PUBLISHED
MAY 4, 1943.
BY A. P. C.

W. LAMPEL ET AL
FIRING DEVICES
Filed Dec. 18, 1939

Serial No.
309,858
3 Sheets-Sheet 1

Fig. 1

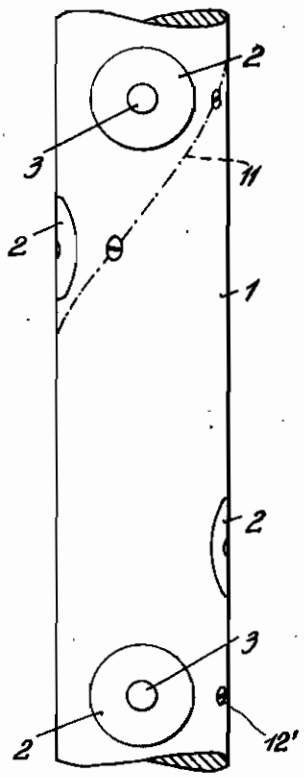

Fig. 2

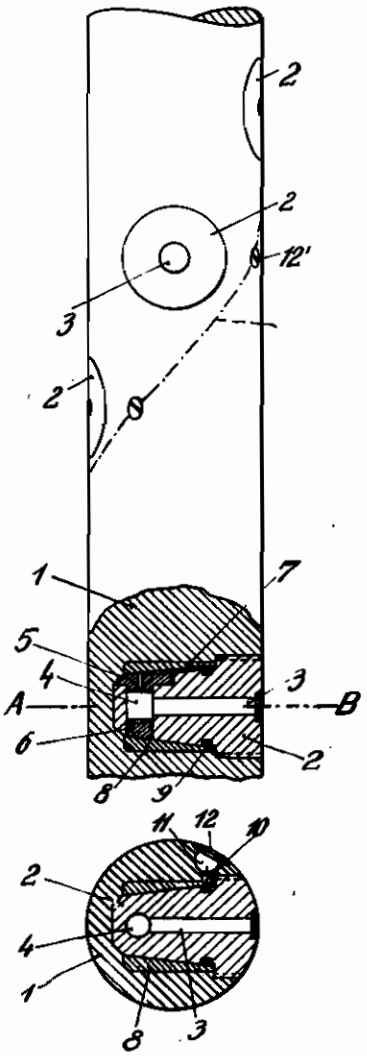

Fig. 3

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Fig. 4

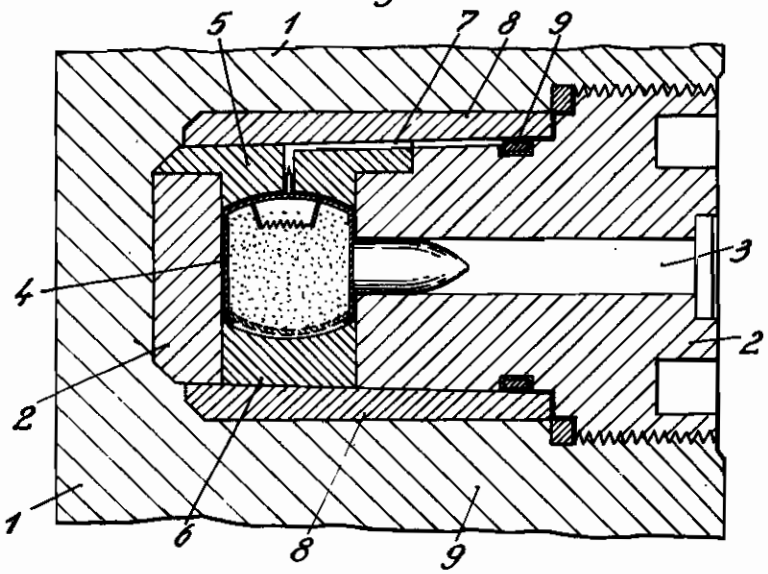

Fig. 5

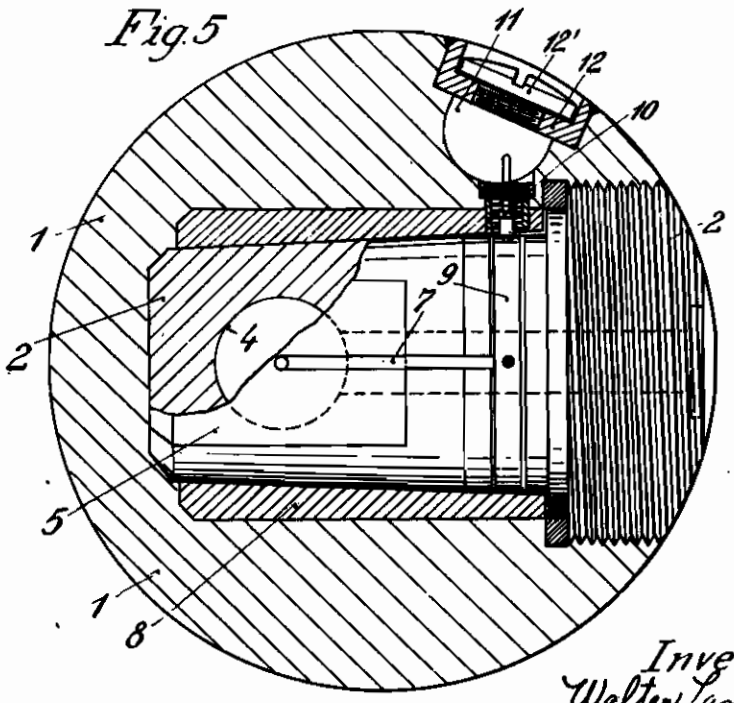

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Fig. 6

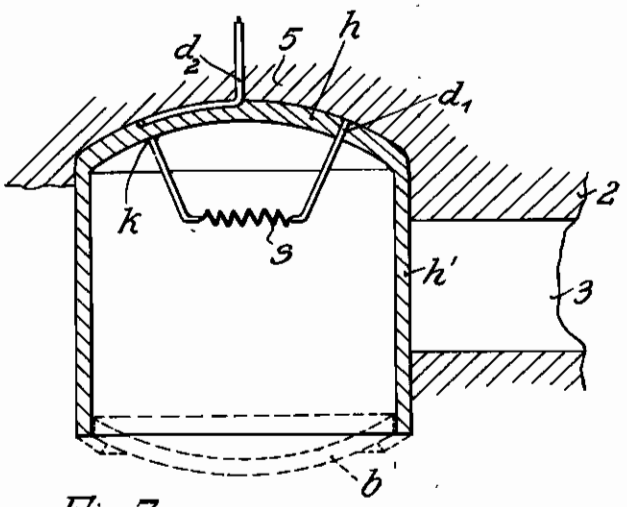


Fig. 7

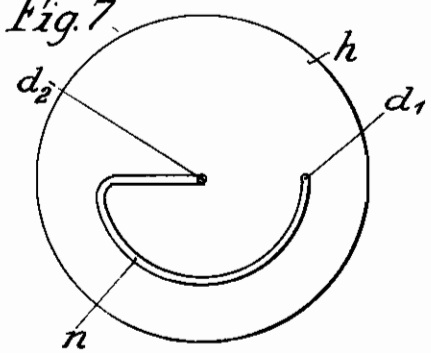
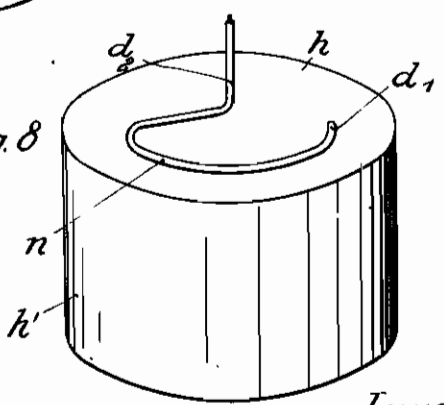


Fig. 8



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Published May 4, 1943

Serial No. 309,858

ALIEN PROPERTY CUSTODIAN

FIRING DEVICES

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Application filed December 18, 1939

This invention relates to firing devices and more particularly to firing devices to be used in connection with guns or ordnances in order to perforate the closure for the bore of the barrel.

As compared with known devices of this kind, which comprise a sinking member provided with several superposed detachable gun-bodies inserted thereinto and with priming wires mounted in the several powder-chambers, according to our present invention the gun-body consists of an integral block provided with the bore of the barrel as well as with the powder-chamber, said chamber being accessible by means of at least one detachable closing member.

The gun-body which according to our invention is made of one piece and comprises the barrel as well as the powder-chamber is of extremely strong construction and is further strengthened by a close fit of said sinking member so that the latter will form a reinforcing jacket for said gun-body. Owing to the construction of the gun-body as one piece there will be attained the further advantage of having a relatively long bore of the barrel which is favorable with respect to the guiding of the projectile as well as with respect to the general ballistic properties of the gun. This construction further permits the gun-body of being conveniently taken out and again inserted so that it may be charged and prepared for service outside of the gun proper.

Our present construction of the gun-body will further permit to utilize the properties of the structural material to the greatest possible extent and to attain in connection therewith an essential saving in space and an essentially improved firing power of the gun. As a result of this the gun-body may be reduced in diameter to be used with barrels of a caliber as small as it is possible with respect to efficient firing.

Our invention furthermore obviates certain further drawbacks arising in known constructions of guns of the present kind, these drawbacks being due to the difficulties connected with the proper tightening of the priming wire at the place of introduction into the gun-body. According to our invention such tightening is brought about by means of a special member, preferably of the form of a strong sleeve of metal, which is inserted into the powder-chamber and carries the priming wire together with the means for introducing the same into said chamber, said member further serving to close up said chamber against the bore of the gun-barrel. Furthermore, the wall of said member or sleeve is properly dimensioned in the first place to tighten the point of entrance of the priming wire into said chamber by action of the pressure of explosion and in the second place to serve as an element for increasing this pressure. In this way said member may also be constructed in the form of a closed sleeve serving for the reception of the powder charge.

In the accompanying drawings which form part of this specification we have shown an example of construction of our new firing device, Fig. 1 being a partial longitudinal view of the aforesaid sinking member with the gun-bodies inserted thereinto, Fig. 2 a similar view of said sinking member in a position turned through ninety degrees with respect to Fig. 1, Fig. 3 a transverse section along line A—B of Fig. 1, Figs. 4 and 5 an enlarged longitudinal and transverse section, respectively, through said sinking member with the gun-bodies inserted thereinto, Figs. 6, 7 and 8 a further enlarged longitudinal section, plan-view and perspective view, respectively, of a tightening and closing member of the form of a sleeve destined to be mounted in the powder-chamber.

Referring more particularly to the drawings, the device forming part of our invention consists of a sinking member 1 preferably composed of a plurality of parts, and of a plurality of superposed gun-bodies detachably inserted thereinto with their orifices 3 in different directions, the several powder-chambers of said gun-bodies being provided with electrically operated priming wires mounted in said sinking member.

According to our invention furthermore the gun-bodies 2 that are inserted into the sinking member 1 consist each of an integral block with a bore 3 and the powder-chamber 4 provided therein, said powder-chamber being accessible by at least one detachable closure.

In this example of construction there is assumed—as may particularly be seen from Figs. 4 and 5—that the powder-chamber 4 is formed by a bore directed perpendicularly to the axis of the barrel, said bore being closed up by means of two oppositely positioned fittings 5 and 6. Above these fittings 5 and 6 a preferably hardened sleeve 8 is mounted in said sinking member 1, said sleeve 6 being introduced at its rear part which preferably is of conical conformation. An annular electrical conductor 9 is provided on said gun-body, said conductor making contact with the contact member 10, an electrical circuit being thus established between the priming cable mounted in the sinking body 1 and the chamber

for the powder-charge, when the gun-body is inserted into said sinking member. The gun-body is threaded into the sinking member 1 and fits closely, that is without any intervening interstice, the sleeve 8, or, what is the same, the sinking member, so that the latter will closely surround the gun-body and form a re-inforcing wall therefor. The priming cables are mounted within a groove 11 which preferably is of helical conformation and extends over the periphery of the sinking member. Said groove 11 is covered up by means of a ledge 12 which is welded to the sinking member 1, thus tightly closing said groove. The ledge 12 is provided at proper places with apertures which may be closed by means of screws 12' permitting access to said groove and the cable therein at the point of contact with the contact member 10.

Access to the powder-chamber 4 may be had by unscrewing the gun-body 2 and removing the fittings 5 and 6, so that on the one hand the projectile may be introduced through said fittings and on the other hand the powder-chamber may be charged with powder. The latter may be inserted into the powder-chamber in loose condition or enclosed within a container or cartridge.

In the gun-body there is further provided a channel 7 leading to the current conductor 9 and containing the priming cable that connects said conductor with the powder-chamber 4.

Owing to the high pressures arising in the device there must be provided special tightening means which, however, can be applied only with difficulties at the place of introduction of the priming cable.

In this respect there is provided a remedy according to our invention by using a fitting inserted into the powder-chamber, said fitting being preferably of the form of a sleeve as shown in a small scale in Fig. 4 and in a larger scale in Figs. 6, 7 and 8. This fitting h, h' is made of strong material and, for instance, may be drawn from a piece of metal of sufficient strength. The primer s is mounted on the cover of the fitting h, one carrier for the primer being in conductive connection with the body of the fitting, while the other carrier d serves as current supply member for the primer. For this purpose the carrier d_1 is mounted at some point remote from the point d_2 at which the priming wire comes out of the groove 7 in the gun-body. The stretch d_1—d_2 of the priming wire is further so mounted within a groove n of the fitting h, h' that by action of the gas-pressure the wire will be pressed against the surface of the powder-chamber so that the wire introduced into said chamber will be tightly enclosed all around.

The fitting thus tightly closes up with its peripheral surface h' the bore 3 of the barrel and is properly dimensioned to serve at the same time as a cover for the barrel. This cover will be subject to rupture, thus permitting the gases to act upon the projectile not sooner than a sufficiently large gas-pressure has been developed in the powder-chamber.

The fitting may be open at one side thereof, as shown, but instead thereof it may also be provided with a bottom b, as indicated in Fig. 6. In this case the fitting consists of a closed container or cartridge containing the powder-charge, said container or cartridge effecting itself upon explosion the tightening against the place of introduction of the priming wire and forming at the same time the surface which serves to cause the gases to act on the projectile as soon as the gas-pressure has attained a value sufficient to effect a rupture of the wall at the place of the barrel and to force the projectile through the latter.

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