No. 800,663. PATENTED OCT. 3, 1905.

J. F. MEIGS & S. A. S. HAMMAR.

FIRING MECHANISM.

APPLICATION FILED DEC. 27, 1902.

FIG. 1

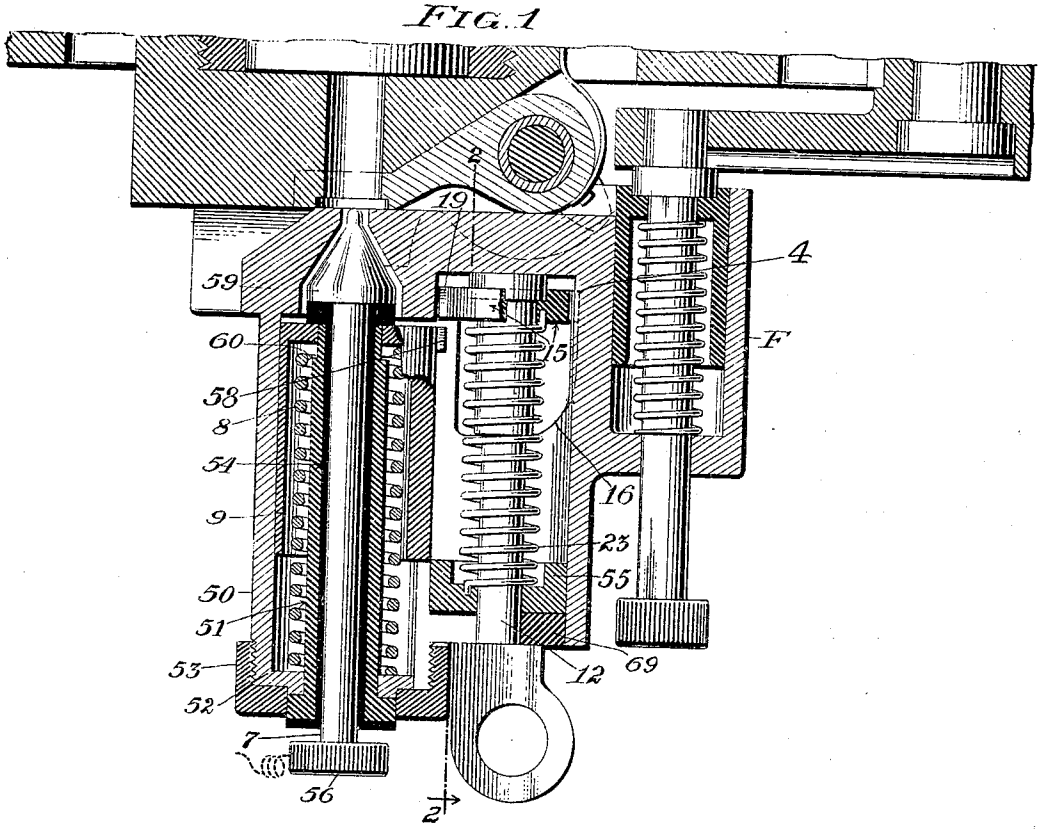


FIG. 2.

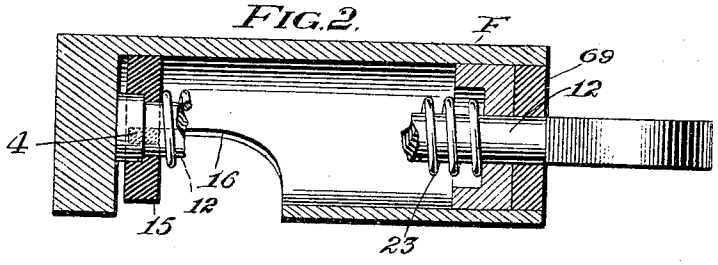
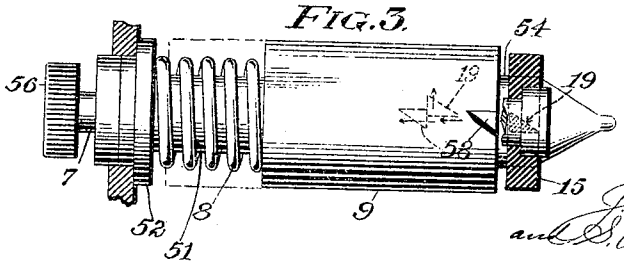


FIG. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN F. MEIGS AND SIGARD A. S. HAMMAR, OF BETHLEHEM, PENNSYLVANIA, ASSIGNORS TO BETHLEHEM STEEL COMPANY, OF SOUTH BETHLEHEM, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FIRING MECHANISM.

No. 800,663. Specification of Letters Patent. Patented Oct. 3, 1905.

Application filed December 27, 1902. Serial No. 136,850.

To all whom it may concern:

Be it known that we, JOHN F. MEIGS, a citizen of the United States, and SIGARD A. S. HAMMAR, a subject of the King of Sweden and Norway, both residing at Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Firing Mechanism, of which the following is a specification.

Our invention relates to the firing mechanism of guns; and it consists in means for operating the mechanism either by a rear pull to fire percussively or by exploding the primer electrically and in the details of construction set forth hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a sectional plan of sufficient of the breech of a gun and its firing mechanism to illustrate our improvements; and Fig. 2 is a section on the line 2 2, Fig. 1; Fig. 3, a side view of the firing-pin and connected parts. Figs. 2 and 3 are looking in the direction of the arrow, Fig. 1.

The firing devices are suitably mounted at the rear of the breech, as shown, upon a sliding carriage F, by means of which the firing-pin at the termination of a head on the stem 7 may be brought into line with the primer-socket or be carried to one side to expose the socket. The stem of the pin is carried in a sleeve 9, which slides without turning in a tubular casing 50 of the support or slide F, said sleeve being carried normally inward by a spiral spring 8, surrounding an inner sleeve 51 and bearing at its outer end against a seat 52 inside a screw-cap 53, closing the outer end of the casing 50. The sleeve 9 is free to travel longitudinally a limited distance independently of the stem 7, its inner flange 58 being held between the face 59 of the pin-head and the shoulder 60 of the sleeve 51, which slides to a limited extent on the stem. Constructed as described, if the sleeve 9 is drawn outward to compress the spring and then suddenly released the inner end of the pin will strike and explode the primer. Normally, however, it is desired to explode the primer electrically by a current transmitted through the stem 7, and for this purpose the spring 8 serves to maintain a close contact between the pin and the primer, and the pin is insulated in its support. Thus a body of insulating material 54 is placed between the pin and the inner sleeve 51 and between the end of the sleeve 51 and the head of the pin, and a binding-nut 56 serves to connect the electric conductor with the pin, the nut being insulated from the rear of the sleeve 51.

If for any reason the primer fails to explode by the electric current, the pin may operate percussively until the defect in the electric appliances is remedied. The pin is withdrawn by means of a retractor consisting of a sliding rod 12, carrying at the inner end a rotatable ring 15, which has a wing 4 engaging a cam edge 16 of the casing 50, so that the ring is turned as the rod is drawn out against the stress of a spiral spring 23, which bears against a washer 55, confined by a cap 69 of the casing 50, and serves to return the rod to position. The ring 15 has a lug 19, which engages a lip 58 of the sleeve 9, so that the sleeve and its firing-pin are retracted as the rod 12 is drawn back until the ring is so turned by the cam 16 as to carry the lug 19 from the lip 58, when the sleeve 9 is released and the firing-pin is thrown inward.

The lug 19 and lip 58 have corresponding beveled faces, so that when the rod 12 and ring 15 move inward the contact of the beveled faces causes the ring to turn until the lug 19 is carried below and then passes forward of the lip, when the spring 23 will turn back the ring until the lug is in position in front of the lip.

It will be evident that the pin 7 may be of any required character and operate in any suitable way to mechanically fire the primer if the electric firing means cannot be employed and that a retractor of any suitable character may be used. It will be evident also that the construction shown and described constitutes a rear-pull firing mechanism which can be used where the pin is not electrically insulated.

Without limiting ourselves to the precise construction shown, we claim—

1. The combination of the insulated sliding firing-pin, actuating-spring, a retractor consisting of a sliding rod, a ring carried by and turning on the rod and adapted to engage a projection connected with the pin, and means for turning the ring as the rod is drawn out, substantially as described.

2. The combination of the firing-pin, actuating-spring, retractor provided with a ring

having a lug engaging a lip connected with the pin, and means for turning the ring to release the pin when the latter has been moved to the required extent for percussive firing, substantially as set forth.

3. The combination of the firing-pin, actuating-spring, retractor provided with a ring having a lug engaging a lip connected with the pin, and a cam for turning the ring to release the pin when the latter has been moved to the required extent for percussive firing, substantially as set forth.

4. The combination of the casing 50, a firing-pin, a sleeve sliding without turning in the casing and inclosing the stem of the firing-pin, a spring between the pin and sleeve, a retractor consisting of a sliding rod, and a ring turning on the rod, and means for carrying the ring into and out of engagement with the sleeve, substantially as set forth.

5. The combination with the firing-pin and actuating-spring, of a retractor consisting of a sliding rod, a ring turning on the rod, and means for carrying a projection on the ring into and out of contact with a projection connected with the firing-pin, substantially as set forth.

6. The combination with the firing-pin and actuating-spring, of a retractor consisting of a sliding rod, a ring turning on the rod and provided with a lug for engaging a projection connected with the pin, and a cam for turning the ring as the rod is moved, substantially as set forth.

7. The combination of the firing-pin, sliding sleeve surrounding the stem of the pin, actuating-spring within the sleeve, a lip or projection on the sleeve, a retractor consisting of a sliding rod, a ring turning on the rod and having a lug adapted to engage said lip, and means for turning the ring as the rod is drawn out, substantially as set forth.

8. The combination of the firing-pin and stem, sliding sleeve surrounding the stem of the pin, actuating-spring within the sleeve, a lip or projection on the sleeve, a retractor mounted to slide parallel to the stem and carrying a rotatable ring having a lug engaging said projection to draw back the pin, and means for turning the ring to release the sleeve after it is drawn back, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN F. MEIGS.
SIGARD A. S. HAMMAR.

Witnesses:
LEIGHTON N. D. MIXSELL,
WM. T. ACHENBACH.