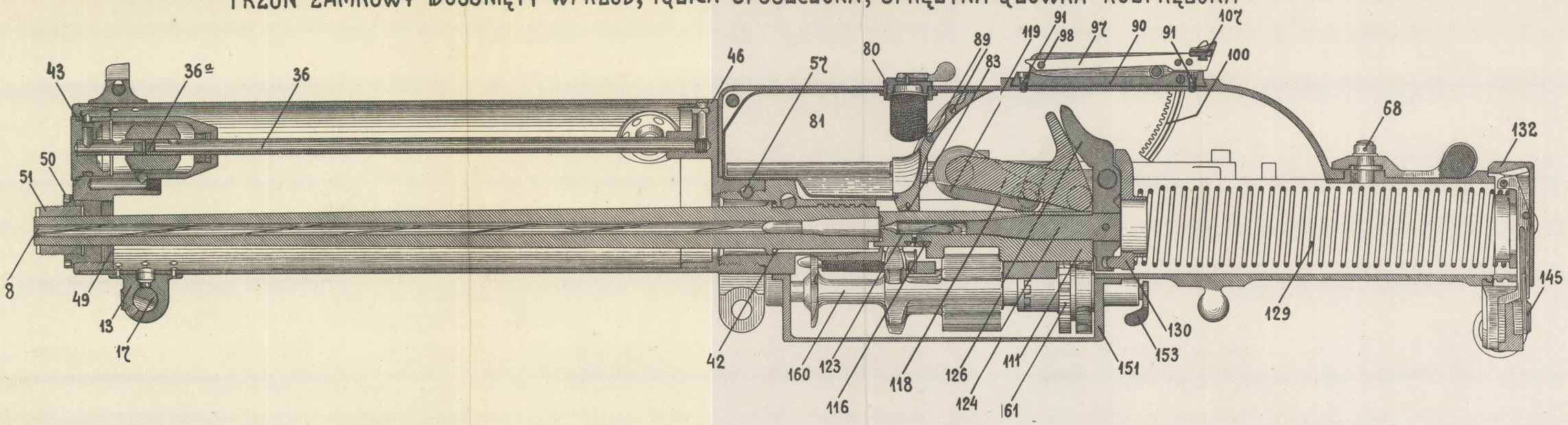
PRZEKRÓJ Nº1.

TRZON ZAMKOWY ODRZUCONY WSTECZ, IGLICA W NAPIĘCIU, TŁOCZEK OLIWIARKI ODCIĄŻNIĘTY WSTECZ, SPRĘŻYNA GŁÓWNA ŚCIŚNIĘTA




PRZEKRÓJ Nº2.

TRZON ZAMKOWY DOSUNIĘTY WPRZÓD, IGLICA SPUSZCZONA, SPRĘŻYNA GŁÓWNA ROZPRĘŻONA



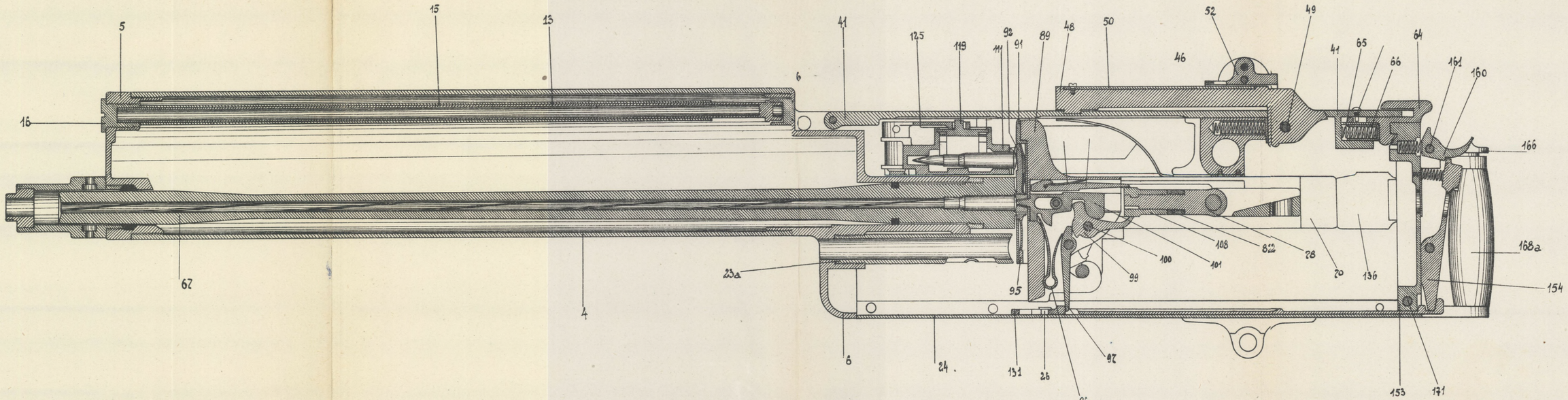
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1/2 WIELK. NAT.



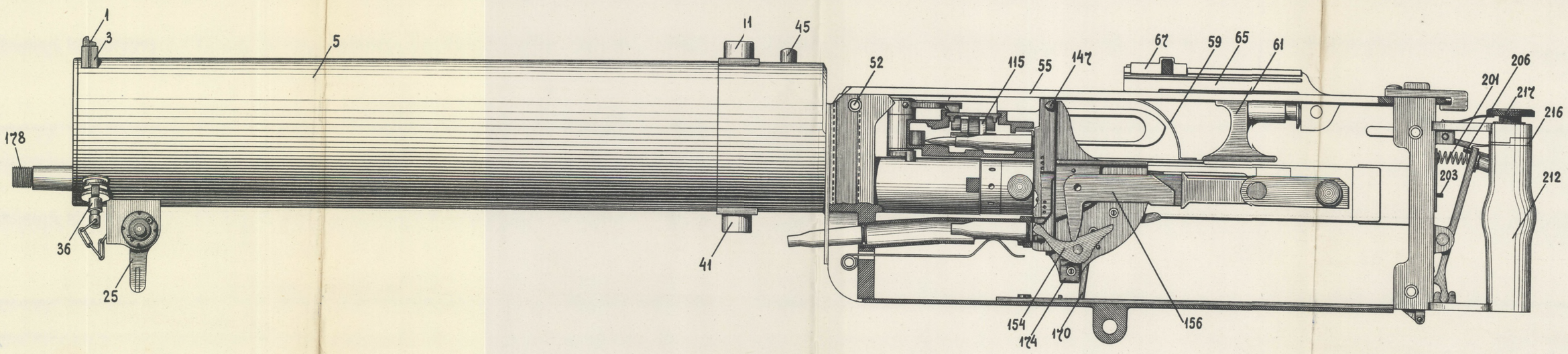
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LUFA ZARYGILOWANA, ZAMEK W POŁOŻENIU PRZEDNIEM. IGLICA ZWOLNIONA, WYSTRZELONA ŁUSKA W KOMORZE NABOJOWEJ. 1/2 WIELK.NAT.

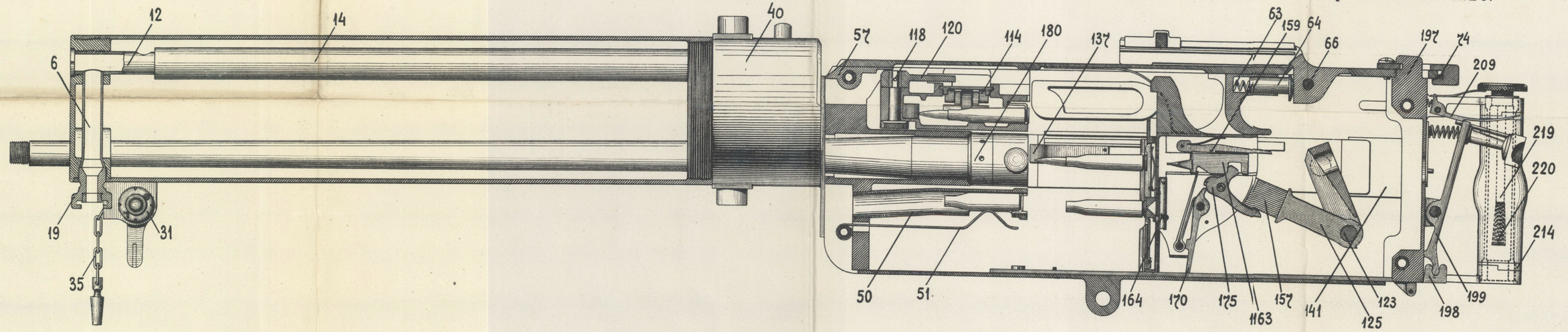


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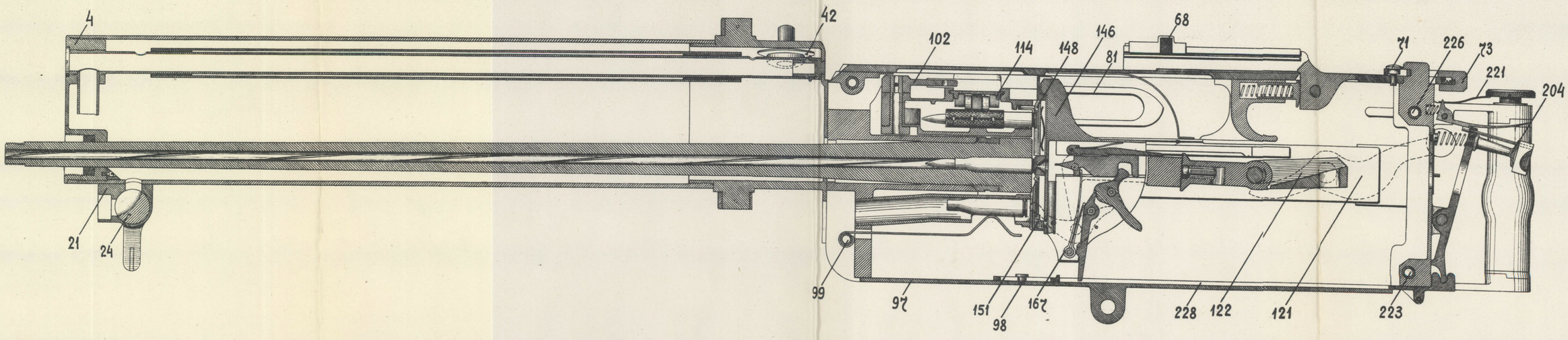
PRZEKRÓJ Nr 1. ZAMEK DOSUNIĘTY DO LUFY, NABÓJ W DONOŚNIKU, WYSTRZELONA ŁUSKA WYPYCHA POPRZEDNIĄ Z WYRZUTNICY. 1/:2 WIELK. NAT.



PRZEKRÓJ Nr 2. ZAMEK ODRZUCONY WSTECZ, IGLICA NAPIĘTA, PODAJNIK PODAJE WYCIĄGNIĘTY Z DONOŚNIKA NABÓJ DO LUFY, A WYSTRZELIONĄ ŁUSKĘ DO WYRZUTNICY.



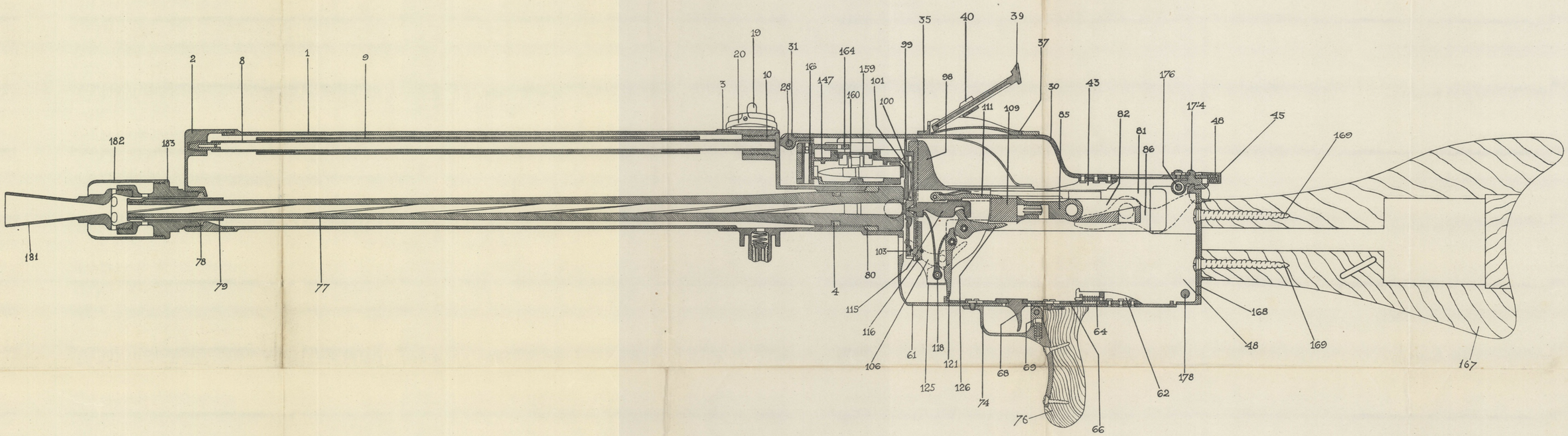
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11 TABLICA.

POŁOŻENIE W PIERWSZEJ CHWILI PO STRZALE (IGLICA W POŁOŻENIU PRZEDNEM, KUREK SPUSZCZONY, SZYNA SPUSTOWA I JĘZYK ODCIĄGNIĘTE WSTECZ).

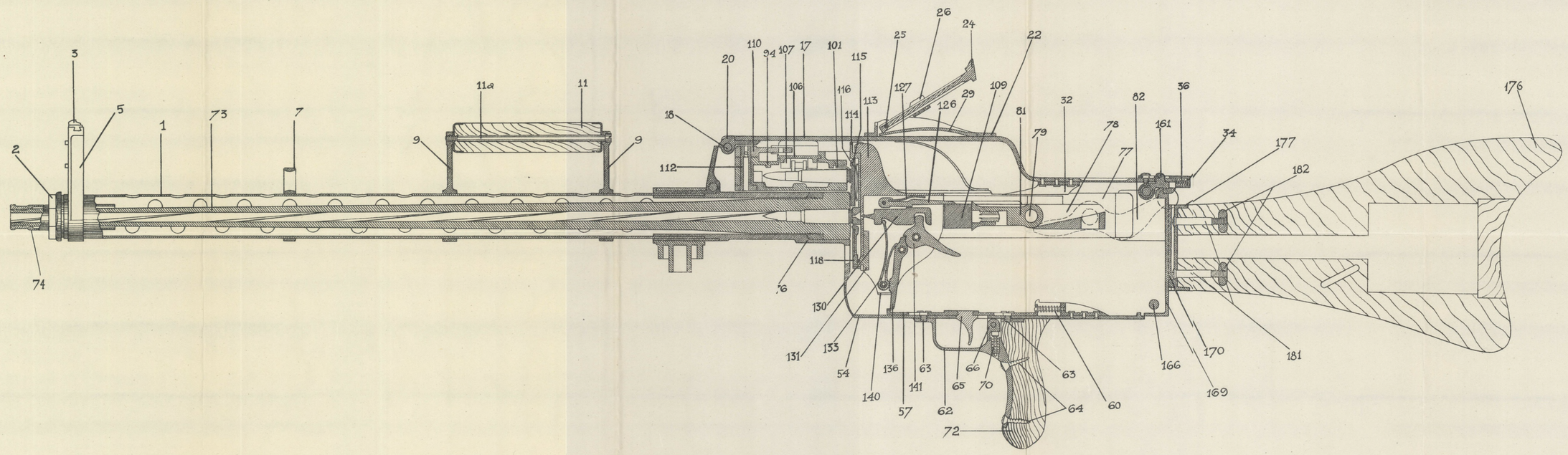
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12 TABLICA.

KARABIN MASZYNOWY NABITY I GOTÓW DO STRZAŁU (IGLICA ODBEZPIECZONA, PODAJNIK TRZYMA NASTĘPNY NABÓJ W DONOŚNIKU).

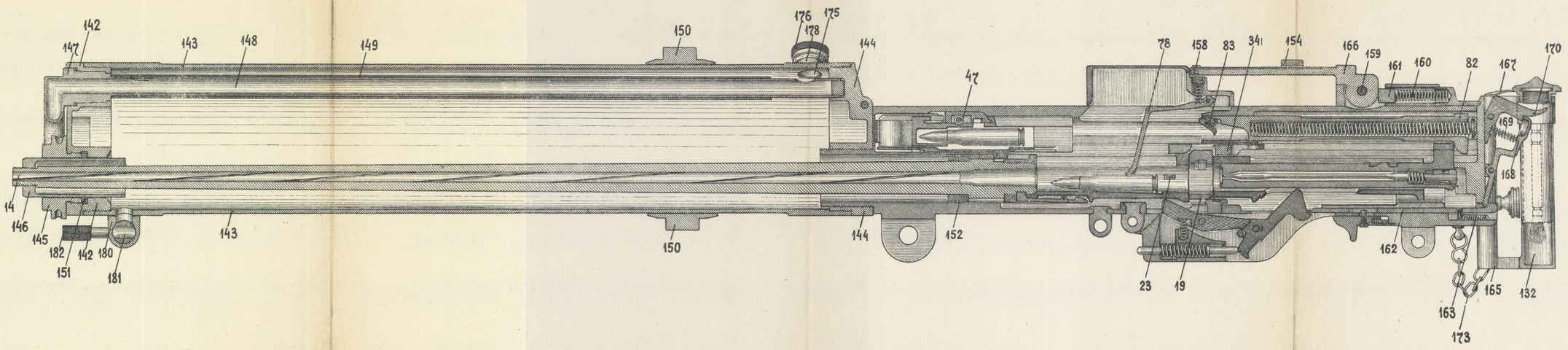
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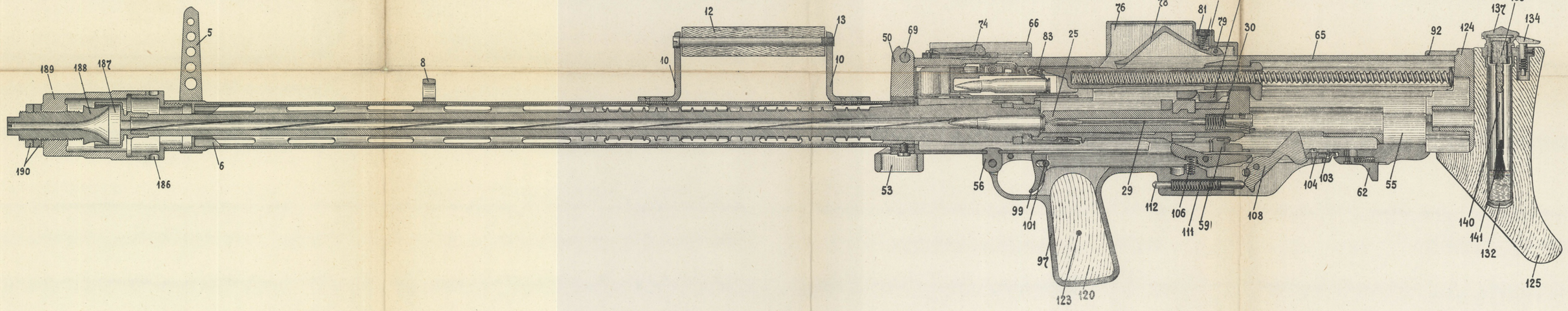
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ZAMEK ZUPEŁNIE ODSUNIĘTY KUREK NAPIĘTY I ODBEZPIECZONY, LUFA ODRYGLOWANA. 1/2 WIELK. NAT.

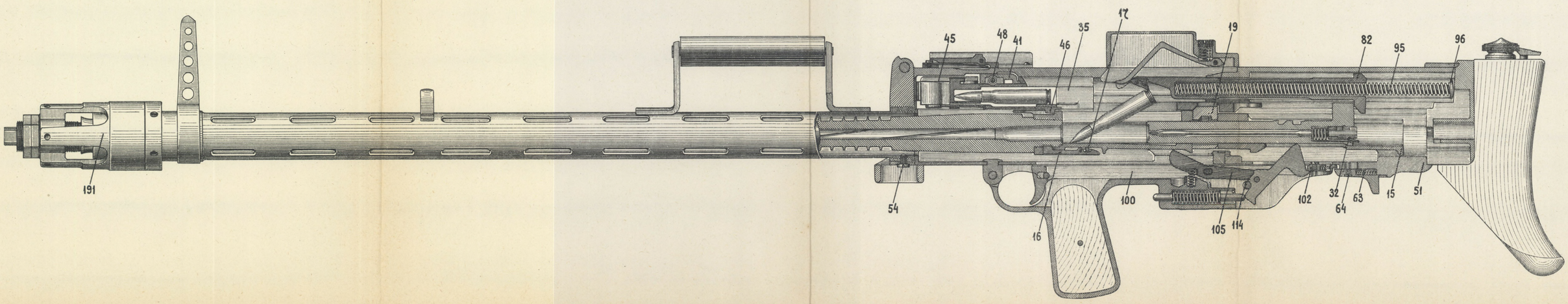


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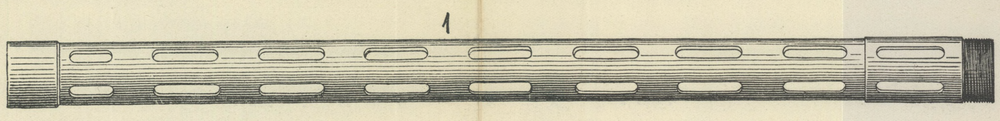
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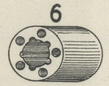
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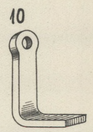
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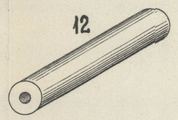

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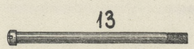

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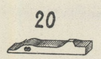

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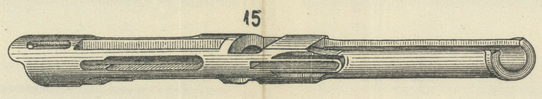

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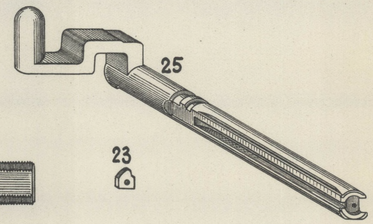

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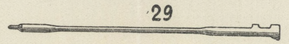

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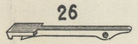

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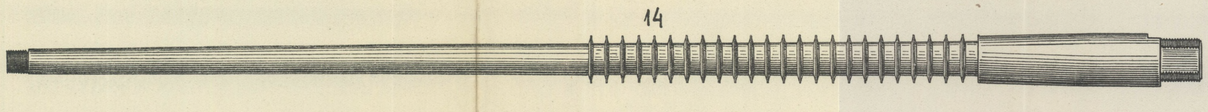

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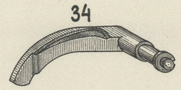

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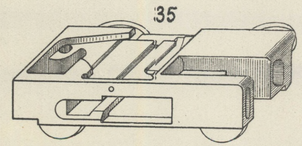

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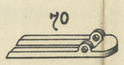

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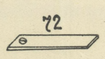

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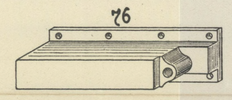

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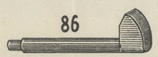

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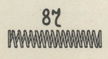

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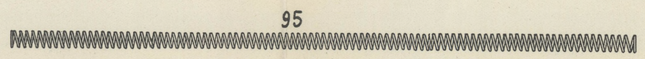

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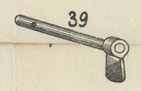

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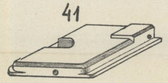

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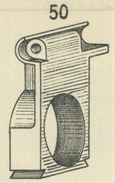

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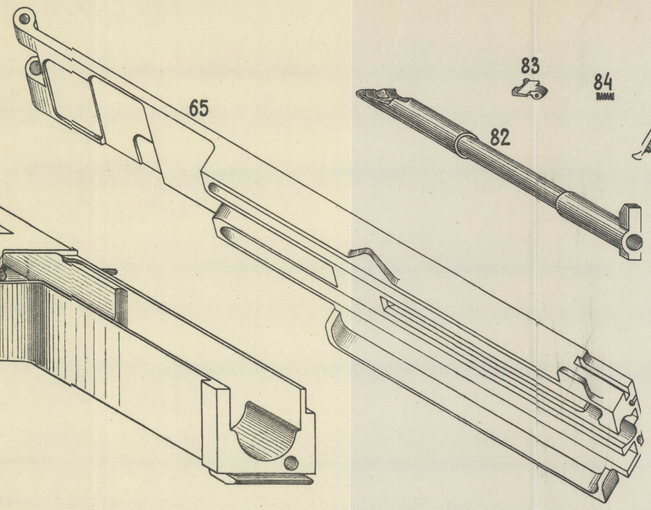

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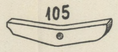
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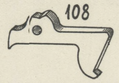
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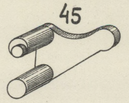
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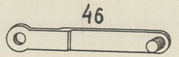
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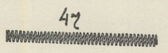
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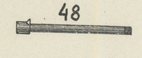

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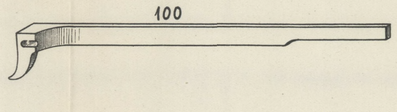

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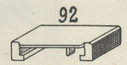

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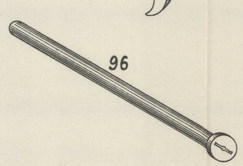
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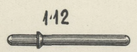

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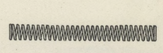

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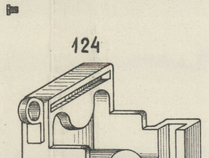

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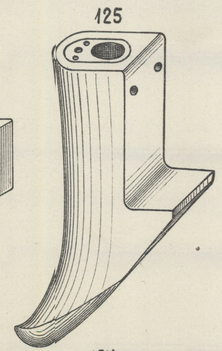

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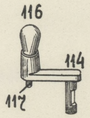



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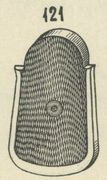

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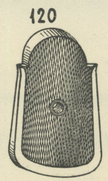

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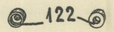
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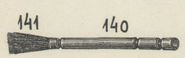

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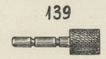

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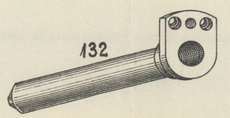

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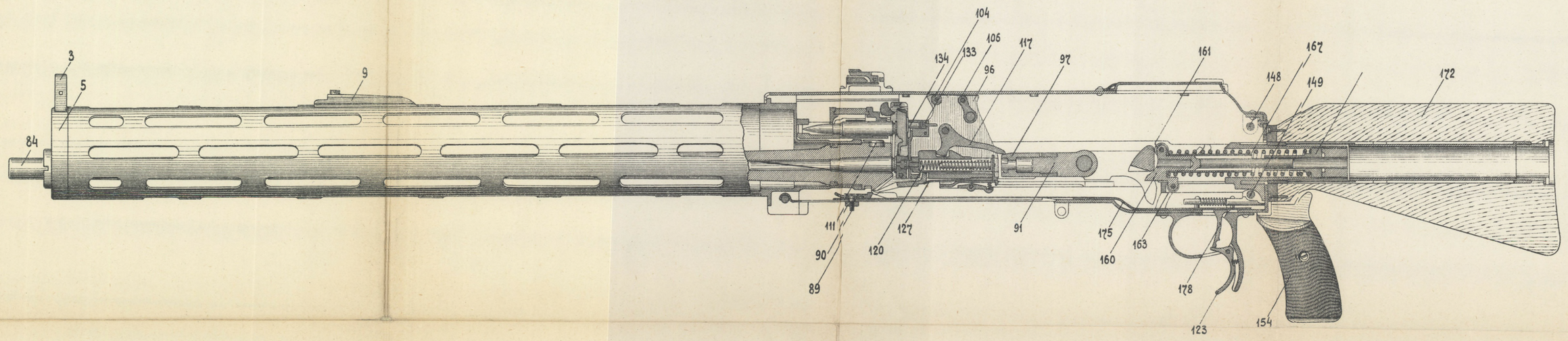

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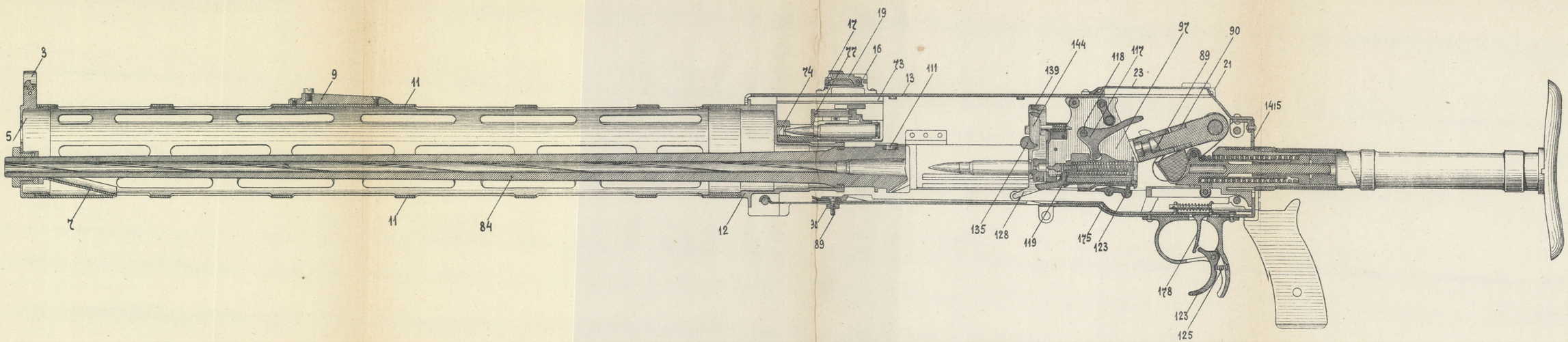
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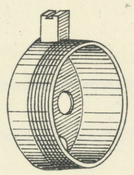


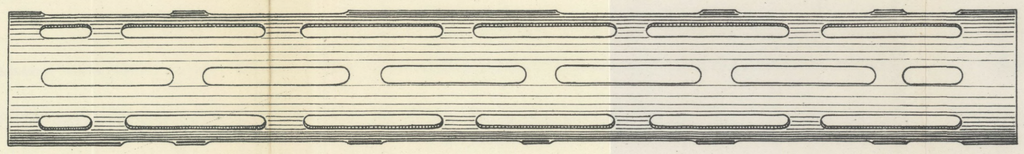
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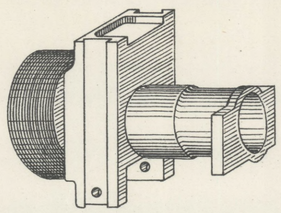


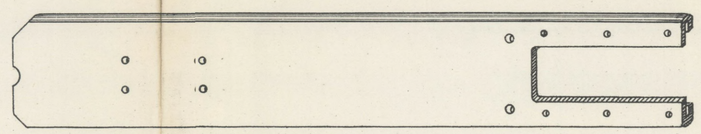
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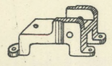

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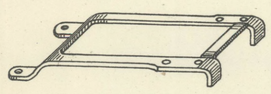

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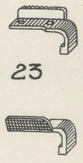

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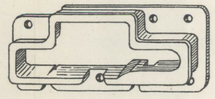

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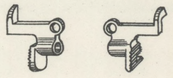

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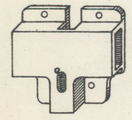

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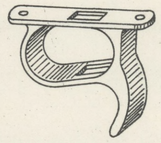

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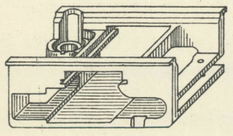

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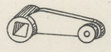

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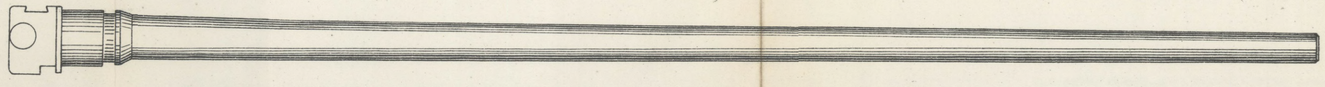
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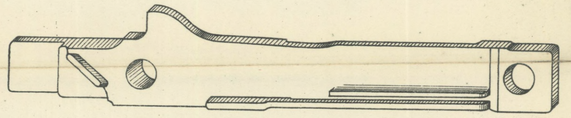

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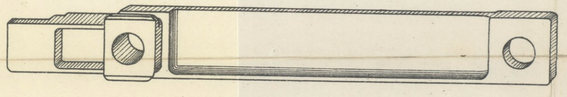

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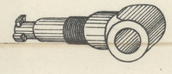

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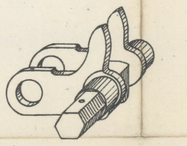

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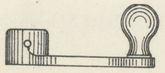

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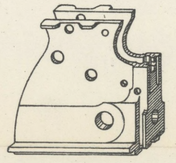

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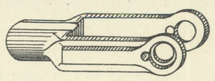

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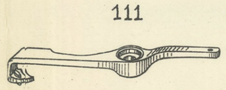

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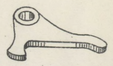

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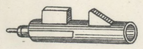

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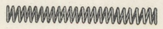

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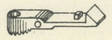

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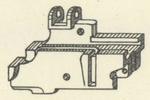
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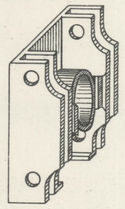

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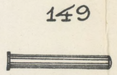

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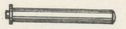

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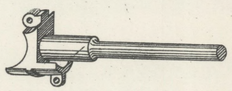

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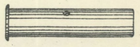

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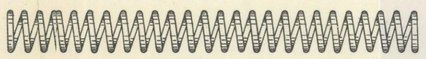

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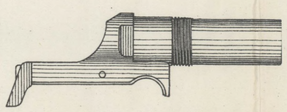

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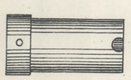

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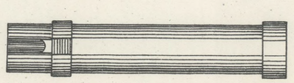

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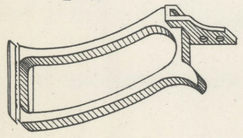

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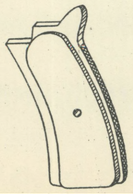

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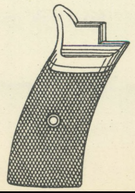

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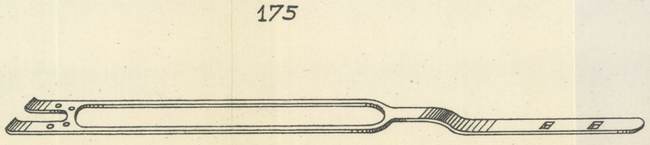

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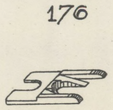

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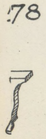

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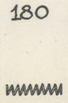

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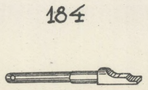

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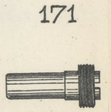

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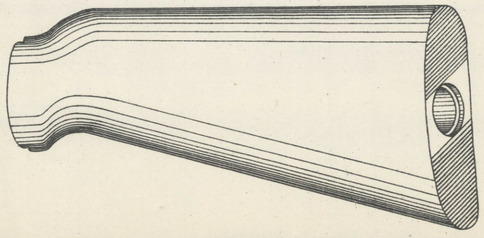

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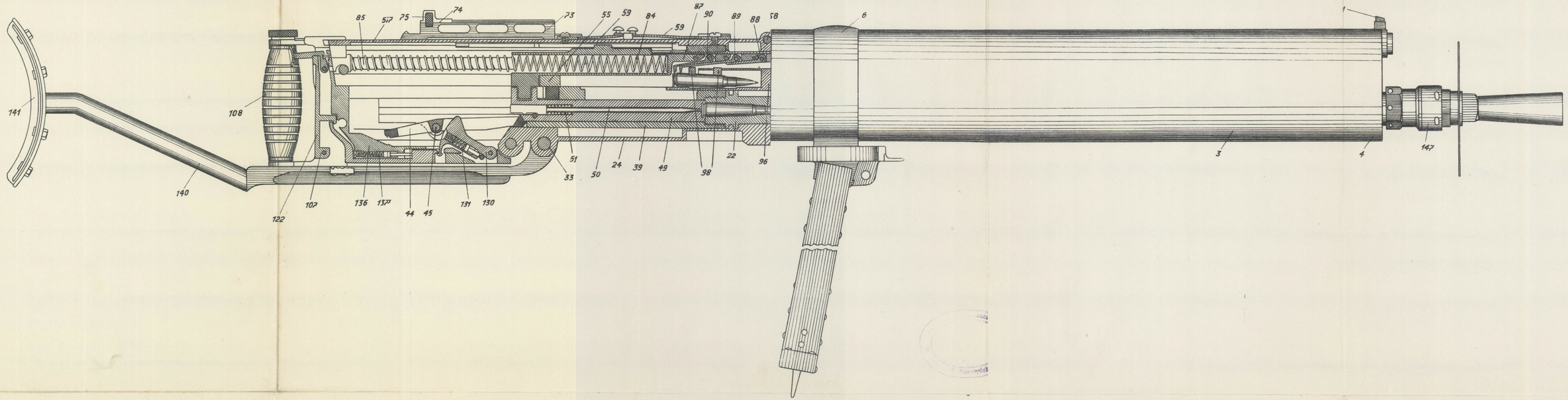

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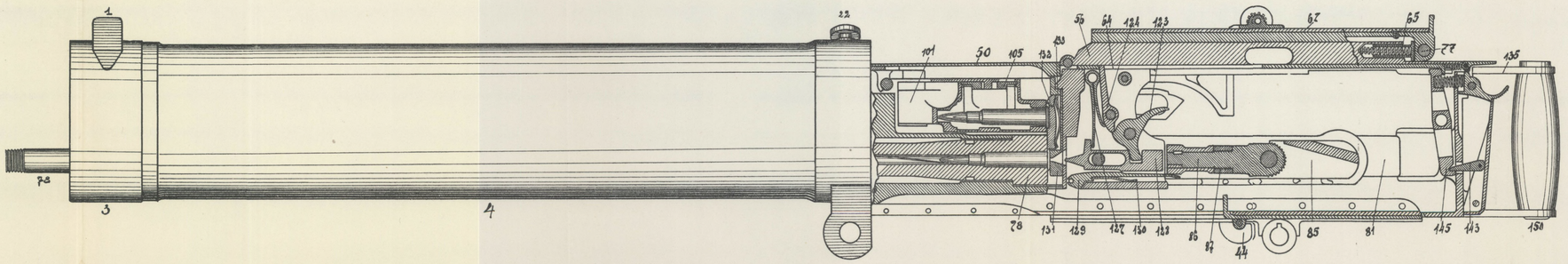
TABLICA 18.

LUFA ZARYGLOWANA, KUREK NAPIĘTY, JEDEN NABÓJ W KOMORZE NABOJOWEJ, DRUGI NAD NIM W DONOŚNIKU. 1/2 WIELK. NAT.



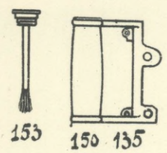
TABLICA 19.

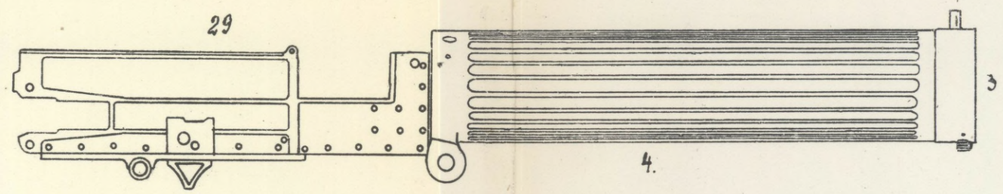
LUFA ZARYGLOWANA, IGLICA NAPIĘTA, JEDEN NABÓJ W LUFIE, DRUGI W DONOŚNIKU. 1/2 WIELK. NAT.

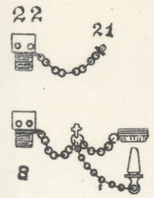


20.

TABLICA 20.

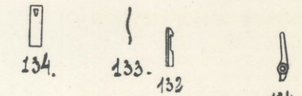


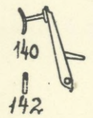


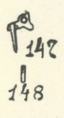






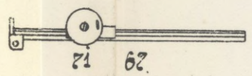


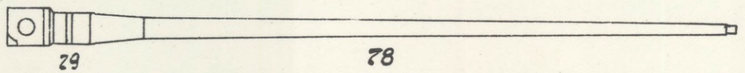
















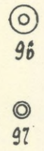






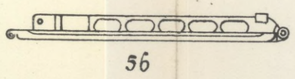


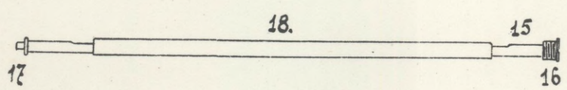






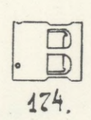




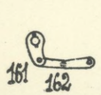






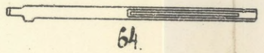




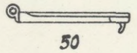




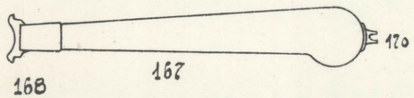


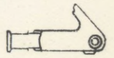


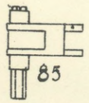




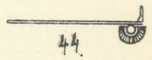


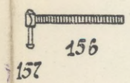


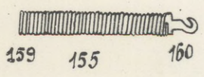


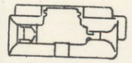






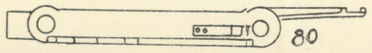


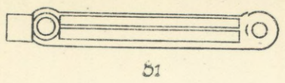


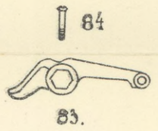






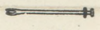














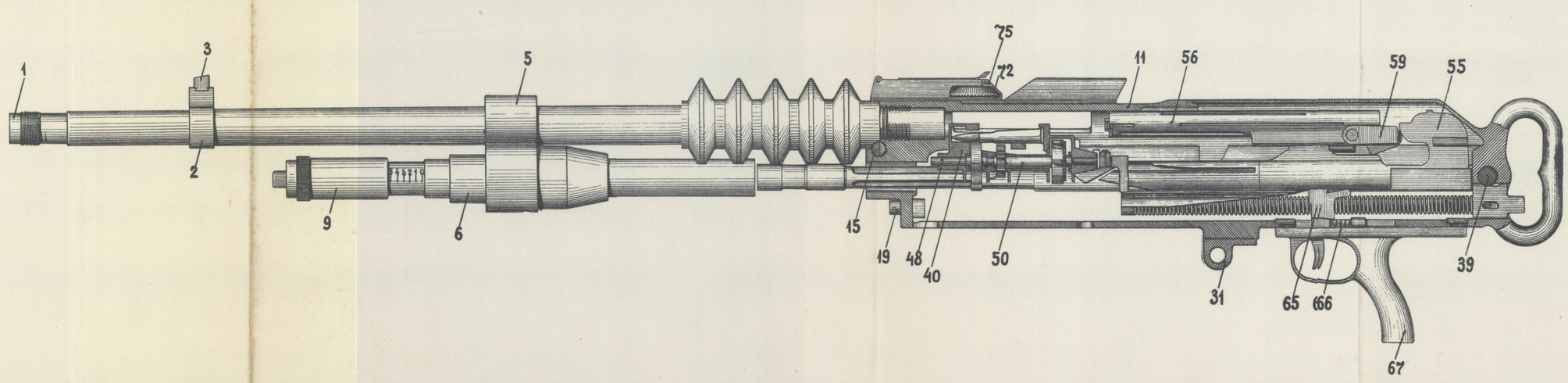




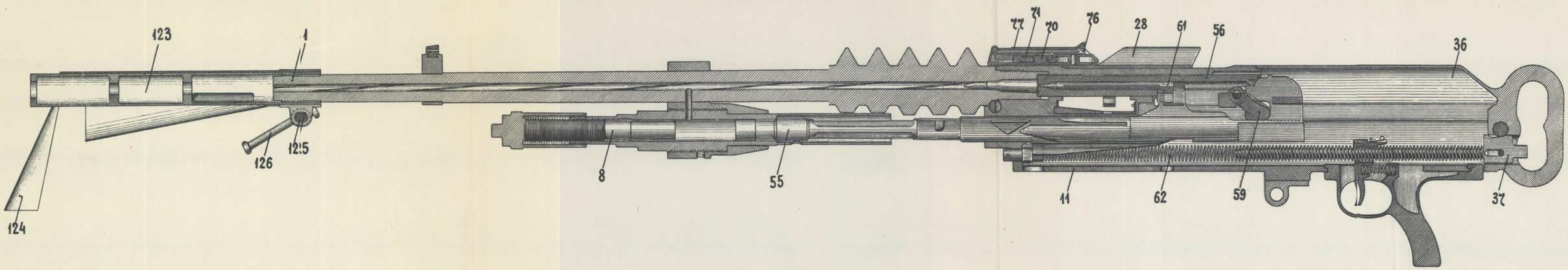
TABLICA 21.

1/3 WIELK. NAT.

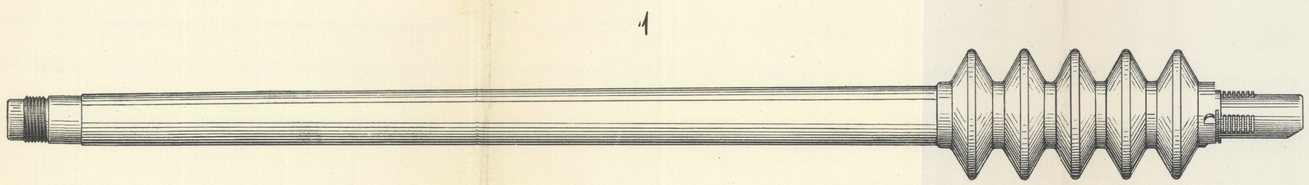
PRZEKRÓJ Nr 1. ZAMEK ODRZUCONY WSTECZ, TŁOK GAZOWY ZACZEPIONY O SPUST, STOPA ZAMKOWA WYPROSTOWANA.

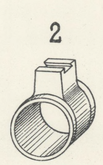


PRZEKRÓJ Nr 2. ZAMEK DOSUNIĘTY, TŁOK GAZOWY W POŁOŻENIU PRZEDNIEM, STOPA ZAMKOWA OPUSZCZONA (LUFA ZARYGLOWANA).

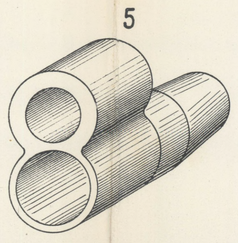


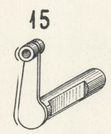
TABLICA 22


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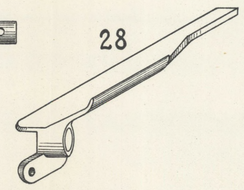

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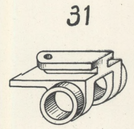

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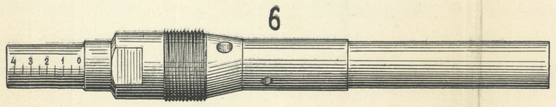

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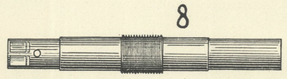

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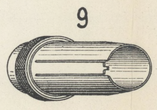

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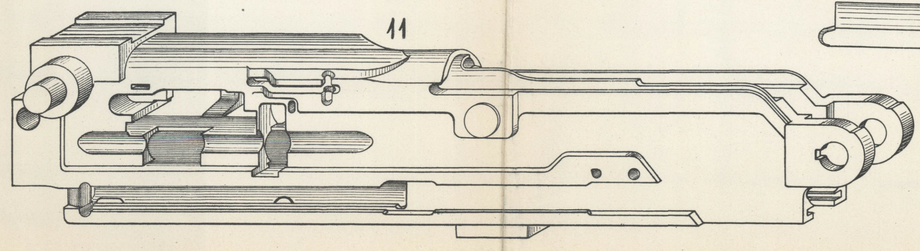

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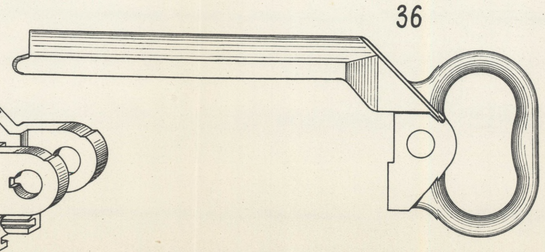

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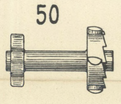

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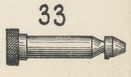

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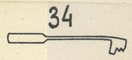

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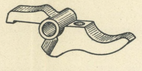

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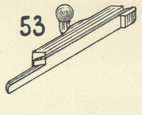

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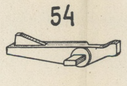

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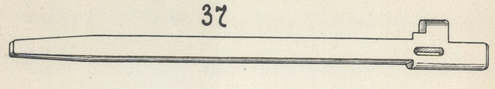

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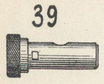

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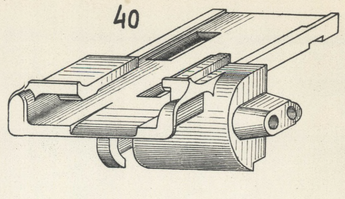

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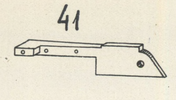

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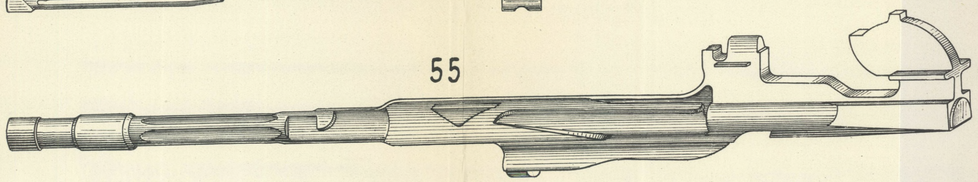

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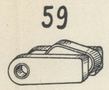

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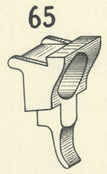

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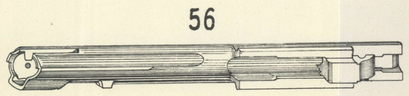

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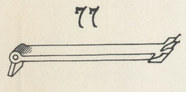

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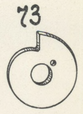

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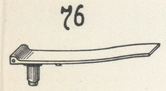

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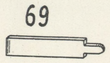

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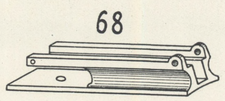

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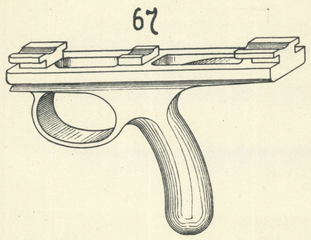

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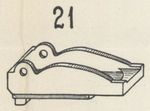

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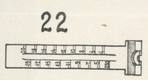

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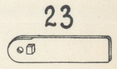

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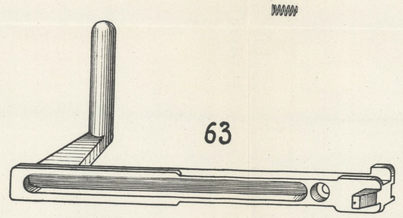
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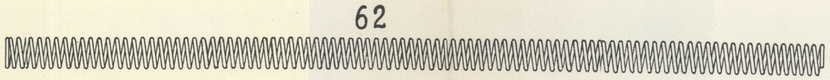

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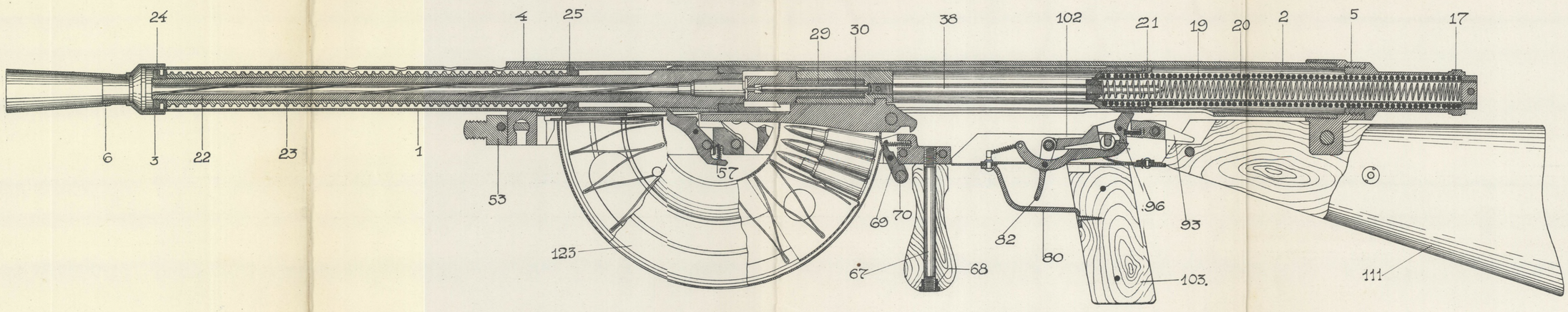

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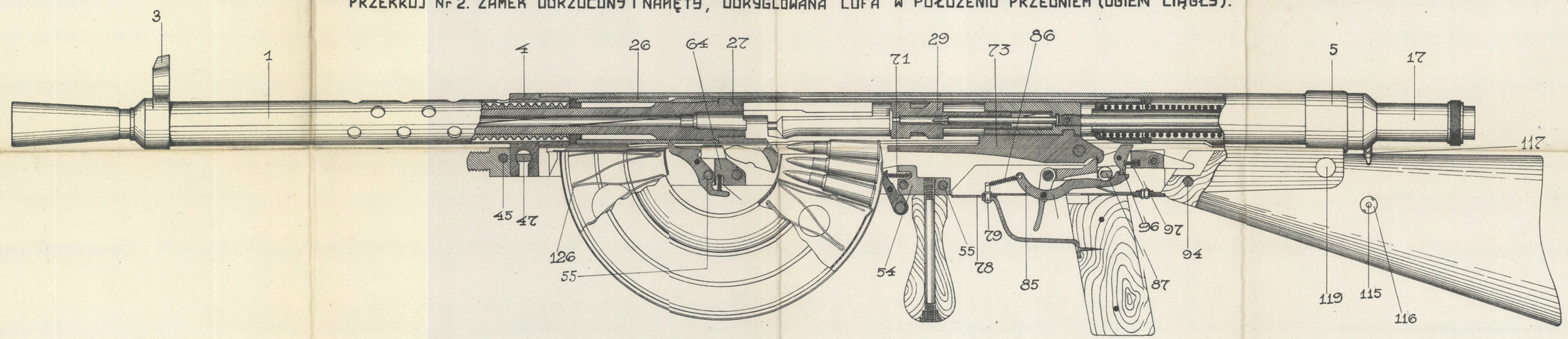
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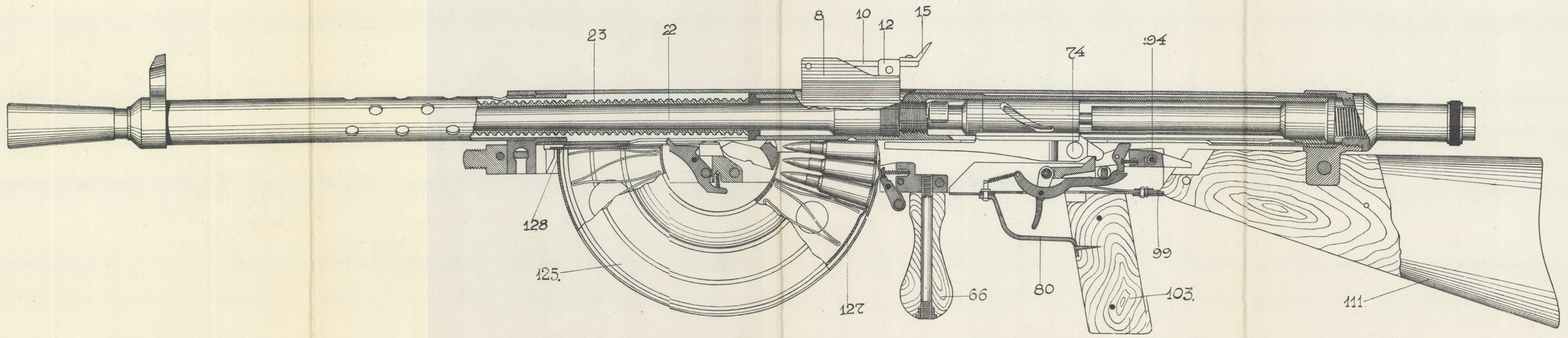
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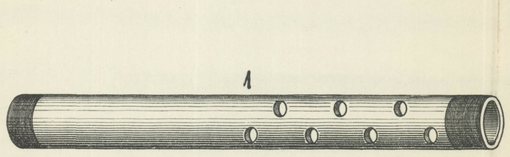
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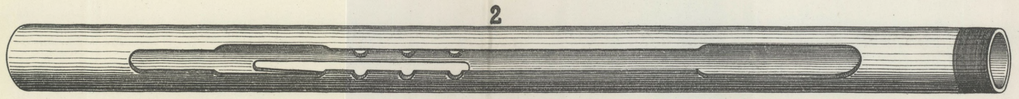


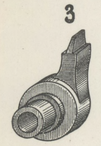
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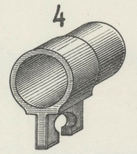


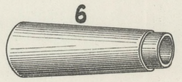
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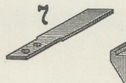

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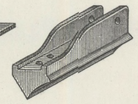

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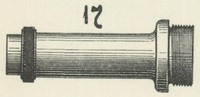

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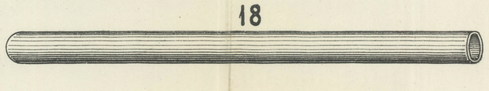

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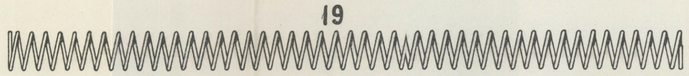

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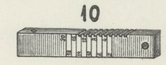

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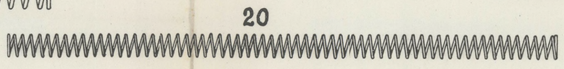

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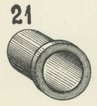

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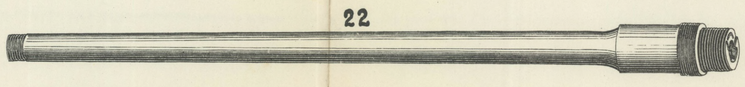

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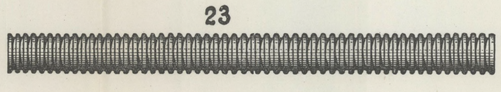

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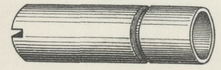

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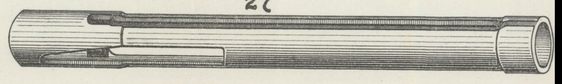

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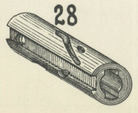

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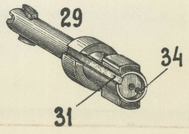

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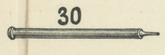

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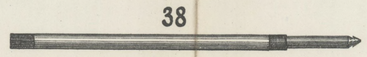

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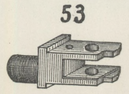

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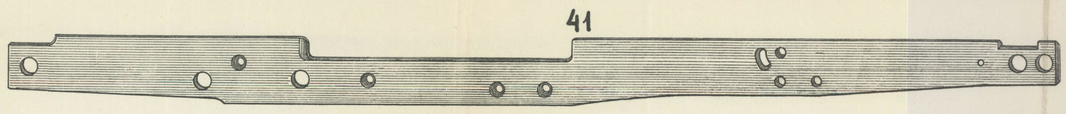

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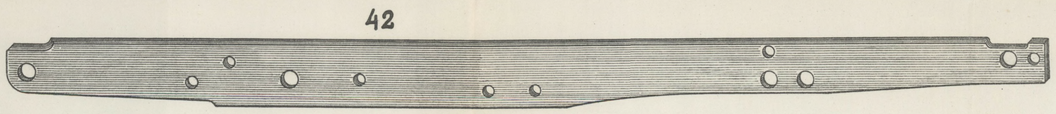

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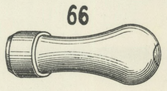

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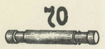

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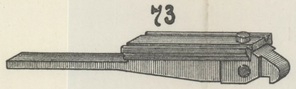

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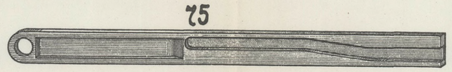

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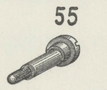

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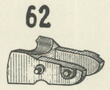

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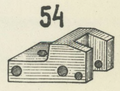

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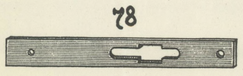

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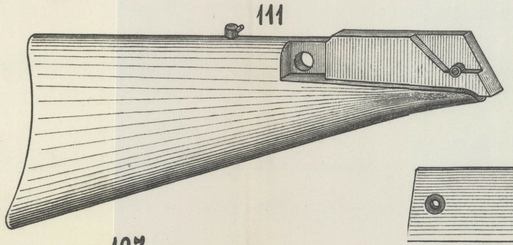

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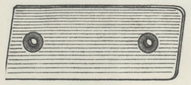

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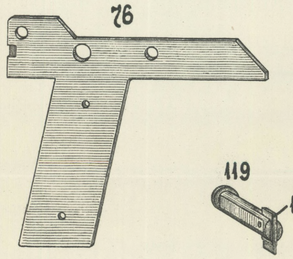

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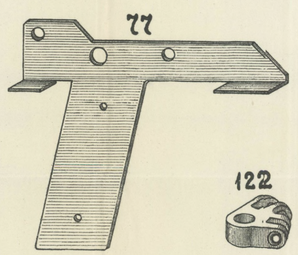

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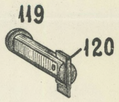

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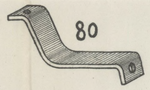

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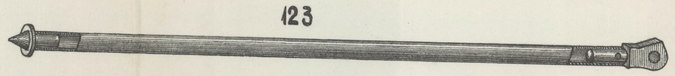
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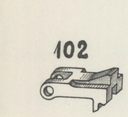

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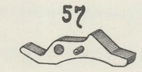

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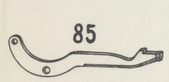

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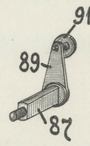

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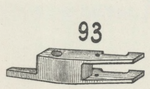

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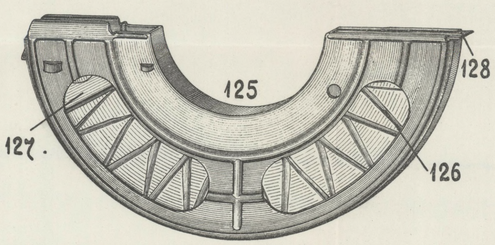

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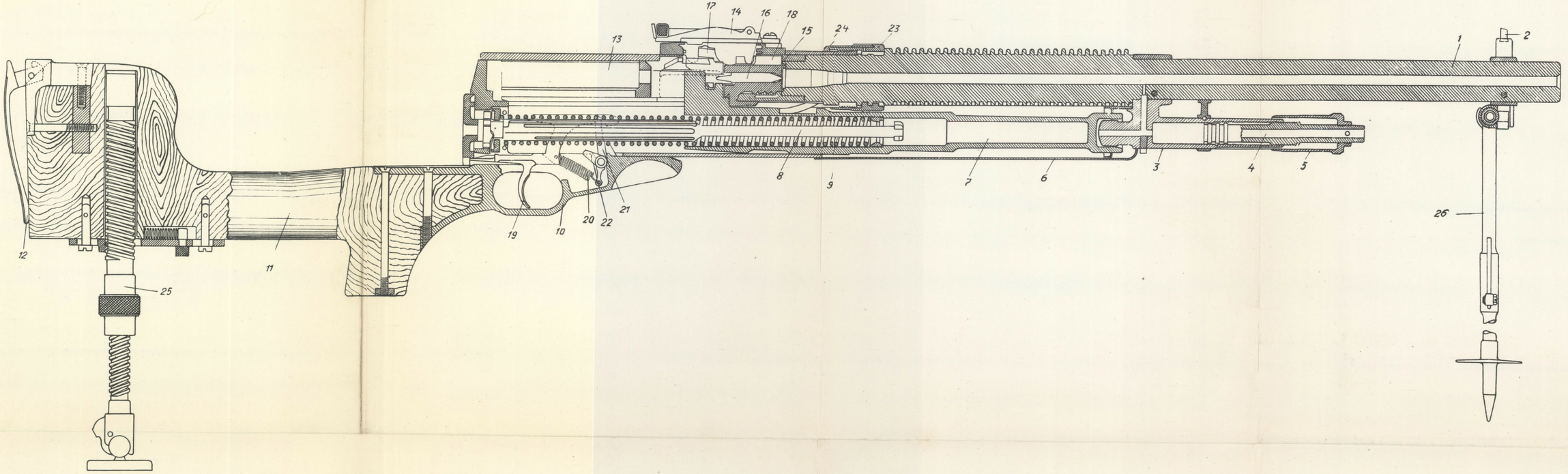

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TABLICA 25.

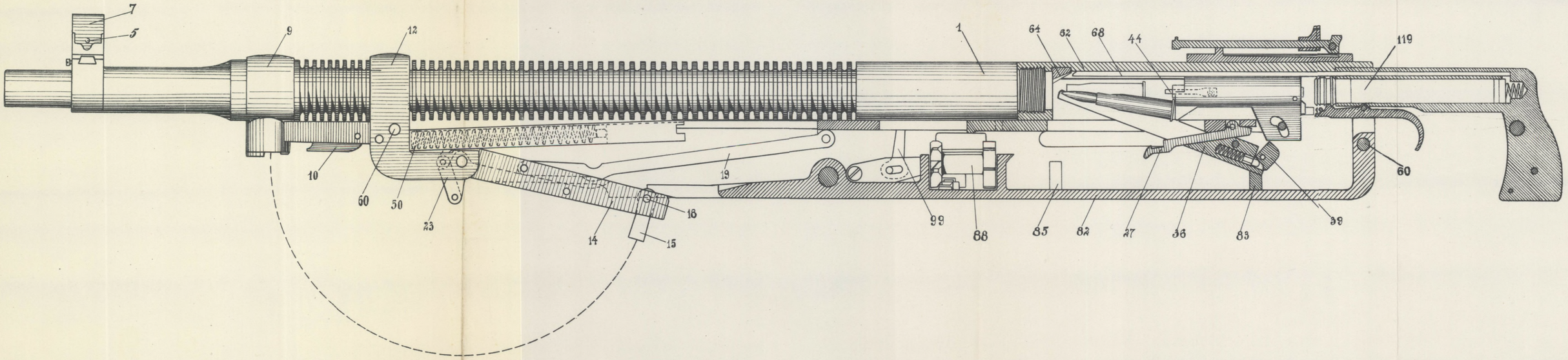
LUFA ZARYGLOWANA. R.K.M. OPARTY NA DWÓJNOGU I PODPÓRCE KOLBY. 1/2 WIELK. NAT.



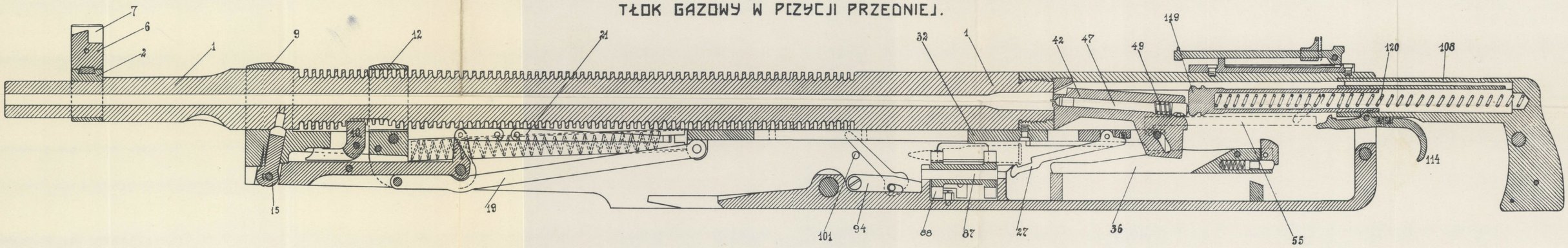
TABLICA 26

1/2 WIELK. NAT.

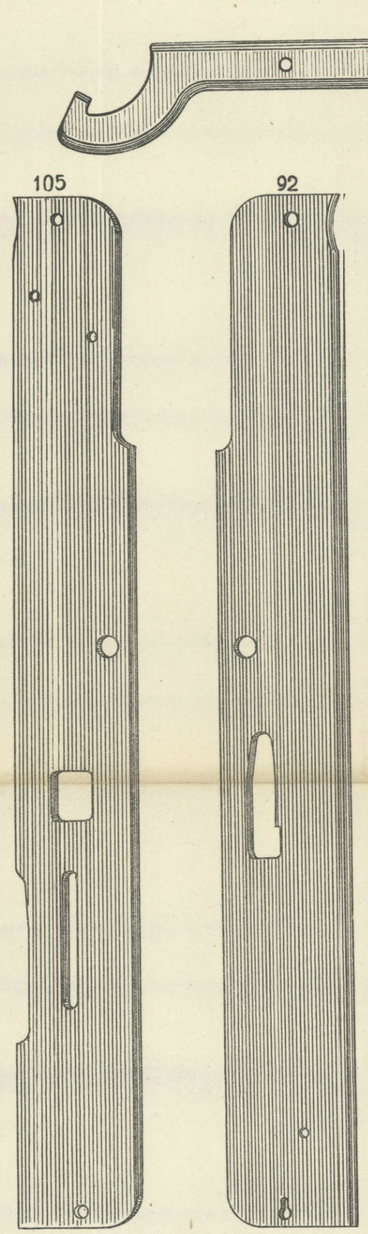
PRZEKRÓJ Nr 1. PRZED STRZAŁEM COFNIĘTY TRZON ZAMKOWY POPYCHA WPRZÓD PODANY ZDOŁU (PRZEZ PODAJNIK) NABÓJ. TŁOK GAZOWY ODRZUCONY WDÓŁ I WTYŁ.



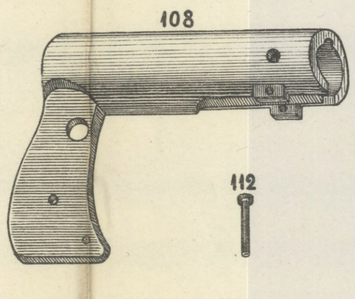
PRZEKRÓJ Nr 2. MOMENT STRZAŁU TRZON ZAMKOWY RYGLUJE LUFĘ. KUREK UDERZA W IGLICĘ. PAZUR CHWYTA NASTĘPNY NABÓJ Z TAŚMY. TŁOK GAZOWY W POZYCJI PRZEDNIEJ.

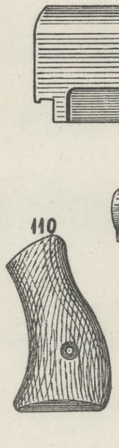


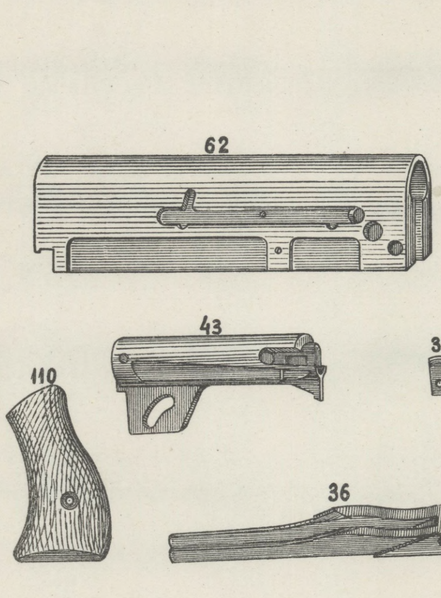
TABLICA 27.

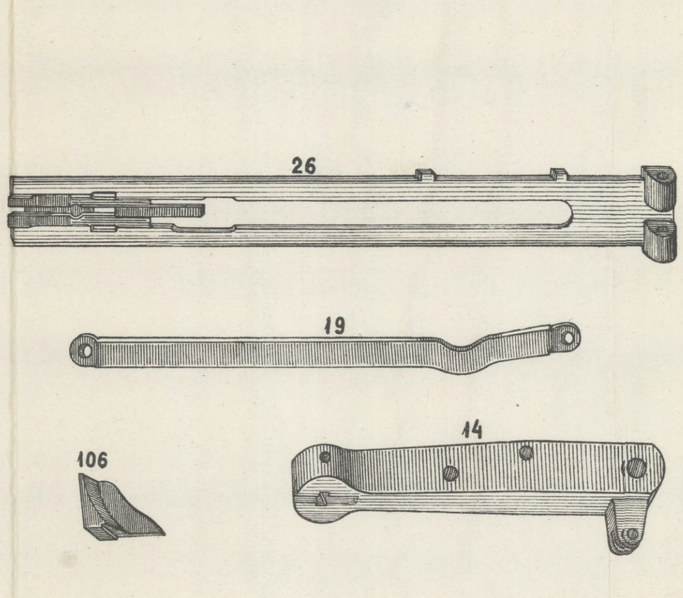

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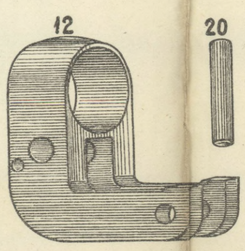

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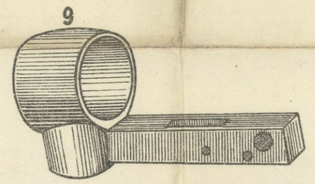

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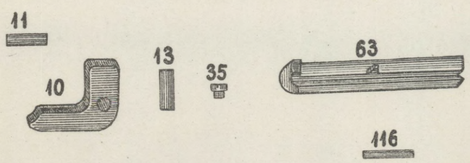

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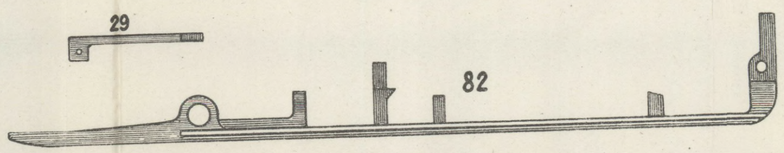

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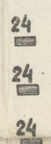

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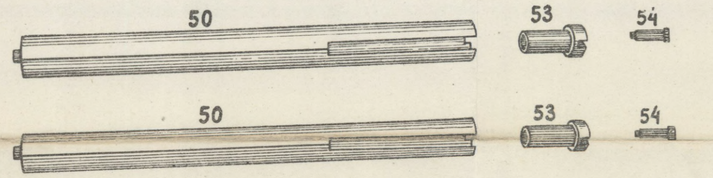

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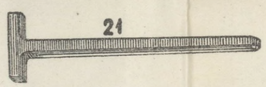

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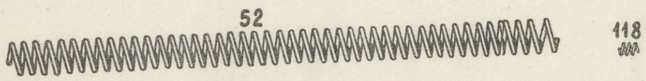

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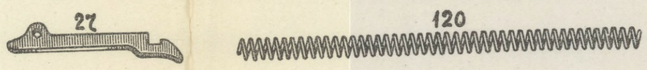

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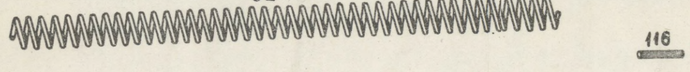

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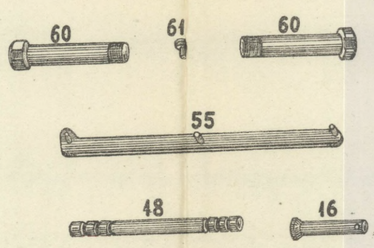

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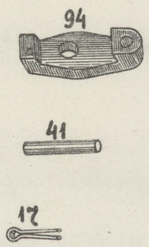

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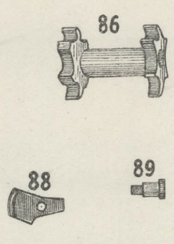

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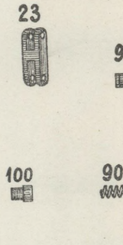

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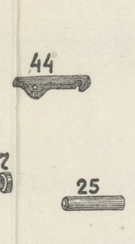

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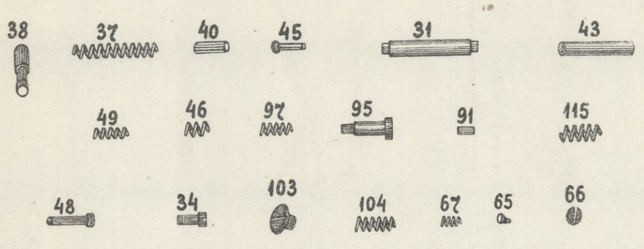

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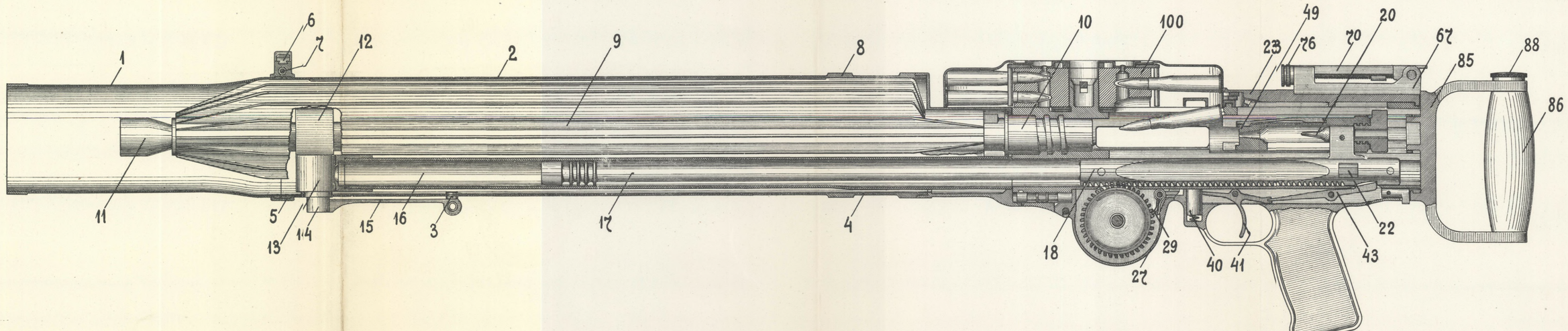

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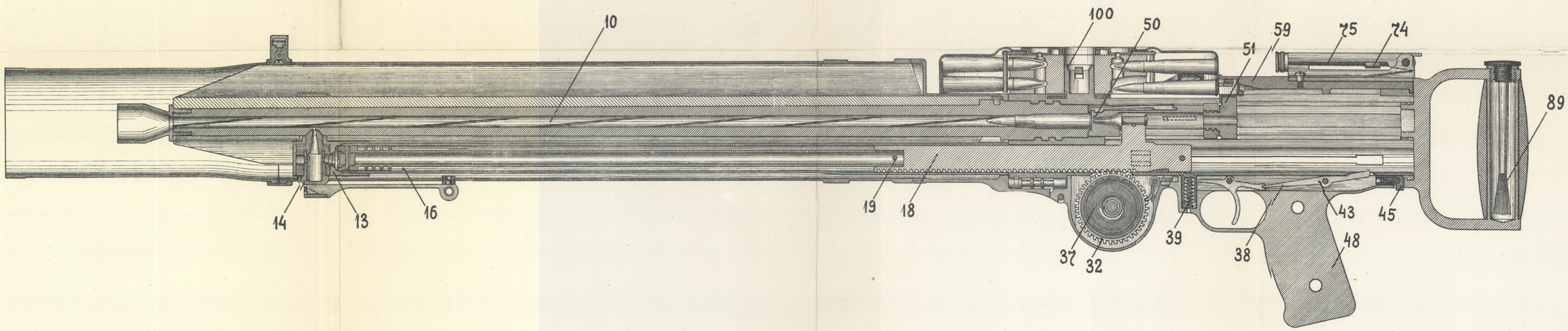
TABLICA 28.

1/2 WIELK. NAT.

PRZEKRÓJ N ≙ 1. ZAMEK ODRZUCONY WSTECZ, ZACZEP SPUSTOWY TRZYMA W NAPIĘCIU TŁOK GAZOWY, NABÓJ OPADA Z MAGAZYNKA DO WNĘTRZA K.M. A K:M:

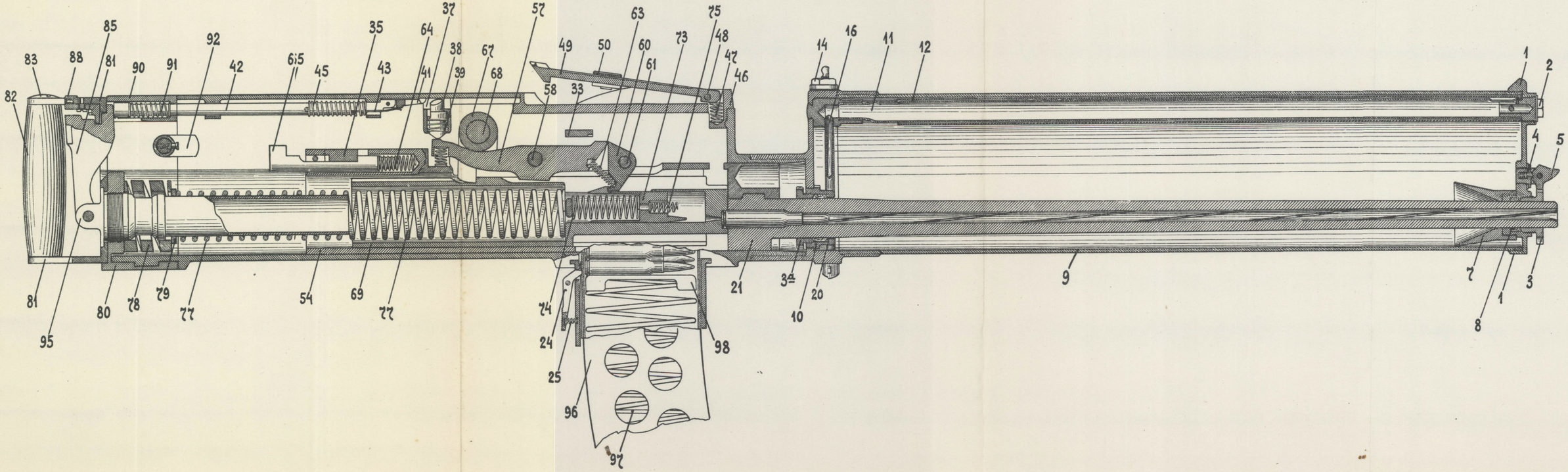


PRZEKRÓJ 2. ZAMEK DOSUNIĘTY DO LUFY. LUFA ZARYGLOWANA, NABÓJ W LUFIE.

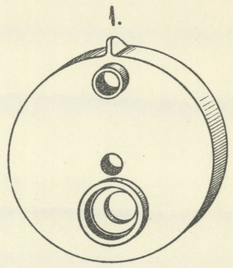


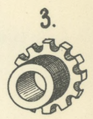
TABLICA 29

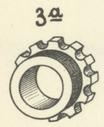
PRZEKRÓJ Z ZAMKIEM W POŁOŻENIU NORMALNEM, IGLICA NACIĄGNIĘTA, NABÓJ W LUFIE. 1/2 WIELK. NAT.

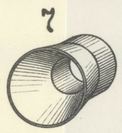


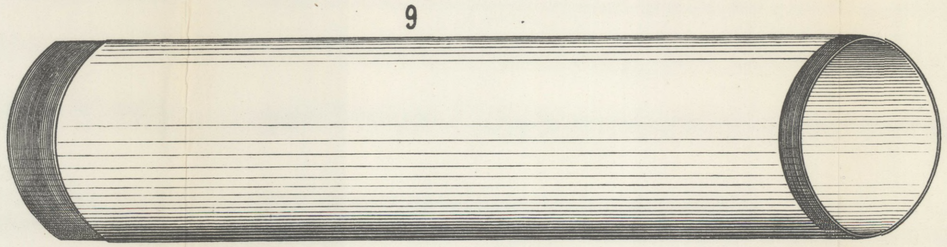
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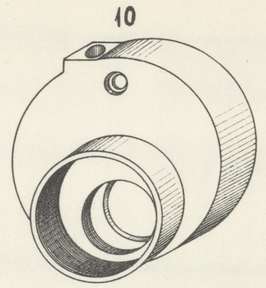

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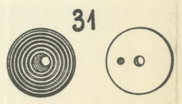

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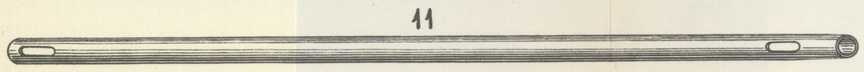

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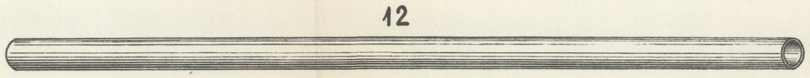

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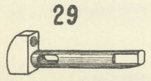

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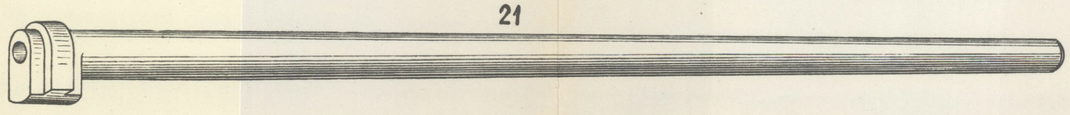

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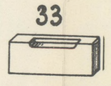

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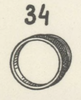

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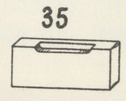

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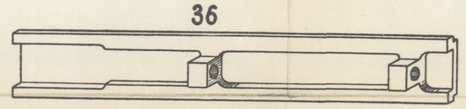

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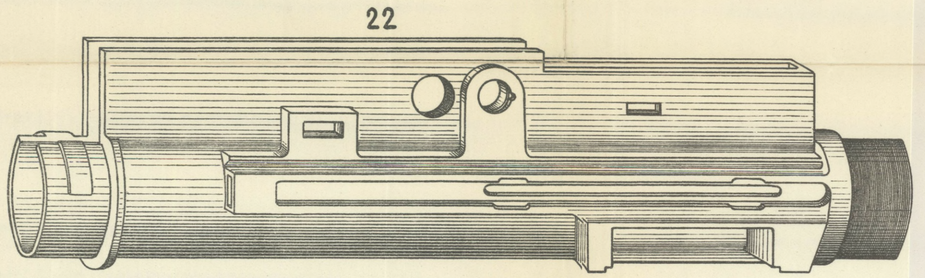

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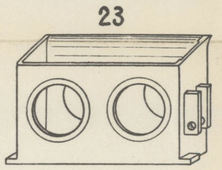

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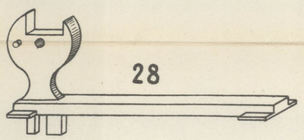

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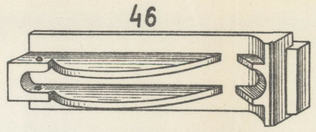

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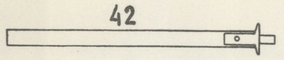

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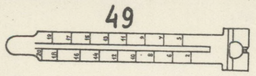

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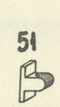

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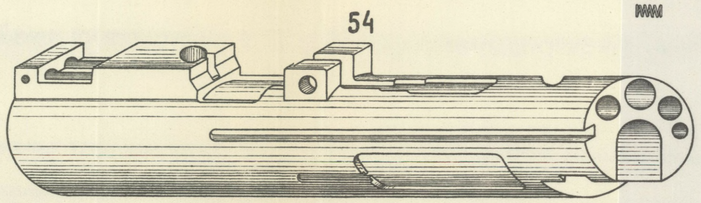

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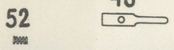

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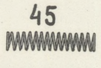

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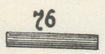

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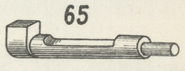

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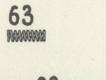

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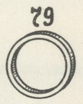

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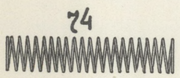

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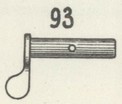

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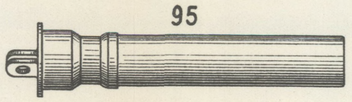

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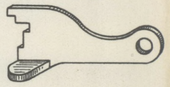

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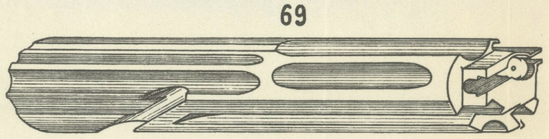

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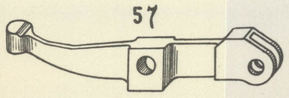

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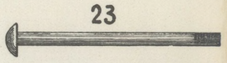

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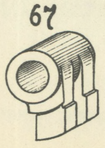

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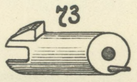

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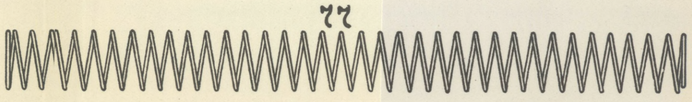

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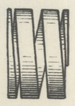

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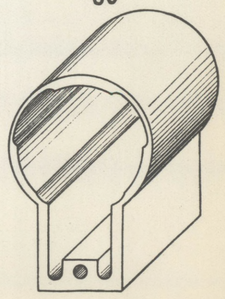

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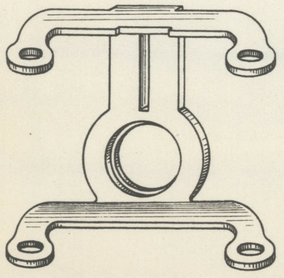

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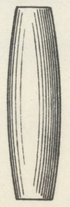

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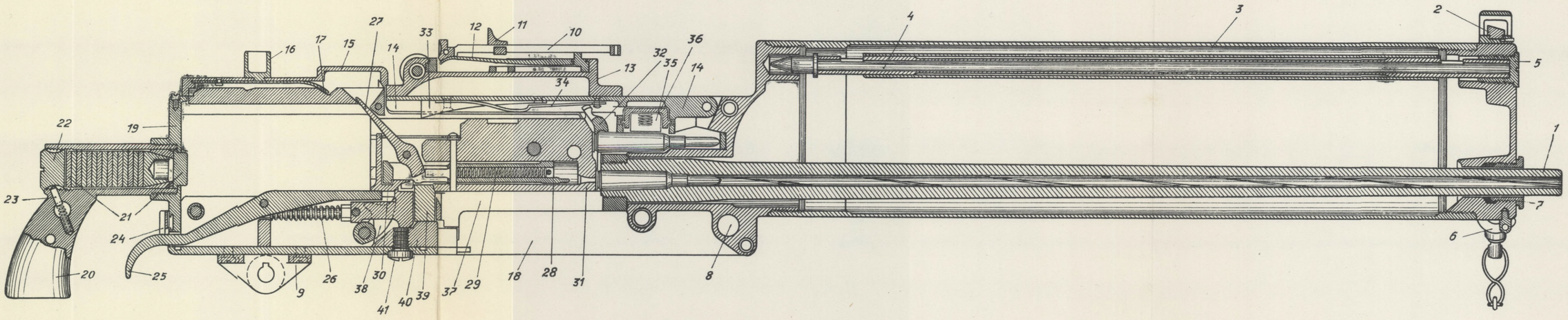

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TABLICA 31

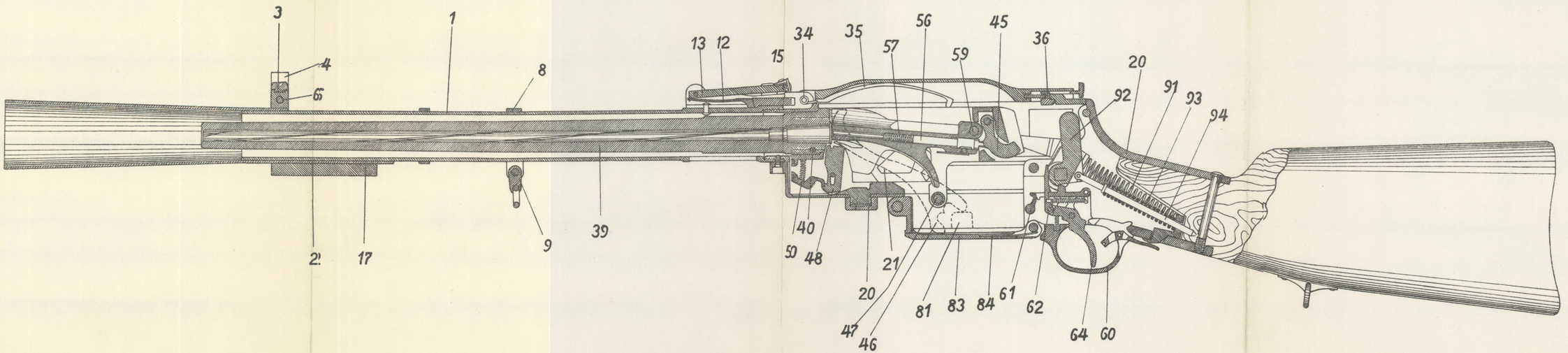
LUFA ZARYGLOWANA W PRZEDNIEM POŁOŻENIU, NABÓJ W DOIOŚNIKU I W KOMORZE NABOJOWEJ. 1/2 WIELK. NAT.



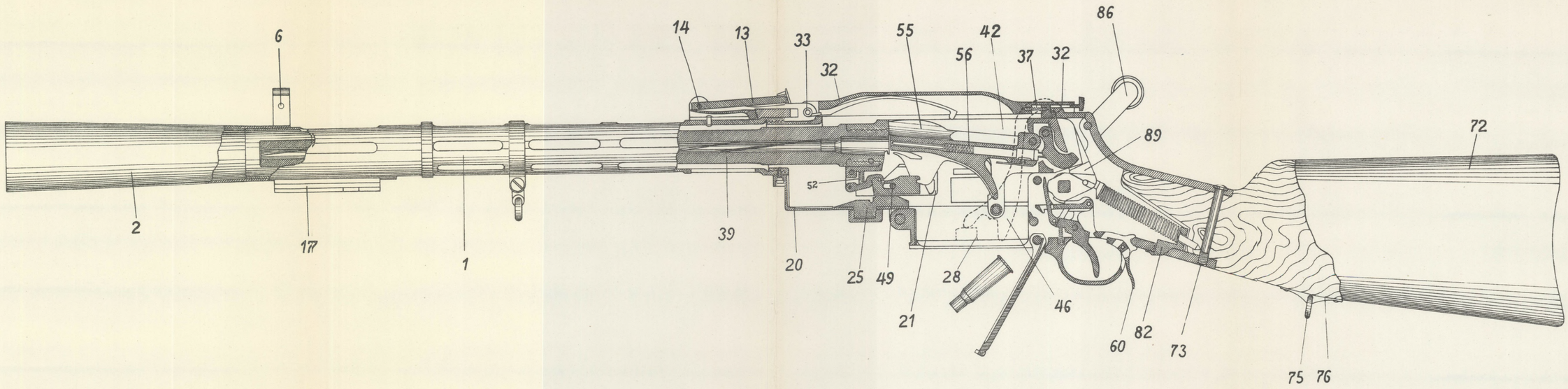
TABLICA 32.

1/2 WIELK. NAT.

PRZEKRÓJ Nr 1. LUFA ZARYGLOWANA, WYSTRZELONA ŁUSKA W KOMORZE NABOJOWEJ, KUREK NAPIĘTY.



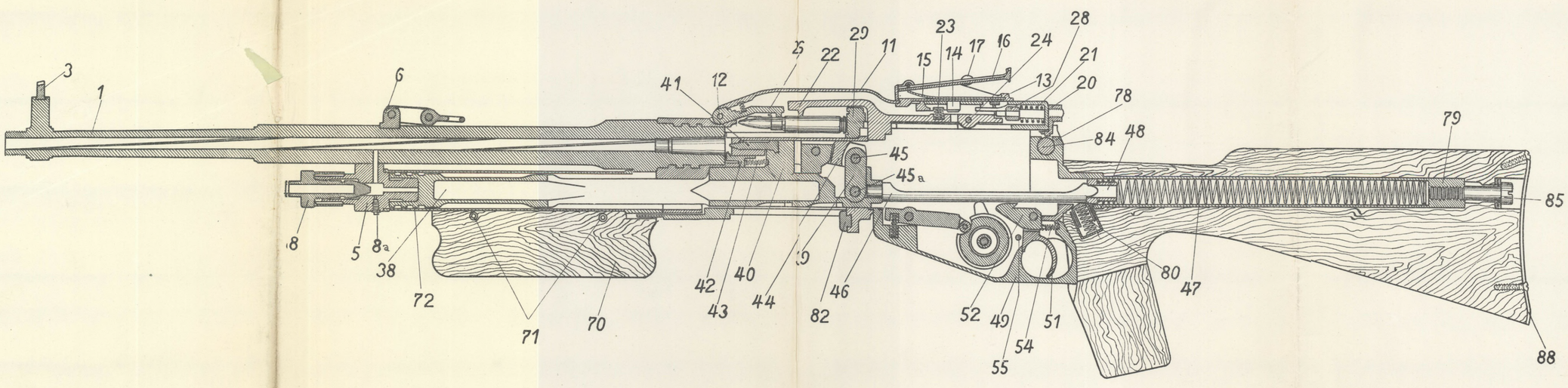
PRZEKRÓJ Nr 2. LUFA COFNIĘTA, POKRYWKA WYRZUTNICY OTWARTA, ŁUSKA WYRZUCONA, PODAJNIK COFNIĘTY.



33,34,35,36.

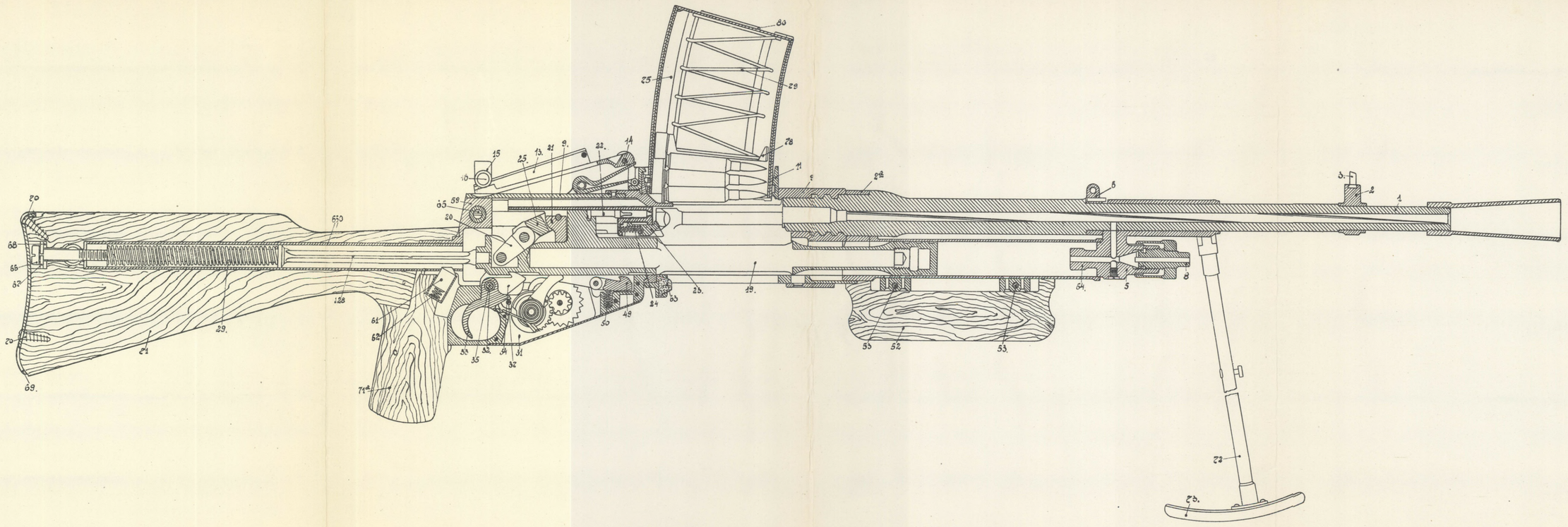
TABLICA 33

LUFA ZARYGLOWANA, WYSTRZELONA ŁUSKA W KOMORZE NABOJOWEJ, NASTĘPNY NABÓJ W DONOŚNIKU, TŁOK GAZOWY W POŁOŻENIU PRZEDNIEM. 1/2 WIELK. NAT.



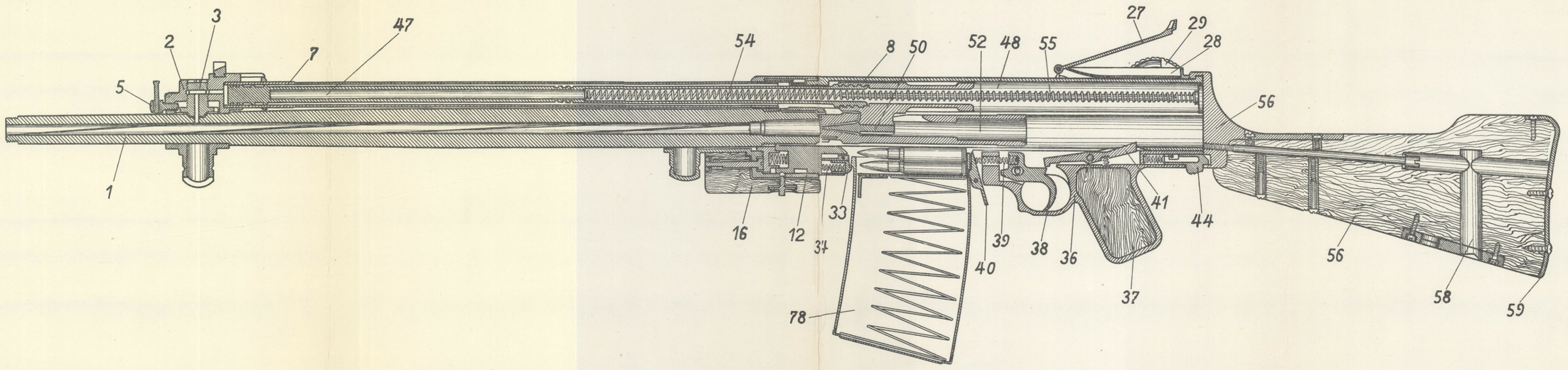
TABLICA 34

LUFA ODRYGLOWANA. ZAMEK I TŁOK GAZOWY WYLE. 1/2 WIELK. NAT.



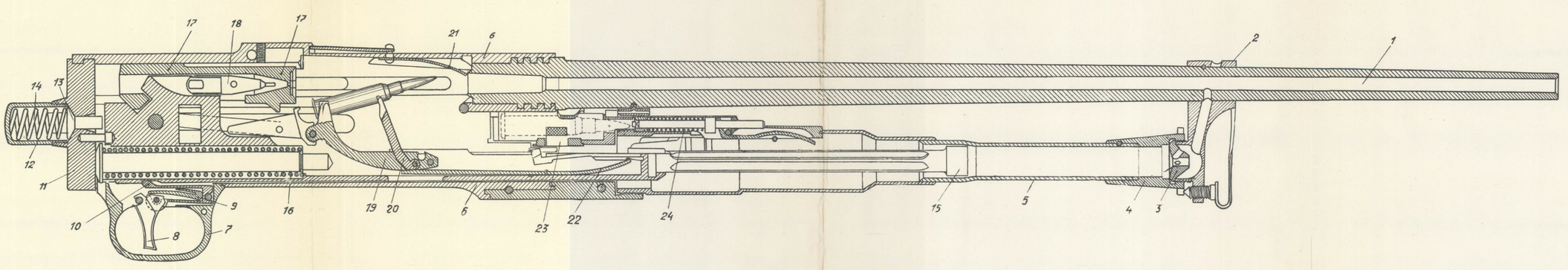
TABLICA 35

LUFA ZARYGLOWANA, WYSTRZELONA ŁUSKA W KOMORZE NABOJOWEJ, TŁOK GAZOWY W POŁOŻENIU PRZEDNIEM. 1/2 WIELK. NAT.



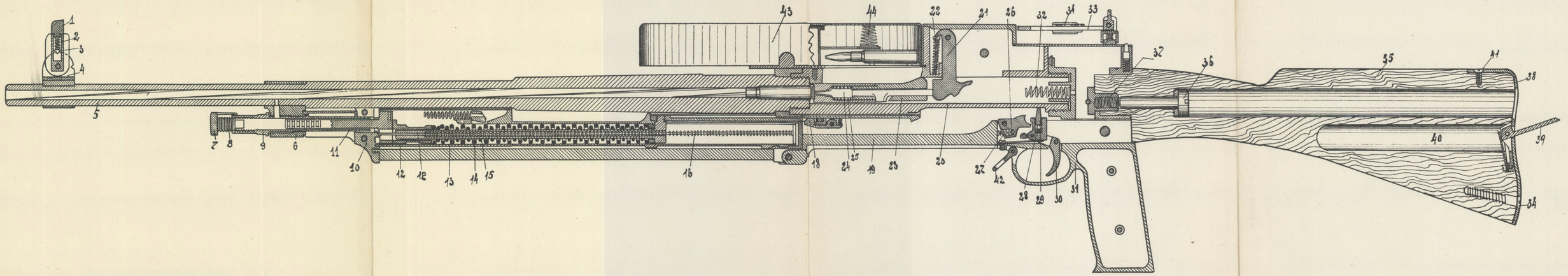
TABLICA 36

LUFA ODRYGLOWANA, PODAJNIK TRZYMA NABÓJ, ZAMEK ODRZUCONY WTYŁ. 1/2 WIELK. NAT.



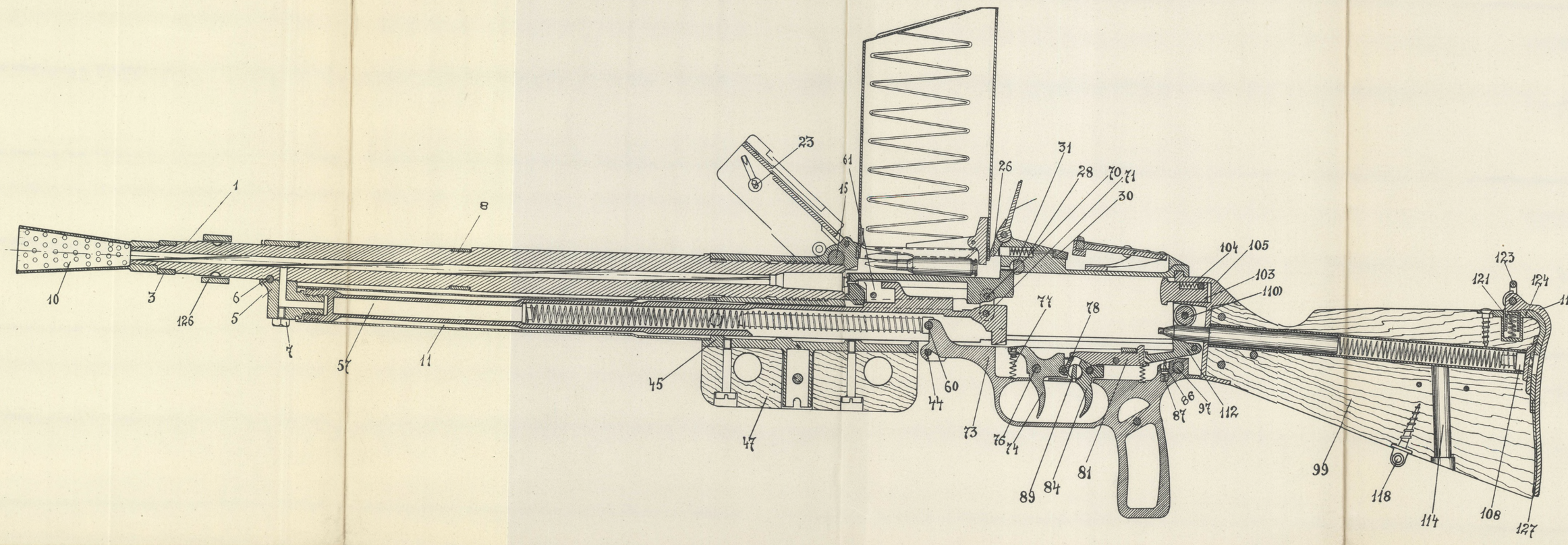
37 TABLICA.

LUFA ZARYGLOWANA, NABÓJ W MAGAZYNKU, KUREK SPUSZCZONY. 1/2 WIELK. NAT.

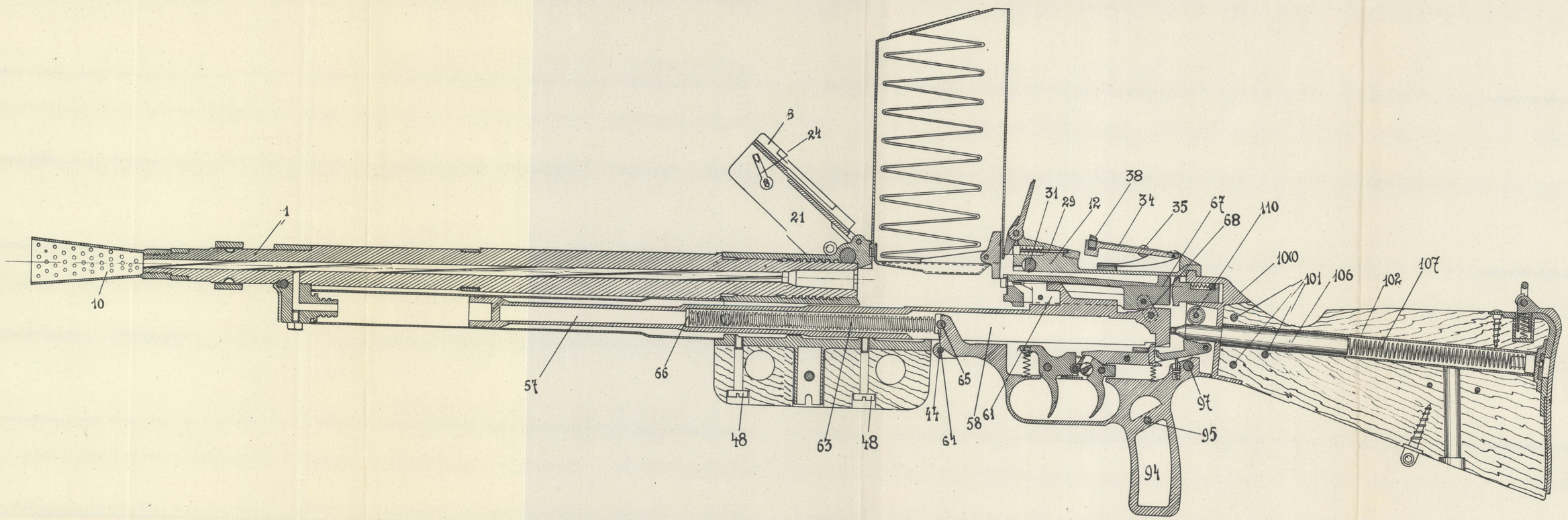


TABLICA 38

PRZEKRÓJ Nr 1. ZAMEK W POZYCJI ZARYGLOWANEJ PRZEDNIEJ SPUST ODBEZPIECZONY

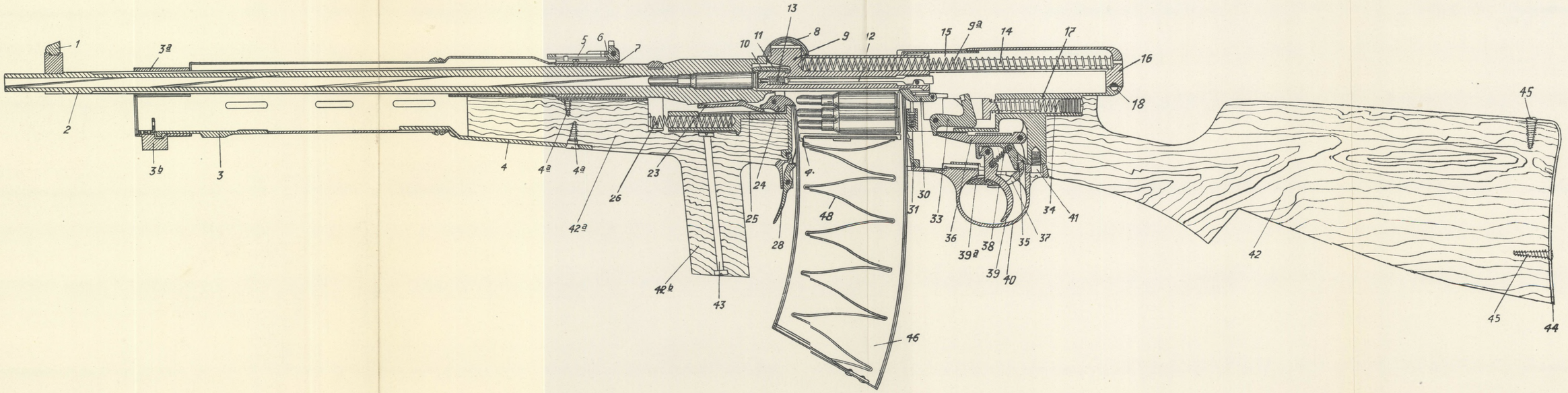


PRZEKRÓJ Nr 2. ZAMEK W POZYCJI ODRYGLOWANE TYLNEJ. SPUST ZABEZPIECZONY



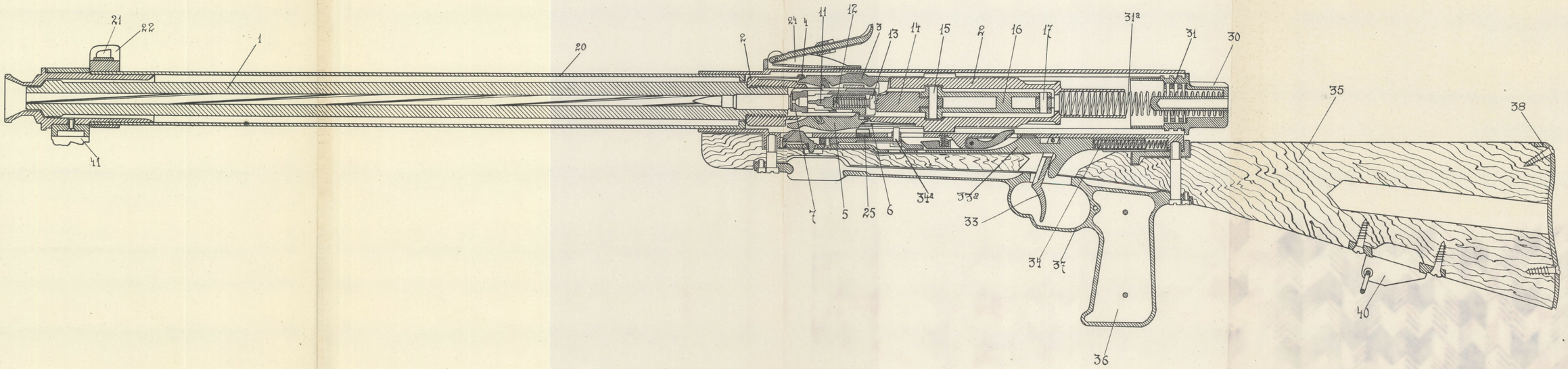
TABLICA 39.

LUFA I TRZON ZAMKOWY W POZYCJI PRZEDNIEJ, JEDEN NABÓJ W KOMORZE NABOJOWEJ, KUREK NAPIĘTY. 1/2 WIELK. NAT.



TABLICA 40

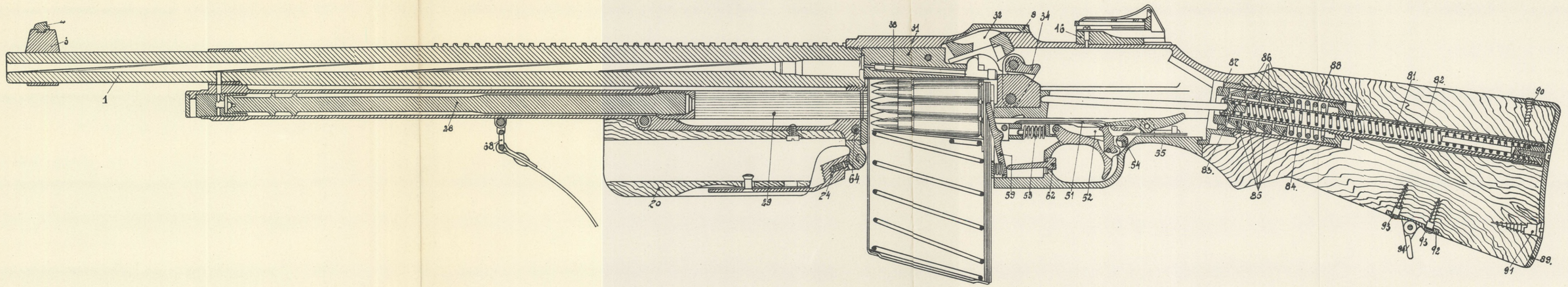
LUFA I ZAMEK W POZYCJI PRZEDNIEJ. LUFA ZARYGLOWANA, IGLICA NAPIĘTA,



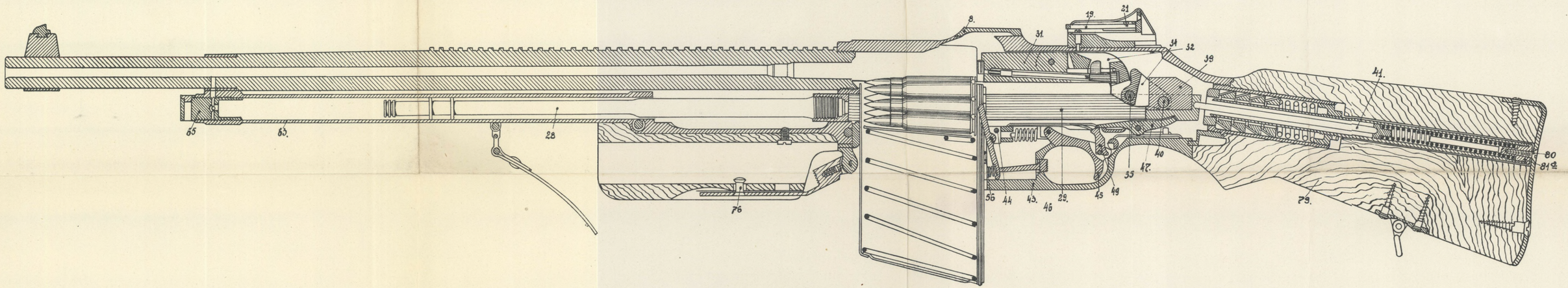
TABLICA 41.

1/2 WIELK. NAT.

PRZEKRÓJ N ◦ 1. MOMENT STRZAŁU. LUFA ZARYGLOWANA, KUREK UDERZA W IGLICĘ, NABOJE W MAGAZYNKU.

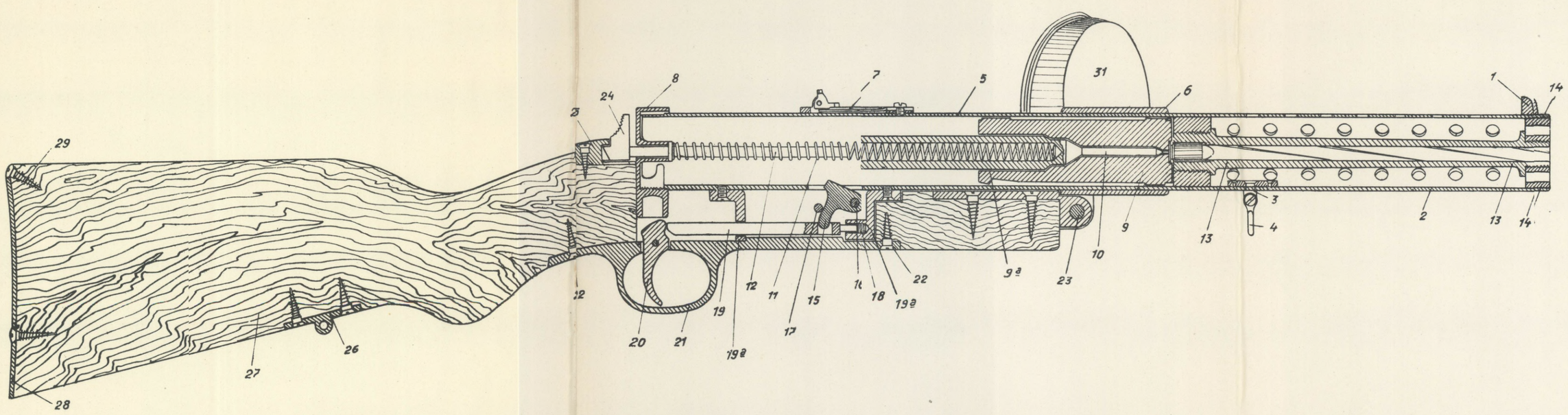


RZEKRÓJ N ◦ 2. PO STRZALE. ZAMEK ODRZUCONY WSTECZ, GÓRNY NABÓJ W MAGAZYNKU PODNIÓSŁ SIĘ PRZED TRZON ZAMKOWY.

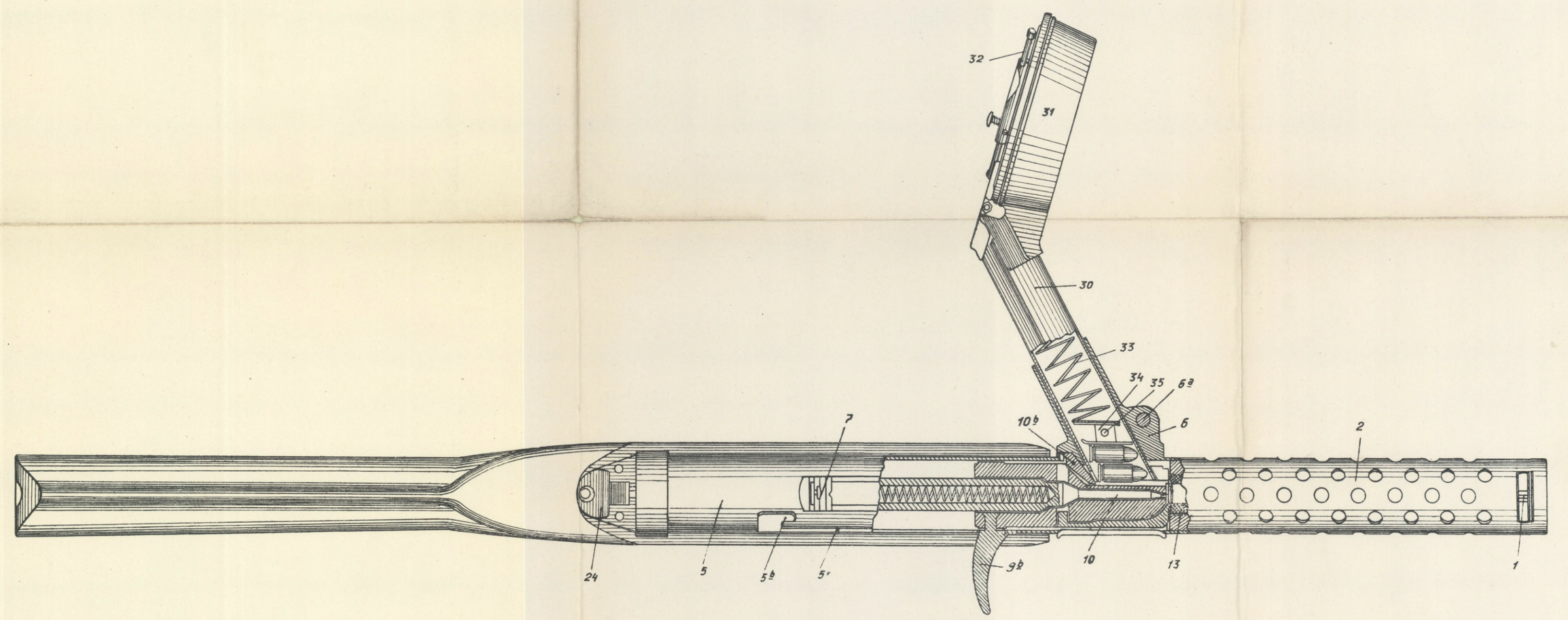


TABLICA 42. 43.

PRZEKRÓJ ZBOKU Z ZAŁOŻONYM MAGAZYIKIEM. TRZON ZAMKOWY I IGLICA W POŁOŻENIU PRZEDNIEM. 1/2. WIELK. NAT.

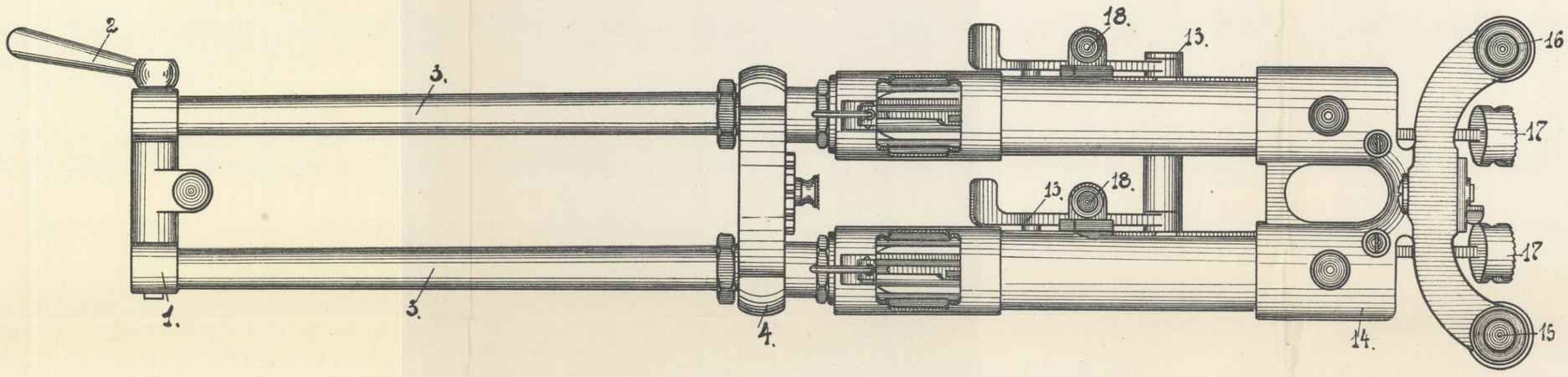


PRZEKRÓJ ZGÓRY Z ZAŁOŻONYM MAGAZYNKIEM. TRZON ZAMKOWY W POŁOŻENIU PRZEDNIEM. 1/2 WIELK. NAT.

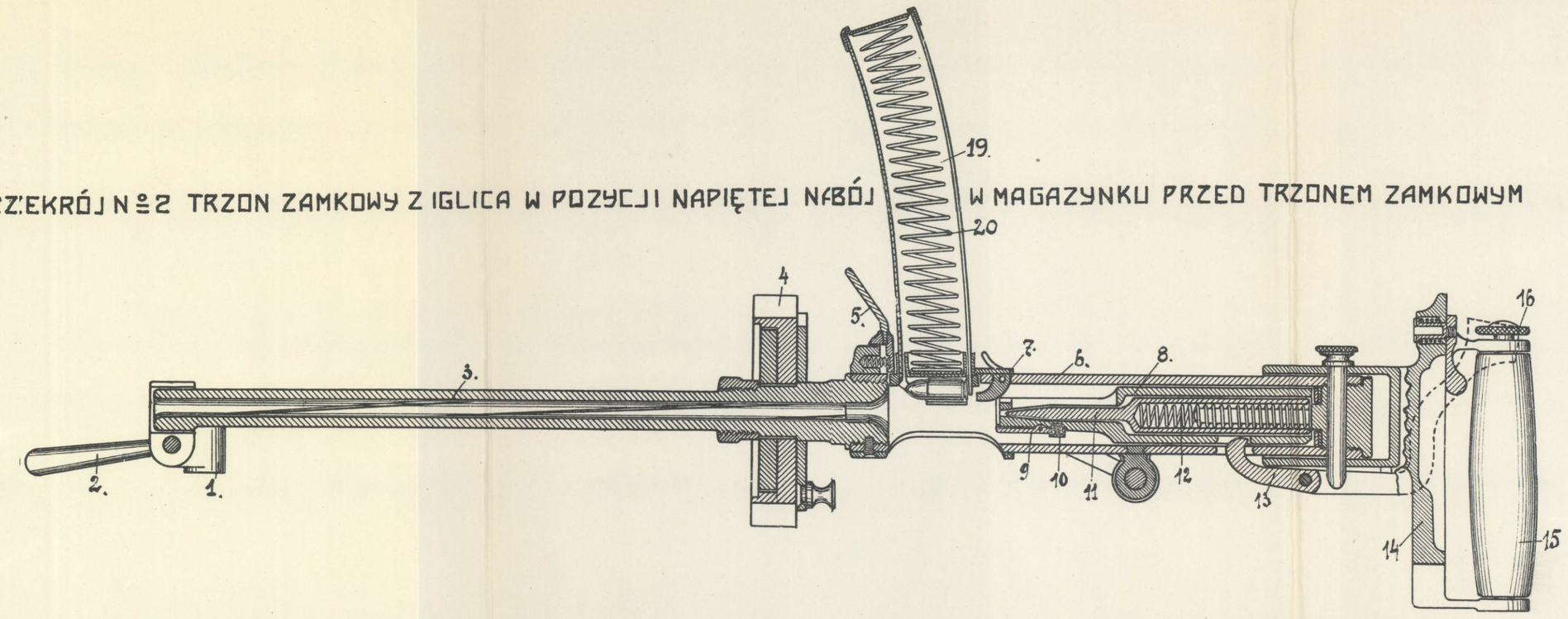


TABLICA 43.

PRZEKRÓJ N ≅ 1. WIDOK Z GÓRY TRZONY ZAMKOWE W POZYCJI PRZEDNIEJ 1/2 WIELK. NAT.



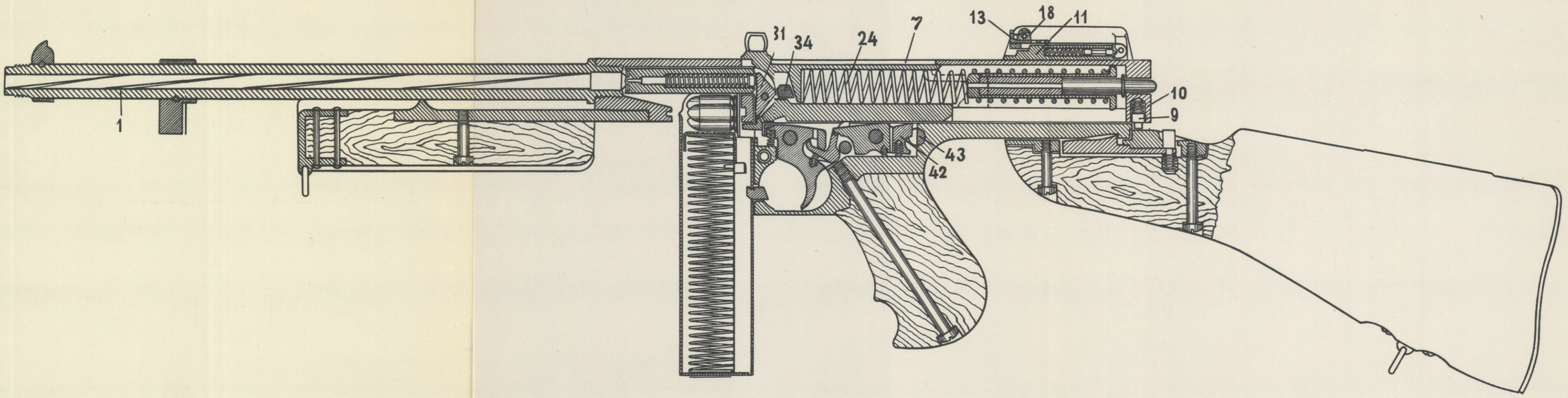
PRZEKRÓJ N≅2 TRZON ZAMKOWY Z IGLICA W POZYCJI NAPIĘTEJ NABÓJ W MAGAZYNKU PRZED TRZONEM ZAMKOWYM



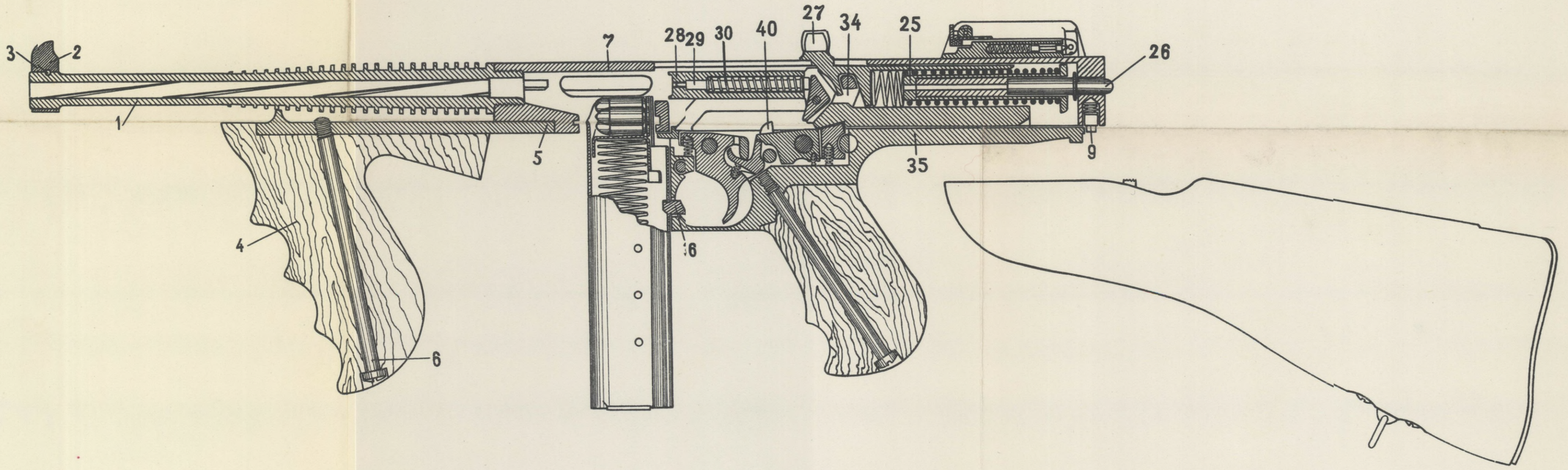
TABLICA 44.

1/2 WIELK. NAT.

PRZEKRÓJ Nr 1. LUFA ZARYGLOJANA MECHANIZM ODBEZPIECZONY.



PRZEKRÓJ Nr 2. ZAMEK ODRZUCONY, MECHANIZM ZABEZPIECZONY W POZYCJI NAPIĘTEJ.



TABLICA PORÓWNAWCZA AMUNICJI (KARABINOWEJ, PISTOLETJ 0,8, PISTOLETU MASZYNOWEGO WZ. 8 I PRZECIWCZOŁGOWEJ).

ODLEGŁOŚĆ W METRACH	CZAS PRZELOTU KULI W SEKUNDACH								SZYBKOŚĆ KOŃCOWA w m/sek.								ENERGJA KULI w m/kg.								KĄT WYLOTU KULI tang ε							KĄT PADANIA KULI ω						
	71 proch czarny	88	S	SmK	sS	pistol.	pistol. masz.	przeciwczołgowy	71	88	S	Smk	sS	pistol.	pistol. masz.	przeciwczołgowy	71	88	S	Smk	sS	pistol	pistol. masz.	przeciwczołgowy	71	88	S	Smk	sS	pistol.	przeciwczołgowy	71	88	S	Smk	sS	pistol.	przeciwczołgowy
0	—	—	—	—	—	—	—	—	440	640	895	815	785	320	340	785	247	307	408	392	403	42	47	1633	—	—	—	—	—	—	—	—	—	—	—	—	—	—
100	0,24	0,17	0,122	0,12	0,13	0,39	0,39	0,13	384	565	806	751	733	279	290	753	188	239	331	332	351	32	35	1503	0,00291	0,0014	0,0007	0,0008	0,0008	0,0052	0,0008	0,0030	0,0015	0,0010	0,00008	0,0009	0,0055	0,0007
200	0,52	0,36	0,255	0,27	0,27	0,72	0,70	0,26	341	498	724	692	683	247	256	721	148	186	267	282	305	25	26	1378	0,00664	0,0029	0,0014	0,0016	0,0017	0,0116	0,0015	0,0073	0,0035	0,0020	0,00018	0,0018	0,013	0,0016
300	0,83	0,57	0,4	0,41	0,42	1,15	1,11	0,41	307	440	649	636	635	221	230	690	120	145	215	238	263	20	22	1262	0,01125	0,0049	0,0022	0,0025	0,0027	0,0192	0,0025	0,0130	0,0061	0,0030	0,00032	0,0024	0,022	0,0028
400	1,17	0,81	0,565	0,58	0,58	1,63	1,56	0,56	278	389	578	583	590	198	208	659	98,8	113	170	200	227	16	18	1157	0,01636	0,0071	0,0032	0,0037	0,0037	0,0280	0,0036	0,0199	0,0096	0,0045	0,00047	0,0043	0,035	0,0039
500	1,55	1,08	0,744	0,76	0,75	2,16	2,07	—	255	351	511	532	546	178	188	630	82,8	92	133	167	195	13	15	1052	0,02165	0,0096	0,0045	0,0050	0,0048	0,0382	0,0047	0,0281	0,0143	0,0057	0,00067	0,0061	0,050	0,0053
600	1,96	1,38	0,955	0,96	0,94	2,75	2,63	—	235	323	449	484	504	160	170	—	70,5	78	103	138	166	10	12	—	0,02759	0,0127	0,0059	0,0064	0,0060	0,0505	0,0058	0,0376	0,0198	0,0095	0,00092	0,0084	0,07	0,0072
700	2,40	1,69	1,159	1,17	1,14	3,41	3,25	—	218	302	394	440	462	144	154	—	60,7	68	79	114	140	8	10	—	0,03417	0,0162	0,0076	0,0079	0,0075	0,0645	0,0075	0,0484	0,0265	0,0132	0,00123	0,0112	0,09	0,0089
800	2,87	2,04	1,466	1,41	1,36	4,16	3,93	—	204	285	352	399	423	129	141	—	52,8	61	63	94	118	6	8	—	0,04148	0,0201	0,0097	0,0098	0,0092	0,0815	0,0084	0,0606	0,0341	0,0179	0,00162	0,0146	0,12	0,0109
900	3,38	2,39	1,775	1,67	1,60	5,01	4,83	—	191	269	323	366	390	114	120	—	46,4	54	53	79	101	5	6	—	0,04949	0,0246	0,0121	0,0121	0,111	0,1169	0,0097	0,0741	0,0425	0,0238	0,00210	0,0188	0,18	0,0130
1000	3,92	2,79	2,1	1,96	1,86	5,98	5,56	1,62	180	255	299	339	362	100	109	496	41,1	49	46	68	87	4	5	652	0,05824	0,0296	0,0150	0,0146	0,0139	0,1325	0,0112	0,0889	0,0521	0,0311	0,00264	0,0239	0,25	0,0152
1100	4,5	3,18	2,41	2,3	2,15	—	—	—	169	241	279	318	339	—	—	—	36,6	44	40	59	76	—	—	—	0,06783	0,0351	0,0183	0,0174	0,0159	—	0,0129	0,1051	0,0626	0,0400	0,00332	0,0298	—	0,0180
1200	5,1	3,61	2,81	2,6	2,45	—	—	—	160	228	261	300	320	—	—	—	32,8	39	35	53	67	—	—	—	0,07818	0,0410	0,0222	0,0204	0,0188	—	0,0146	0,1228	0,0746	0,0500	0,00404	0,0361	—	0,0210
1300	5,74	4,06	3,21	2,9	2,77	—	—	—	152	217	245	284	305	—	—	—	29,6	35	31	47	61	—	—	—	0,08939	0,0475	0,0267	0,0241	0,0220	—	0,0166	0,1419	0,0884	0,0612	0,00488	0,0428	—	0,0244
1400	6,41	4,54	3,61	3,3	3,1	—	—	—	145	208	231	270	294	—	—	—	26,8	32	27	43	57	—	—	—	0,10143	0,0546	0,0319	0,0281	0,0255	—	0,0187	0,1622	0,1036	0,0741	0,00582	0,0501	—	0,0286
1500	7,12	5,04	4,11	3,7	3,4	—	—	2,78	138	198	217	257	284	—	—	389	24,4	29	24	39	53	—	—	401	0,11438	0,0624	0,0376	0,0326	0,0292	—	0,0210	0,1840	0,1201	0,0893	0,00692	0,0577	—	0,0323
1600	7,86	5,57	4,51	4,1	3,8	—	—	—	132	188	203	246	276	—	—	—	22,4	26	21	36	50	—	—	—	0,12820	0,0707	0,0440	0,0374	0,0332	—	0,0230	0,2074	0,1391	0,1073	0,00795	0,0656	—	0,0367
1700	—	6,10	5,01	4,5	4,2	—	—	—	—	181	190	233	268	—	—	—	—	24	18	32	47	—	—	—	—	0,0800	0,0512	0,0426	0,0374	—	0,0253	—	0,1604	0,1285	0,00921	0,0740	—	0,0415
1800	—	6,67	5,61	4,9	4,5	—	—	—	—	171	177	222	261	—	—	—	—	22	16	29	44	—	—	—	—	0,0905	0,0590	0,0483	0,0418	—	0,0276	—	0,1853	0,1552	0,11056	0,0828	—	0,0468
1900	—	7,27	6,21	5,4	5,0	—	—	—	—	164	165	212	256	—	—	—	—	20	14	26	42	—	—	—	—	0,1026	0,0680	0,0545	0,0465	—	0,0303	—	0,2141	0,1887	0,11210	0,0930	—	0,0524
2000	—	7,89	6,81	5,9	5,3	—	—	4,22	—	154	153	201	251	—	—	—	—	18	12	24	40	—	—	275	—	0,1174	0,0788	0,0611	0,0515	—	0,0330	—	0,2508	0,2316	0,11389	0,1050	—	0,0583
2100	—	—	—	6,4	5,8	—	—	—	—	—	—	191	244	—	—	—	—	—	—	22	39	—	—	—	—	—	—	0,0681	0,0570	—	0,0363	—	—	—	0,11587	0,1197	—	0,0654
2200	—	—	—	6,9	6,2	—	—	—	—	—	—	181	234	—	—	—	—	—	—	19	36	—	—	—	—	—	—	0,0756	0,0630	—	0,0397	—	—	—	0,11802	0,1377	—	0,0729
2300	—	—	—	7,5	6,6	—	—	—	—	—	—	172	222	—	—	—	—	—	—	17	33	—	—	—	—	—	—	0,0841	0,0696	—	0,0434	—	—	—	0,12053	0,1599	—	0,0804
2400	—	—	—	8,1	7,1	—	—	—	—	—	—	163	210	—	—	—	—	—	—	16	29	—	—	—	—	—	—	0,0937	0,0770	—	0,0473	—	—	—	0,12331	0,1899	—	0,0893
2500	—	—	—	8,7	7,6	—	—	5,92	—	—	—	154	196	—	—	—	—	—	—	14	25	—	—	211	—	—	—	0,1043	0,0855	—	0,0515	—	—	—	0,12638	0,2186	—	0,0980

ciężar kuli .	25,0	14,7	10	11,55	12,85	8	8	51,5	} w gramach
ciężar prochu	5,0	2,55	3,055	2,9	2,85	0,36	0,36	13,00	
kaliber w mm	11	7,9	7,9	7,9	7,9	9	9	13,25	

TABLICA POŁÓWNAWCZA

ŚREDNIEGO ROZRZUTU OGNIA KARABINA (ROS. W. 9) I KARABINA MASZYNOWEGO (ROS. WZ. 05)

CELOWNIK W KROKACH	KARABINÓW PIECHOTY									KARABINÓW MASZYNOWYCH					
	z oparcia			ogień pojedyńczy			salwy			z 1-go k. m.			z 4-ch k. m.		
	wzwyż	wszerz	w głąb	wzwyż	wszerz	w głąb	wzwyż	wszerz	w głąb	wzwyż	wszerz	w głąb	wzwyż	wszerz	w głąb
	metry									metry					
200	0,045	0,040	38,88	0,360	0,216	244,8	0,504	0,288	346,32	0,090	0,063	79,92	0,135	0,94	105,84
400	0,085	0,081	31,68	0,432	0,360	169,2	0,648	0,432	233,28	0,180	0,130	64,8	0,265	0,162	87,84
600	0,130	0,126	25,92	0,576	0,504	117,36	0,792	0,576	157,68	0,270	0,202	52,5	0,405	0,234	72,72
800	0,184	0,180	21,6	0,720	0,648	83,52	0,936	0,720	108,72	0,378	0,279	43,2	0,549	3,105	59,70
1000	0,252	0,247	18,0	0,764	0,792	61,2	1,080	0,764	78,48	0,495	0,360	35,64	0,702	3,860	48,96
1200	0,337	0,328	15,12	1,008	0,936	45,52	1,296	1,080	59,76	0,625	0,445	29,52	0,868	4,905	40,32
1400	0,481	0,423	13,68	1,152	1,080	39,6	1,512	1,296	48,96	0,774	0,535	24,768	1,053	5,940	33,84
1600	0,562	0,535	12,96	1,368	1,296	35,28	1,800	1,584	42,48	0,940	0,630	21,168	1,246	7,515	28,8
1800	0,706	0,666	12,96	1,656	1,584	33,12	2,160	1,944	38,88	1,129	0,729	18,504	1,458	8,325	24,48
2000	0,873	0,814	12,24	2,016	1,944	31,68	2,592	2,370	36,0	1,341	0,832	15,912	1,687	9,630	21,6
2200	0,062	0,958	12,24	2,448	2,370	30,9	3,096	2,880	34,56	1,579	0,940	15,264	1,939	11,025	20,16
2400	1,278	1,179	11,52	3,024	2,880	30,2	3,744	3,456	33,12	1,845	1,053	14,184	2,227	12,510	18,72
2600	1,521	1,395	10,8	3,744	3,528	29,52	4,530	4,170	33,12	2,142	1,170	13,392	2,560	14,085	17,64
2800	1,791	1,638	10,8	4,608	4,320	29,52	5,472	5,040	32,4	2,475	1,291	12,888	2,934	15,750	16,848
3000	2,088	1,908	10,8	5,610	5,256	29,52	6,624	6,048	32,4	2,848	1,417	12,672	3,357	17,505	16,344
3200	2,412	2,205	10,08	6,768	6,336	29,52	8,064	7,200	32,4	3,267	1,552	12,528	3,825	19,350	16,128

UWAGA. W zimie średni rozrzut jest większy o 1,25.

Jak widać z tablicy, rozrzut wzwyż i wszerz przy strzelaniu z karabina i karabina maszynowego zwiększa się wraz ze zwiększeniem odległości, natomiast zmniejsza się rozrzut w głąb.

Zjawisko to tłumaczy się tem, że łącznie ze zwiększeniem odległości zwiększa się kąt padania pocisku, czyli pocisk pada bardziej prostopadle.

Widać również z tablicy, że rozrzut pojedyńczego ognia jest większy, niż przy strzelaniu z oparcia i mniejszy niż przy strzelaniu salwami.

Przy strzelaniu z jednego karabina maszynowego rozrzut boczny przy celowniku do 2000 jest większy, niż przy strzelaniu z karabina zwykłego, z oparcia; natomiast na odległościach większych rozrzut ten jest mniejszy.

Rozrzut wzwyż i w głąb przy tem samem strzelaniu jest na wszelkich odległościach większy niż przy strzelaniu z karabina zwykłego, z oparcia.

W porównaniu z ogniem pojedyńczym i salwami z karabinów zwykłych, ogień z karabinów maszynowych na wszelkich odległościach daje im ogromną przewagę pod względem rozrzutu. Ogień 4-ch karabinów maszynowych w porównaniu z ogniem 1 karabina maszynowego daje większy rozrzut.

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