

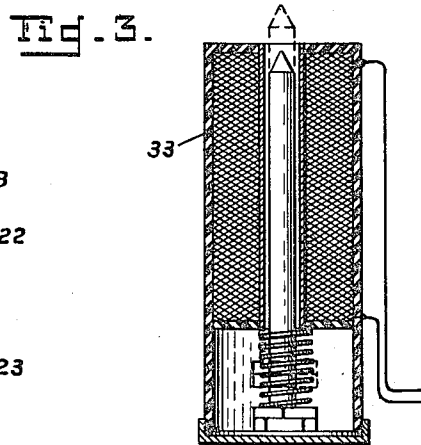
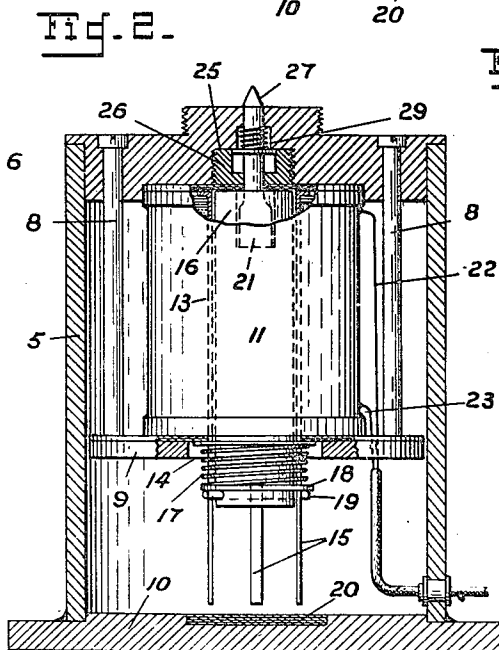
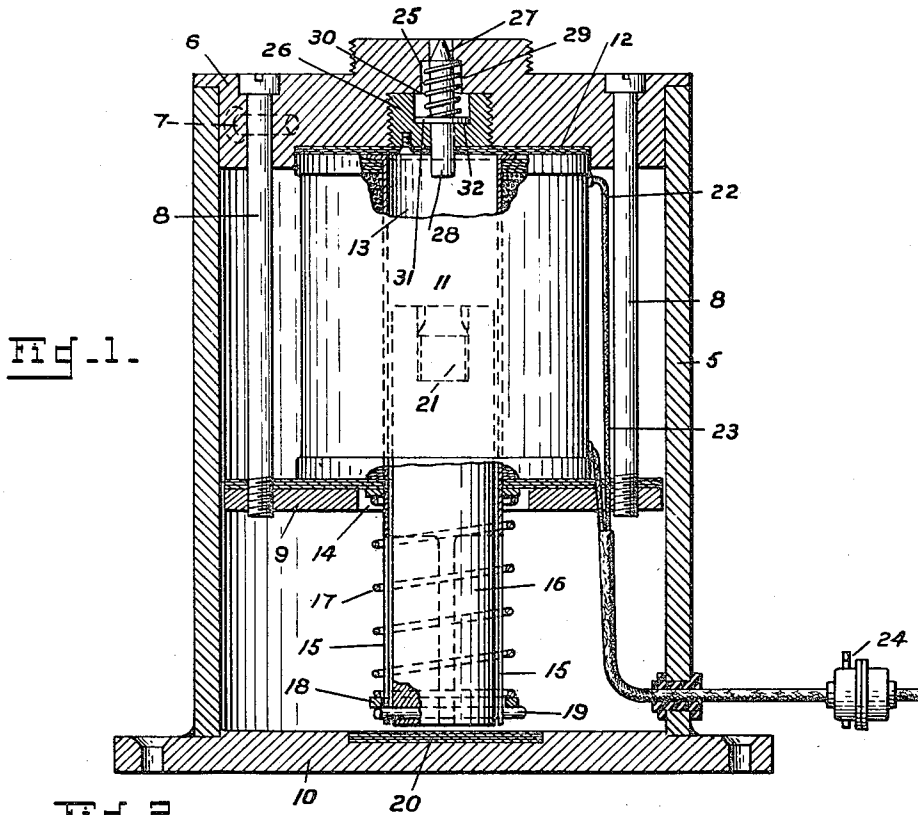
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ELECTRICALLY CONTROLLED PERCUSSION FIRING MECHANISM

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ELECTRICALLY CONTROLLED PERCUSSION FIRING MECHANISM

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(GRANTED UNDER THE ACT OF MARCH 3, 1883, AS AMENDED APRIL 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

5 The subject of this invention is an electrically controlled percussion firing mechanism.

The advantage of an electrical firing mechanism for ordnance consists in the fact that it affords an opportunity for remote control while the advantages of a percussion primer reside in its cheapness of manufacture and in its avoidance of the escape of gases to the rear. The firing mechanism forming the subject of the present invention has been devised to retain only the best features of the electric and percussion mechanisms and consists essentially in providing a magnetically attracted striker whose blow will be constant and uniform.

20 To these and other ends, the invention consists in the construction, arrangement and combination of elements described hereinafter and pointed out in the claims forming a part of this specification.

25 A practical embodiment of the invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a longitudinal sectional view of the improved firing mechanism showing the parts in the retracted or cocked position;

Fig. 2 is a view of similar section showing the parts in the fired position;

Fig. 3 is a longitudinal sectional view of a modified form of the invention.

35 Referring to the drawings by numerals of reference:

There is shown a housing 5 having an open end which is closed by a cover plate 6 secured in place by screws 7. A series of headed rods 8 passing through the cover threadedly carry a plate 9 in spaced relation with respect to the inner face of the cover as well as the base 10 of the housing.

45 An electromagnet 11 seated in an annular recess 12 in the cover plate is confined by the plate 9 and rigidly held in place. The electromagnet is tubular and the inner casing 13 projects through an aperture 14 in the plate 9 and is continued by a plurality of

spaced fingers 15 forming a cage that extends almost to the base 10 of the housing.

Movable within the inner casing 13 and the cage is a core or armature 16 normally maintained in extruded position with respect to the electromagnet by means of a spring 17 embracing the fingers 15 and confined between the electromagnet and a washer 18 held on the outer end of the armature by a pin 19. The fingers 15 bear against the inside of the washer and serve to guide the armature in its movement. A resilient disk 20 embedded centrally in the base 10 of the housing constitutes a buffer to limit the movement of the armature under the influence of the spring 17. The inner end of the armature is axially recessed to receive a steel plug 21.

Electrical conductors 22 and 23 of the electromagnet are led out of the housing adjacent the base to a source of electric current not shown. A momentary contact switch 24 is interposed in the electric circuit.

The cover plate is provided centrally with a stepped aperture 25, the largest portion of which is on the inner side of the plate and is adapted to receive a cup 26. A firing pin or striker 27 disposed in the aperture 25 has a stem 28 extending through the base of the cup 26 and into the path of movement of the armature. The firing pin is maintained in the retracted or cocked position by means of a spring 29 seated on a shoulder 30 of the stepped aperture 25 and on a firing pin collar 31 fitting in the cup 26. The collar under the influence of the spring normally rests against the floor of the cup and is arranged to engage the shoulder 32 of the cover plate to limit forward movement of the firing pin.

In operation when the switch 24 is moved to close the electric circuit the electromagnet 11 will be energized thereby attracting the armature 16 which strikes the firing pin 27. The striking energy of the firing pin may be adjusted to suit the various types of primers by varying the applied voltage or by varying the compression of the restraining springs. For a given voltage the striking energy will be constant and uniform.

All of the elements entering into the for-

mation of the firing mechanism are conveniently arranged or supported by the cover plate so that they can be readily assembled and removed for repair and replacement.

5 In the modification shown in Fig. 3 the armature 33 carries the firing pin.

I claim:

10 1. In a firing mechanism, a housing, a cover plate for the housing, headed rods passing through the cover plate, a plate threadedly carried by the rods, an electromagnet confined between the plate and the cover plate, an armature for the electromagnet, a spring normally urging the armature to extruded position against the base of the housing, a firing pin mounted in the cover plate, a spring normally retracting the firing pin into the path of movement of the armature and an electric circuit including said magnet.

20 2. In a firing mechanism, a housing, a cover plate for the housing, an electromagnet carried by the cover plate, an armature for the electromagnet, a spring normally urging the armature away from the electromagnet, a buffer carried by the housing for limiting movement of the armature under the influence of its spring, a firing pin mounted in the cover plate, a spring normally retracting the firing pin into the path of movement of the armature and an electric circuit including said magnet.

30 3. In a firing mechanism, a housing, a cover plate for the housing, an electromagnet carried by the cover plate, an armature for the electromagnet, a spring normally urging the armature away from the electromagnet, means for limiting movement of the armature under the influence of its spring, a firing pin mounted in the cover plate, a spring normally retracting the firing pin into the path of movement of the armature, and an electric circuit including said magnet.

40 4. In a firing mechanism, a housing, a cover plate for the housing, a firing pin mounted in the cover plate, an electromagnet carried by the cover plate and disposed within the housing, an armature for the electromagnet arranged to strike the firing pin, and an electric circuit including said magnet.

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