

No. 785,967.

PATENTED MAR. 28, 1905.

A. E. MERKEL.
MAGAZINE DETONATING DEVICE.

APPLICATION FILED DEC. 10, 1903.

2 SHEETS—SHEET 2.

Fig. 5.

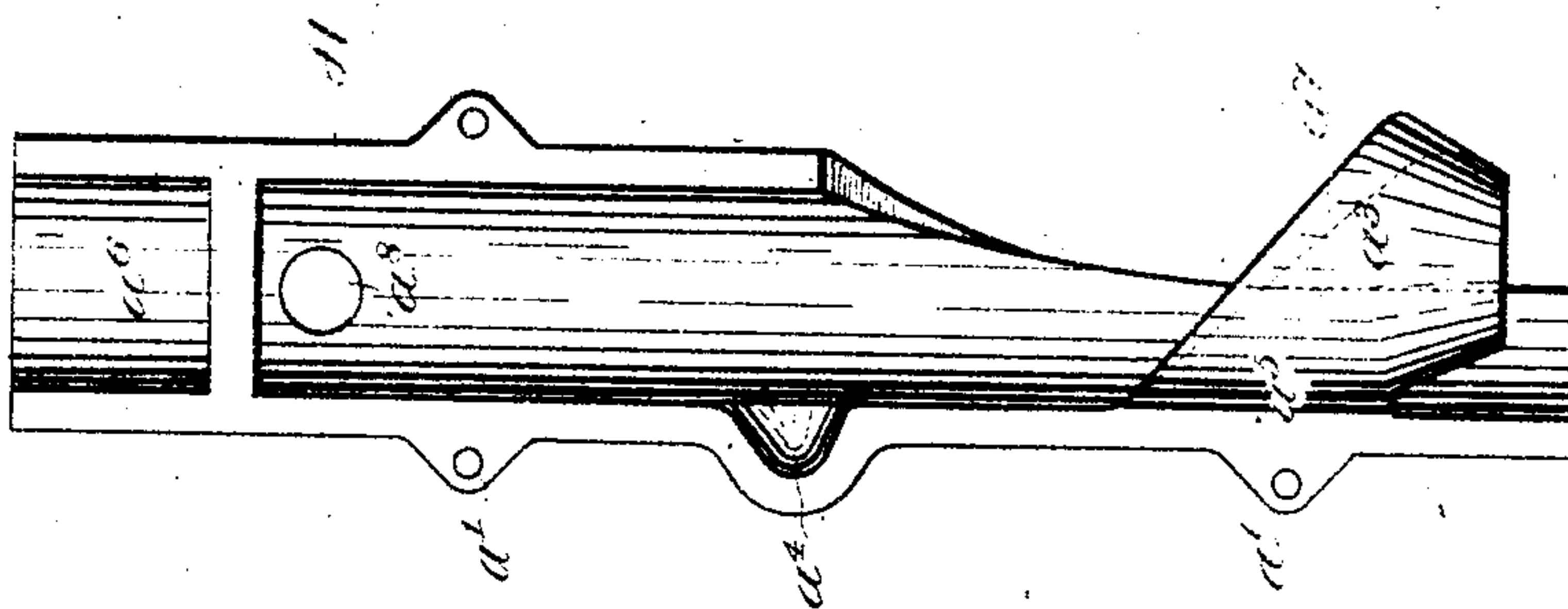


Fig. 4.

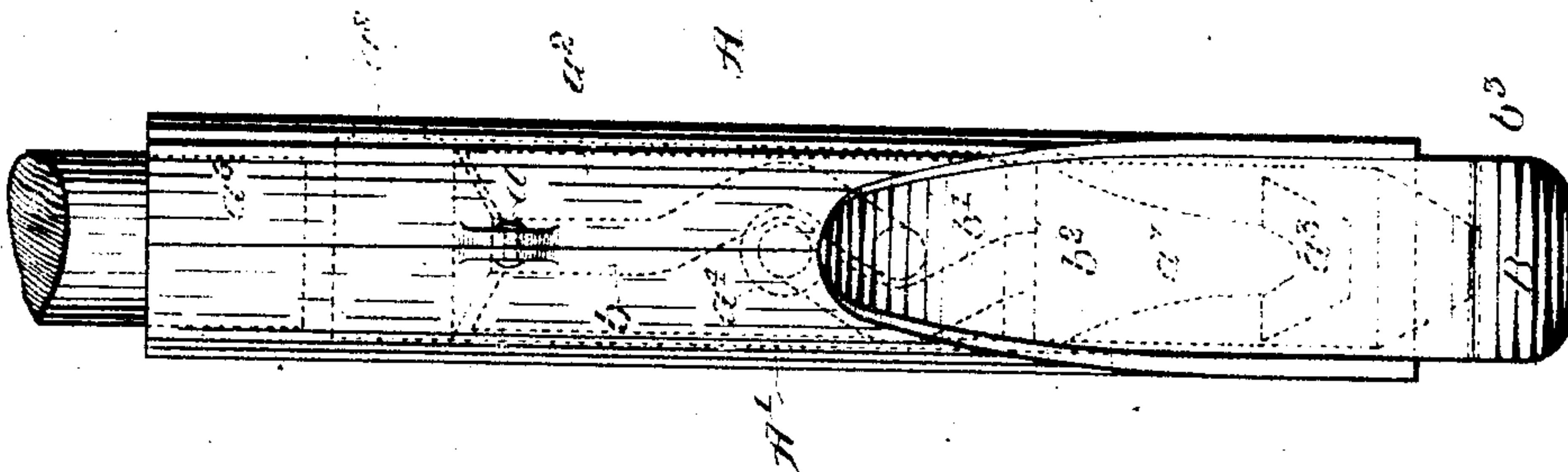
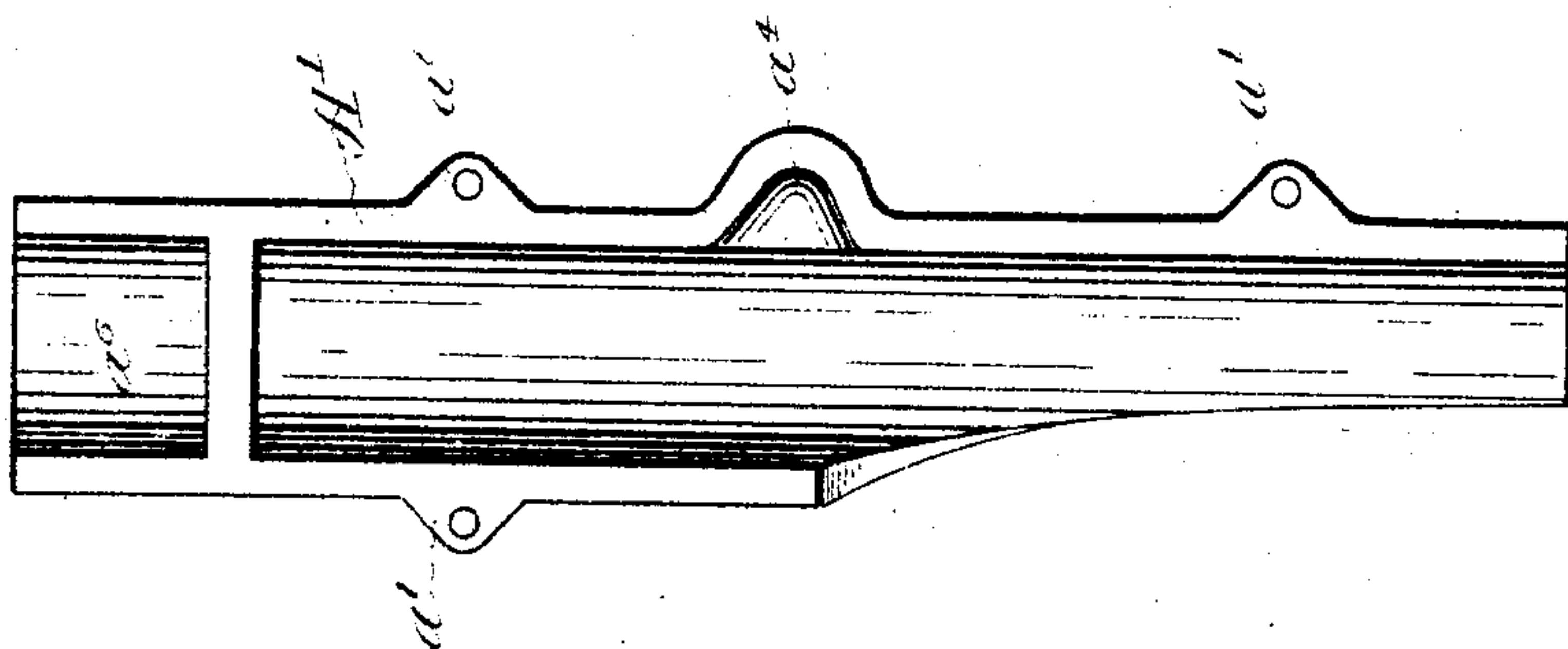


Fig. 3.



WITNESSES.

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MAGAZINE DETONATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 785,967, dated March 28, 1905.

Application filed December 10, 1903. Serial No. 184,610.

To all whom it may concern:

Be it known that I, ARTHUR E. MERKEL, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Magazine Detonating Devices, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to detonating devices, and particularly to that class thereof embodying a magazine and parts arranged to cooperate therewith to automatically feed ammunition from such magazine to the detonating or explosion chamber.

The said invention has for its object the construction of a device of said character which will embody economy in its construction and facility and safety of operation; and it consists of means hereinafter fully described, and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure 1 represents an axial section of a structure embodying my invention, illustrating the parts in position prior to the explosion of a charge; and Fig. 2 represents a similar view illustrating the parts in position during the explosion. Figs. 3 and 5 represent elevational views of the two parts of the outer casing or shell of the device detached from each other, and Fig. 4 represents an elevation of the complete structure viewed in the direction indicated by the arrow in Fig. 1.

The outer casing or shell consists of two parts A and A', which are secured to each other by means of rivets a passing through ears a' a' , as will be readily understood. The upper partition of these two parts form a bore a^2 of cylindrical form, and cast integrally with

the lower portion of part A is an exploding-head a^3 . A plunger B is provided in its upper portion with a tubular duct b , forming a magazine and curved so as to intersect the lateral surface of the plunger, as shown. A second tubular duct b' intersects the lateral surface of said plunger and curves downwardly, as shown. The said upper plunger portion or magazine portion terminates in a transverse surface b^2 , which is intersected by the lower end of duct b' , the upper end of duct b intersecting the upper surface of said magazine portion. The plunger is formed at its extreme lower end with a cup b^3 , which reciprocates in the lower end of the casing and receives the exploding-head, such cup, head, and casing forming an explosion-chamber. That portion of the plunger intermediate of the cup and magazine portion is reduced in diameter, as shown, so that the plunger may be freely reciprocated. Said reduced portion is curved away from the head a^3 , so as to form a passage-way between it and the head when the plunger is in its lowermost position, as shown in Fig. 1, whereby access from the duct b' may be had to the exploding-chamber.

In the casing or shell and located so as to register with the lower and upper ends of ducts b and b' , respectively, is a pocket a^4 , the path of reciprocation of the plunger being made such as to effect the registration of said pocket with the end of the magazine-duct b when the plunger is in its uppermost position and with the end of duct b' when in its lowermost position, the middle of these two duct ends being located so as to fall in the same axial plane. The exploding-head a^3 is also so placed that the neck a^5 of the head will be intersected by said axial plane. Furthermore, the pocket a^4 is in the same side of the casing as that to which the head is attached, so that the head interrupts direct communication between the chamber and the pocket, and consequently between the chamber and the magazine. The upper part of the head a^3 is preferably grooved and is downwardly inclined, the groove a^7 being so placed as to receive a pellet when dis-

charged from duct b' and discharge same into the free space between the head and reduced plunger portion.

A lateral opening a^8 is provided on the upper part of the bore a^2 to permit of the introduction of ammunition into the magazine-duct, the upper end of the latter being countersunk, as shown, for facilitating the loading operation.

10 The device operates as follows: The magazine having been provided with a quantity of explosive pellets of spherical form and suitable diameter, contact of the lower end of the plunger with a fixed object, such as the pavement, causes the said plunger to move upwardly in the casing, and so bring the lower end of the magazine-duct into registration with the pocket a^4 , thereby permitting a pellet to be deposited in same. A subsequent lifting of the shell permits the plunger to drop downwardly in same, and so brings the upper end of duct b' into registration with said pocket a^4 , the latter containing, as before said, a pellet. Such pellet is thereupon discharged from said pocket, falls through duct b' , and so reaches the explosion-chamber. A subsequent sharp downward movement of the device and impact upon a hard surface explodes the charge in the explosion-chamber. The peculiarities in the construction above described prevent the ignited gases or flash from communicating with the pellets in the pocket a^4 or magazine, and so obviate the danger of premature ignition or explosion of such pellets, the latter being effectually protected by the interposition of parts, as shown, during such explosion.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

45 I therefore particularly point out and distinctly claim as my invention—

1. In a detonating device, the combination of a handle, a member fixed relatively thereto and provided with a bore and detonating-head, and a second member reciprocable in said bore and having a duct therein forming a magazine, said duct intersecting the lateral face of said second member, such second member provided with a second duct intersecting its lateral and bottom faces and forming a feeding-duct, said first member provided with a pocket located so as to register successively with the lateral extremities of said magazine and feeding-ducts.

60 2. In a detonating device, the combination of a handle, an outer shell or casing fixed thereto, and a plunger reciprocable in said shell or casing and provided with a magazine,

said casing and plunger arranged to automatically feed ammunition from said magazine. 65

3. In a detonating device, the combination of a handle, an outer shell or casing provided with an exploding-head and fixed to said handle, a plunger reciprocable in said shell or casing and provided with a magazine, said casing and plunger arranged to form an explosion-chamber, and to feed ammunition automatically from said magazine to said chamber. 70

4. In a detonating device, the combination of a handle, an outer shell or casing fixed relatively to said handle and provided with an exploding-head, a plunger reciprocable in said shell or casing and provided with a magazine, said casing and plunger arranged to automatically feed ammunition from said magazine and to jointly form an explosion-chamber. 75 80

5. In a detonating device, the combination with a hollow shell or casing composed of two juxtaposed parts, one of such parts provided with an exploding-head, of a reciprocating member provided with an explosion-head forming with said first-named head an explosion-chamber, and a magazine-duct intersecting the lateral surface of said reciprocating member on the same side of the interior of the casing as that to which said exploding-head is attached, said exploding-head thus being interposed between the end of said duct and the explosion-chamber, thereby interrupting direct communication between the magazine and said chamber. 85 90 95

6. In a detonating device, the combination with an outer shell or casing provided with an exploding-head fixed relatively thereto, detached from one side of the interior of such casing and attached to the other side of such interior, of a member mounted in said casing, relatively reciprocable therein and provided with a magazine-duct arranged to discharge laterally and on the same side of the casing as that to which said head is attached and provided with an explosion-head. 100 105

7. In a detonating device, the combination of an outer shell or casing provided with an exploding-head fixed relatively thereto, detached from one side of the interior of the casing and attached to the other side of such interior; a pocket in said casing on the same side as that to which said exploding-head is attached; a member, provided with an explosion-chamber, mounted in said casing, relatively reciprocable therein, and provided with a magazine-duct arranged to discharge ammunition into said pocket, and a feeding-duct arranged to discharge ammunition from said pocket to said chamber. 110 115 120

8. In a detonating device, the combination of an outer shell or casing provided with an exploding-head fixed relatively thereto, detached from one side of the interior of the 125

5 casing and attached to the other side of such interior; a pocket in said casing on the same side as that to which said exploding-head is attached; a member, provided with an explosion-chamber, mounted in said casing, relatively reciprocable therein, and provided with a magazine-duct and a feeding-duct arranged to register alternately with said pocket to convey ammunition from said magazine-duct

to said chamber, and to shut off direct communication between said magazine-duct and said chamber.

Signed by me this 9th day of December, 1903.

ARTHUR E. MERKEL.

Attest:

D. T. DAVIES,

G. W. SAYWELL.