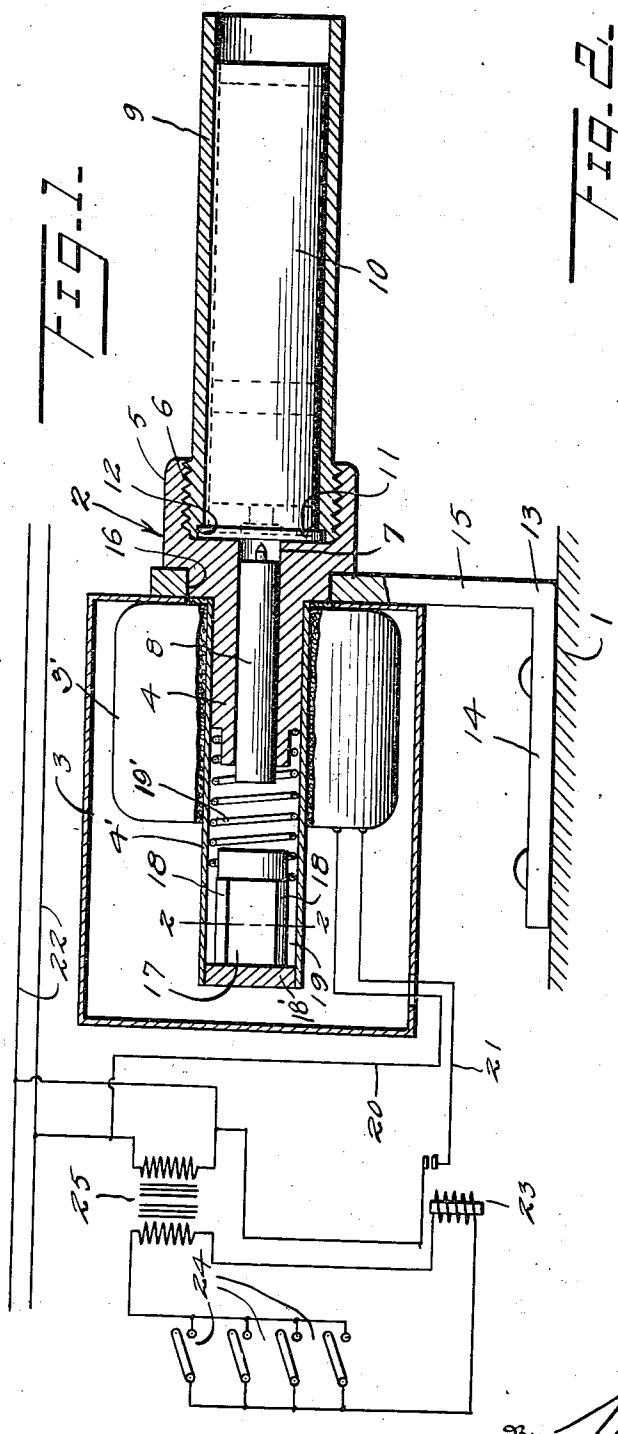
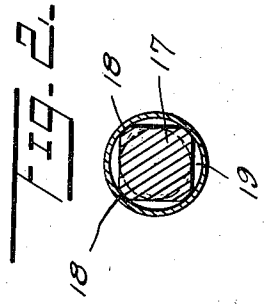
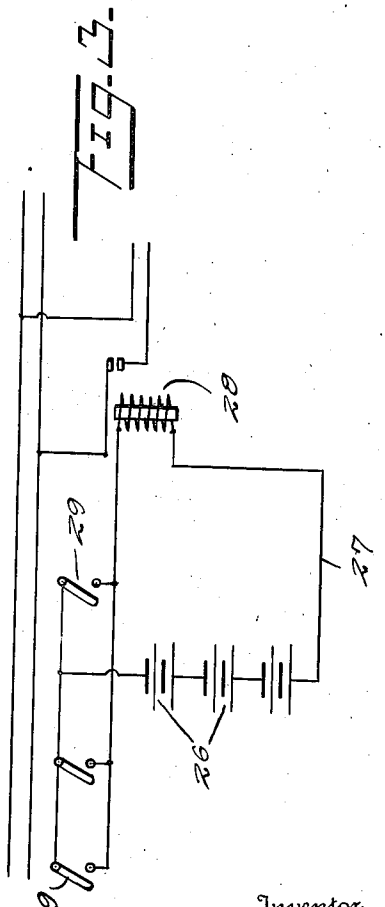
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TEAR GAS GUN

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## TEAR GAS GUN

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3 Claims. (Cl. 42—1)

This invention relates to improvements in devices for protecting buildings or other structures against the entrance of unauthorized persons and pertains particularly to an improved tear gun and means for operating the same.

The primary object of the present invention is to provide a tear gun which is designed to be actuated or discharged by a person located at a remote point therefrom, thereby making the same a valuable adjunct to banks or other institutions where valuables are housed by providing a means whereby the public portion thereof may be protected and cleared of persons therein by a member of the institution who is located at a point remote from such public area.

Another object of the invention is to provide an improved electrically operated tear gas gun.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a view partly in longitudinal section and partly in elevation of the tear gas gun embodying the present invention showing a circuit connection therefor;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a diagram of a battery controlled circuit for operating the relay by means of which the gun operated circuit is closed.

Referring now more particularly to the drawing wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates a supporting structure of any suitable character for carrying the tear gas gun embodying the present invention. This may represent the counter of the cashier's cage of a bank or a supporting table of any other suitable character therein or in any other structure in which it is desirable to have a means of protection.

The gun embodying the present invention is indicated as a whole by the numeral 2 and it comprises a casing 3 in which is a solenoid 3' through the center of which extends the metallic sleeve 4'. One end of the sleeve 4' opens through a wall of the casing 3 and into this end there is extended a cylindrical body 4 which terminates at one end adjacent the center of the coil and the outer end of this body has a head 5 in which is formed the interiorly threaded recess 6. This recess 6 in the head of the body 4 has opening thereinto through the center of the bottom thereof a passage 7 which extends completely through the longitudinal center of the body 4 to the inner end thereof. In this passage 7 is mounted a firing pin 8.

Threadably mounted in the recess 6 is one end of the gun barrel 9 which is formed interiorly to receive a tear gas cartridge 10. This cartridge has a head portion 11 which projects beyond the wall of the cartridge 10 forming the surrounding flange which is secured in the rear end of the barrel by being clamped in the annular groove 12 in the barrel when the latter is threaded into the head 5.

As shown, the head portion 11 of the cartridge abuts against the head 5 and is thus securely held in place between the same and the wall of the groove 12 in which it is located.

For the support of the solenoid, the casing and the gun barrel there is provided a bracket 13 which has a horizontal portion 14 and a vertical portion 15 in which is formed an opening 16.

This opening 16 has a portion of the head extended thereinto as shown and the head thus operates to clamp the bracket against the adjacent end of the casing. Within the sleeve 4' adjacent the end thereof which is extended beyond the coil 3' is located a shiftable core 17 which constitutes the hammer of the gun. This hammer is in the form of a relatively short body of rectangular cross section and having its corners rounded off as indicated at 18 so that it will fit snugly and move smoothly in the sleeve as shown in Figure 2. By making the hammer of rectangular cross section and rounding the corners so that it will fit in the sleeve, areas 19 are formed along the sides of the hammer so that the same will not be held back or have its movement resisted by the compression of air between it and the body 4 as the hammer moves toward the center of the coil to strike the firing pin 8.

As shown the end of the sleeve 4' which is remote from the coil and which will be referred to as the outer end thereof, is closed by the head 18' so that the outward movement of the core or hammer 17 from the center of the coil will be limited. The adjacent or opposed ends of the hammer and body 4 are reduced in diameter as shown and these ends locate within the ends of a coil spring 19' which is interposed between them

in the sleeve and which operates when the coil 3' is not energized, to move the hammer 17 to its normal position in the outer end of the sleeve, as shown in Figure 1.

The tear gas gun is designed to be operated from the usual house lighting circuit.

For this purpose the same is provided with the wires 20 and 21 one of which may be directly connected with one side of the lighting circuit which is indicated generally by the numeral 22 while the other side, as for example the wire 21, may be connected with one side of a relay switch which is indicated generally by the numeral 23, the other side of the switch being connected to the current line in the manner illustrated. By this means a plurality of control switches 24 may be employed for firing the gun from as many remotely positioned points as there are switches and where the lighting circuit is to be used for energizing the relay 23 there is provided a transformer which is indicated generally by the numeral 25 by means of which the current may be stepped down to the necessary voltage for the actuation of the relay.

As shown in Figure 2 the relay governing the closing of the circuit to the coil 3 may be energized by means of the batteries 26 which may be placed in the circuit 27 in series with the coil 28 and with the control switches 29. The employment of this means of actuating the gun, of course, eliminates the use of the transformer.

From the foregoing it will be readily apparent that when the tear gun herein described is to be used in a bank the gun proper may be located in the public area of the bank and the control switches 24 may be distributed about to the several desks or counters therein.

Should any person enter the public area and indicate an intention of holding up the bank an occupant of a desk or attendant at a counter where a switch 24 is located needs merely to close the adjacent switch to effect the energization of the coil 3' and the driving forward of the hammer 17 therein to explode the gas cartridge. The result will, of course, be the routing of the would-be hold-up man or bandit from the bank. As will be apparent as the coil draws the hammer inwardly the spring 19 will be compressed and when the coil is deenergized this spring will react to force the hammer outwardly into the outer end of the sleeve 4'.

Having thus described the invention, what we claim is:—

1. A tear gas gun, comprising a solenoid coil, a metal sleeve within said coil and having one end extending beyond an end of the coil, a tubular body extended into the other end of the sleeve and terminating at its inner end adjacent the center of the coil, the outer end of said tubular body being formed to provide a head having an interiorly threaded recess therein, a tear gas cartridge barrel threadably engaged at one end in said recess, a firing pin reciprocable in said tubular body for firing a cartridge in the barrel, a core member for the coil reciprocable in the sleeve under the influence of the coil when the latter is energized, and spring means in the sleeve between the core and the tubular body for normally urging the core toward the end of the sleeve remote from the coil.

2. A device of the character described, comprising a supporting body having an aperture, an elongated member having one end extended through said aperture and having a head upon its other end and abutting the supporting body, said head having an interiorly threaded recess therein opening into a passage extending longitudinally through the body, a pin reciprocably mounted in said passage, said head recess being designed to receive an end of a tear gas cartridge, means engaging the threads in said head for holding said cartridge in position, a tubular housing encasing the elongated body and at one end abutting against said head, the other end of the casing being closed, a plunger within the tubular casing, a spring interposed between the plunger and the elongated body and normally urging the plunger away from the pin, and a solenoid coil encircling the tubular body and the elongated body and having one side in close proximity to the side of the supporting body opposite the said head and maintaining the structure in assembled relation, the coil when energized effecting the forcible application of the plunger against said pin.

3. A device of the character described, comprising a bracket-like supporting body having an aperture, an elongated body extending through said aperture and having a head at one end in abutting relation with the supporting body, said head having a recess for the reception of an end of a tear gas cartridge and said elongated body having a passage therethrough opening into the recess, a firing pin reciprocable in the passage, a tubular body surrounding at one end the elongated body and having its other end closed, a housing having a wall abutting said apertured support and having an aperture aligning with the aperture of the support and having the elongated body passing therethrough, a solenoid coil surrounding the elongated body and the adjacent end of the tubular body and abutting the apertured wall of the housing and maintaining the latter in assembled relation with the tubular body and the supporting body, a plunger reciprocable in the tubular body, and a spring within the tubular body normally moving the plunger away from the piston, said coil when energized effecting the forcible application of the plunger to the reciprocable pin to drive the latter against a cartridge.

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