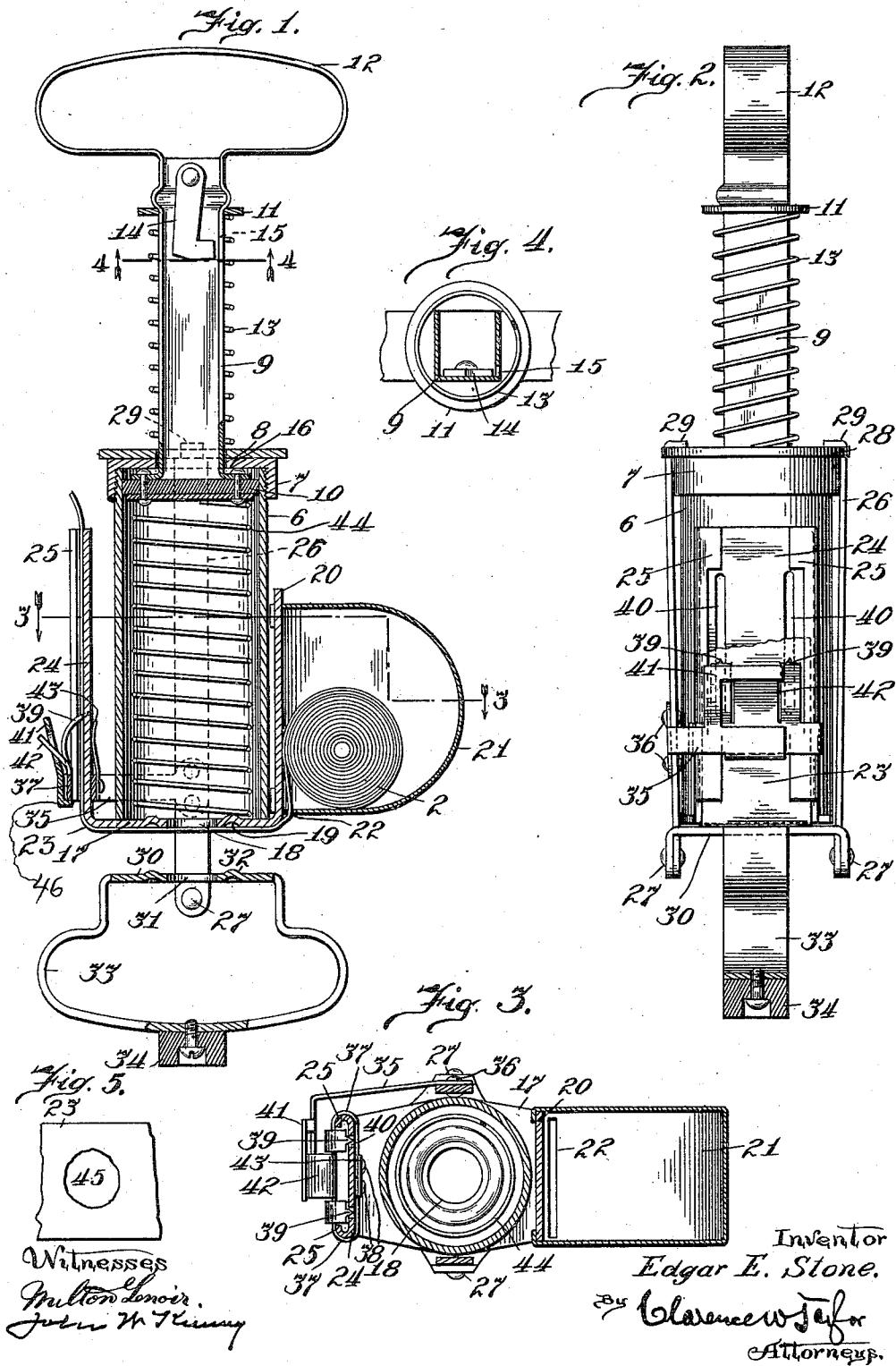


E. E. STONE.
 DETONATING DEVICE.
 APPLICATION FILED OCT. 7, 1910.

986,322.

Patented Mar. 7, 1911.



UNITED STATES PATENT OFFICE.

EDGAR E. STONE, OF CHICAGO, ILLINOIS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDGAR E. STONE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Detonating Devices, of which the following is a specification.

My invention relates to improvements in detonating devices, and the primary object thereof is the provision of a detonating device without the use of a chemical compound, or heat or other source of combustion.

An important feature of my improvement is the employment of a closure material consisting preferably of a compacted web or felting of vegetable fibers, commonly in the form of a thin flexible sheet, such as a newspaper, which may be ruptured with suddenness and loud report by a fluid under pressure.

A further object of my invention is to provide means to automatically feed the closure material and thus afford a repeating detonating device.

With the above and other objects in view, my invention consists in the novel features and in the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings forming a part of this specification, and particularly pointed out in the claims hereunto appended, it being understood that changes, variations and modifications in the details of the invention within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages thereof.

In the drawings Figure 1 is a central sectional view of the assembled device. Fig. 2 is an elevation of the device showing the paper moving means in the position when the charge is ready for explosion. Fig. 3 is a cross section on line 3—3 of Fig. 1. Fig. 4 is a cross section on line 4—4 of Fig. 1. Fig. 5 is a detail of the closure material after explosion.

One embodiment of my invention is hereinafter described.

Similar numerals refer to similar parts throughout the several views.

Referring to the drawings by reference numerals, 6 denotes a cylinder with a screw cap 7, on one end, having an axial aperture 8, therethrough. The aperture is preferably rectangular in form to receive the correspondingly shaped piston or plunger rod or

stem, 9. The piston head 10, is made of rubber, compressed paper wood fiber or other suitable or desired substance to give an air tight sliding movement in the cylinder for the purpose of compressing air below the piston head in the cylinder.

The numeral 11, designates an annular collar on the piston rod. The outer end of the rod is formed to serve as a handle or hand hold, 12.

A coil spring, 13, capable of being compressed in the line of its axis is provided to constantly urge the piston to normal position as shown. The stem 9, carries pivoted hasp 14, having its free end adapted to protrude through aperture 15, to engage with the under surface of the screw cap 7, at 16, for the purpose of holding the device compressed to occupy less space and for convenience in carrying or shipping. On the opposite end of the cylinder there is fixed by soldering or other preferred method, a plate 17, having an axial aperture 18, therethrough, and an annular groove or depression in the outer surface thereof to correspond with an annular bead (32, hereinafter mentioned). Integral with or attached to plate 17, is extension 20, which carries magazine or box 21 slidably secured thereto. The slot 22 is an outward path for the closure material or strip of paper carried in the box 21. Integral with or attached to plate 17, is another extension 24, with folded edges 25. The side straps 26, are riveted at one end to the apertured plate 17, at 27, and are fixed to slidable plate 28, at 29, by soldering or other preferred method.

For the purpose among other things, of providing an automatic practically air tight closure, with the aid of the closure strip hereinbefore mentioned, there is a plate 30 having an aperture 31, registering with the opening 18, in the end of the cylinder and having an annular bead 32, to correspond with the annular groove, 19. The bail or hand hold 33, is similar to the bail 12 and the two enable the operator to make effective the device. As a guard against injury to furniture, a resilient buffer 34, is fixed to the bail 33.

For the purpose of automatically feeding the closure material 23, to the air outlet 18, in the cylinder, there is mounted on extension 24, feeding means comprising arm 35, fixed at 36. The straps 37, partly embrace the part 24, and the ends are riveted

at 38. The integral fingers 39 are pointed and the points travel in the slots 40.

The numeral 41, denotes what is termed a deflecting finger. The finger 42, is positioned to interfere with the deflecting finger and lift the points 39, from the paper strip. The lip 46, engages with one edge of the bar which carries the feeding points 39, and causes the paper strip to move up a step. The closure material consists preferably of a compacted web or felting of vegetable fibers, commonly in the form of a thin flexible sheet, such as newspaper, and is adapted to be ruptured with loud report by the fluid under pressure in the compressor. The closure material may be fed in strips or it may be broken or cut into lengths or pieces sufficient for a charge to suitably cover the air outlet from the compression means. The spring blade, 43, bears at its free end against the inner wall of extension 24 and tends to keep the points 39, in the paper strip. The coil spring 44, in the cylinder may be omitted if desired and spring 13, relied upon to do the work. The hole 45, in the section or portion of closure material shown in Fig. 5, indicates the usual appearance after the paper or material has been exploded by the fluid under pressure.

In operation the device is held, if preferred, by grasping a bail in each hand and compressing or forcing the two members together with suddenness and with force. Obviously the piston bail may be grasped and the other bail placed against some resisting object.

It will be apparent from the drawings and the foregoing description that when the closure material 23, is drawn between the two apertured plates and the plate 30, forced against the plate 17, the interior of the cylinder is for all practical purposes air tight, and the piston forced suddenly to or toward the apertured end of the cylinder that the air or fluid under pressure in the cylinder will rupture the paper covering the outlet from the cylinder with an explosive sound when the bail 33 is in the position indicated in Fig. 2 the paper strip or closure material 23 has been moved to the position of full closure of the air outlet 18. (See Fig. 1.) After the explosion or rupture of the material 23 the bail is drawn out to the position shown in Fig. 1, and the paper strip moving means being attached to the straps 26 is drawn back in respect to the material 23 and is in readiness to take a new bite or hold and advance the paper strip 23 sufficiently to prevent a new charge to the air outlet 18 during the time the

plate 30 is being moved to the apertured plate 17. This is accomplished by the points 39 being forced into the paper strip 23 by an upward movement of the bail 33 which is secured to the straps 26. One of the straps 26 has attached to it the arm 35 which when moved causes the part 37 to travel slidably upwardly on the part 24. When the bail 33 is drawn back into the position indicated in Fig. 1 the paper strip moving means is ready to feed another charge to the air outlet 18.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a detonating device, the combination of a compression cylinder, a piston working in the cylinder, closure material capable of being ruptured by fluid under pressure, an apertured retaining plate to hold the closure material in position, and a compression spring constantly urging the apertured plate from the compression cylinder.

2. In a device of the class described, the combination of a compression cylinder, a piston working in the cylinder, an apertured plate having an annular groove on one end of the cylinder, a plate with an opening therethrough registering with the aperture in the plate on the cylinder and having an annular bead corresponding to the annular groove and closure material between said two plates.

3. In a device of the class described, the combination of air compression means having an air outlet, a movable plate having an opening therethrough registering with the air outlet, the compression means having an annular groove and the movable plate having an annular bead corresponding to the annular groove, and a bail fixed to each end of the device.

4. In a detonating device, the combination of a compression cylinder having an air outlet, a piston working in the cylinder, a bail for the cylinder and a bail for the piston, one end of the cylinder having an annular groove and the adjacent plate having a corresponding annular bead and an opening therethrough registering with the air outlet in the cylinder, closure material for the air opening in the cylinder, and automatic means to feed the material in suitable charges or shots.

In testimony whereof, I affix my signature in the presence of two witnesses.

EDGAR E. STONE.

Witnesses:

S. ELVA KELLOGG,
JOHN W. KINNEY.