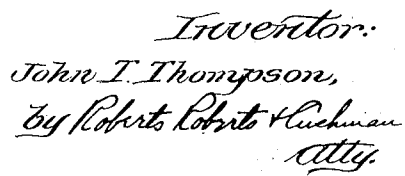


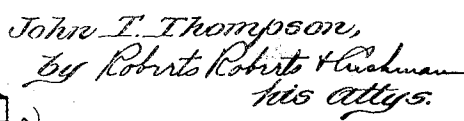
1,334,059.

3 SHEETS--SHEET 1.



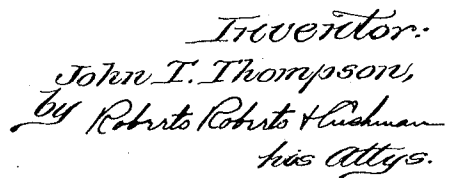
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

JOHN T. THOMPSON, OF NEWPORT, KENTUCKY.

PORTABLE SIGNAL DEVICE.

1,334,059.

Specification of Letters Patent.

Patented Mar. 16, 1920.

Application filed November 15, 1919. Serial No. 338,156.

To all whom it may concern:

Be it known that I, JOHN T. THOMPSON, a citizen of the United States, and resident of Newport, in the county of Campbell and State of Kentucky, have invented new and useful Improvements in Portable Signal Devices, of which the following is a specification.

This invention relates to portable signal devices, particularly to signal devices for use in transmitting information or giving commands in military or naval operations, as a burglar alarm or other alarm, for the purpose of attracting the attention of the police, of summoning help in cases of emergency, etc.

One of the objects of the invention is to provide means whereby the gas pressure resulting from the firing of cartridges may be utilized to operate a siren (*i. e.* a whistle, horn, klaxon, or other form of gas or air operated signal) which preferably produces the high shrill note of a police whistle. Another object is to provide a gas chamber adapted to receive the explosion gases, or air forced therein by the explosion gases, and thence supply the gases or air to the siren. Another object is to provide means for trapping and storing the gases or air in a chamber with which the whistle is connected, whereby a substantially continuous, prolonged tone may be obtained. Another object is to provide a safety means for relieving the pressure in the gas or air chamber in the event the pressure becomes excessive. Another object is to provide means whereby the siren may be operated by either the rearward or the forward movement of the bolt of the firing mechanism. Another object is to provide a visual signal adapted to be operated in conjunction with the aural signal.

The invention comprises the combination of a gun, whether manual, semi-automatic or full automatic, and of any type, together with a suitable signal arranged to be operated by gas pressure produced by the gun, that is, by the explosive gases or by compressed air or the like produced by the explosions. The preferred signal is a siren but in the broader aspect of the invention the signal may comprise any suitable visual or aural or other device adapted to be operated by gas pressure. Moreover, the signal is preferably operated directly by the explosion gases but it may be operated indi-

rectly through means controlled by the explosion gases.

In order that the nature of my invention may be clearly understood, I have illustrated certain embodiments of the invention in the accompanying drawings, in which,—

Figure 1 is a side view, partly in section, of one type of signal device embodying my invention;

Fig. 2 is a top plan view of the signal device shown in Fig. 1, with the barrel broken away;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a longitudinal section on line 4—4 of Fig. 1 showing the firing mechanism;

Fig. 5 is a longitudinal section of a modified form of barrel having a gas chamber below the signal;

Fig. 6 is a longitudinal section of another modified form of barrel having a different form of gas chamber below the signal;

Fig. 7 is a side view, partly in section, of another form of the signal device having a light signal incorporated therein;

Fig. 8 is a side view, partly in section, of the light signal and associated parts;

Figs. 9 to 13 are side views, partly in section, of still further embodiments of the invention;

Fig. 14 is a section on line 14—14 of Fig. 13;

Fig. 15 is an elevation of an embodiment employing firing means, similar to that employed in the ordinary revolver.

In the drawings is shown a pistol of the automatic type having a grip G and a detachable or clip-loader magazine M for holding cartridges C connected to a receiver R as is usual in pistols of this type. In the receiver R is a bolt 1 adapted to move freely in a bolt chamber 2 and having inserted therein a movable firing pin 3. A spiral spring 4 mounted on a stud 5 at the inner end of the bolt chamber 2 has its free end engaging the rear end of the bolt 1 and is adapted to force by its expansion the bolt 1 forward after compression incident to the recoil of the bolt 1. An actuator 6 attached to the bolt 1 extends upwardly through a longitudinal slot 7 in the upper wall of the receiver R and is adapted to be retracted so as to pull back the bolt 1 against the spiral spring 4 and upon releasing the actuator 6 the bolt 1 is driven forward, its front end striking a cartridge C in

the barrel 12, when the firing pin 3 is thrown forward by its inertia and the cartridge exploded, and thus initial firing is accomplished, after which the firing is rendered automatic by the recoil of the bolt 1 against the spiral spring 4 and its subsequent expansion. The bolt 1 is provided with a cartridge extractor 8 and a cartridge ejector 9 operating in a longitudinal slot 10 in one side of the bolt 1, whereby the cartridges C are extracted and ejected automatically. The magazine M is provided with a spiral spring 11 adapted to push upwardly in succession into the receiver R the cartridges C as they are fired and extracted from the barrel 12.

Mounted in a threaded opening 13 in the barrel 12 is a siren 14, preferably of the police type, having a threaded base portion 15 engaging the threaded opening 13 and provided with a port 16 leading from the bore 17 of the barrel to the body portion 18 of the whistle. The whistle 14 is so located as to be preferably interposed in the path of the gas resulting from the explosion of a cartridge C in the barrel 12, so that a portion of the gas will pass upwardly through the port 16 and hence to the whistle 14, thereby producing a high shrill note or sound in conjunction with the report of the pistol, which sound, in the case of an automatic pistol, would follow in substantially continuous impulses or waves.

Below the whistle 14 may be formed an enlarged bore or gas expansion chamber 19, as shown in Figs. 5 and 6, in which the greater portion of the outgoing gas, instead of passing out of the barrel 12, will be accumulated and expanded therein, and will be consequently directed and carried upwardly to the whistle 14 in greater volume and with greater force than in the form shown in Fig. 1, and with a corresponding increase in the volume of tone. As further illustrated in Fig. 5 a check valve 70 may be interposed between the firing chamber and the enlarged gas chamber 19 to trap the gases in the gas chamber; and a safety valve 71 may be provided in advance of the gas chamber to maintain the gas chamber closed except when the pressure exceeds a predetermined limit. Obviously these features may be employed in other embodiments of the invention in view of these examples.

One of the most satisfactory forms of the invention is illustrated in Fig. 9 wherein the barrel is enlarged to form a gas chamber and the siren is mounted in the mouth of the barrel or chamber. The chamber should be made large enough to store a considerable quantity of gas and strong enough to withstand the maximum pressure of the device. the siren may be mounted in the mouth of the barrel in other embodiments of the invention as shown by Fig. 9.

As illustrative of the many possible applications of the invention I have shown in Fig. 10 another form of gas expansion chamber 19, similar to that shown in Fig. 5, but provided with a different form of safety valve and with no check valve. The safety valve 20 is seated in an outlet tube 21 leading from the gas expansion chamber 19 and has a stem 22 on which is mounted a spiral spring 23 adapted to normally hold the escape valve 20 in its closed position. By providing the escape valve 20, means is provided for the escape of any excessive volume of gas that may accumulate in the gas expansion chamber 19. In still another form, shown in Fig. 11, a gas storage chamber 24 is provided above the outlet tube 25, attached to the barrel 12, and having a duct 26 leading from the outlet tube 25 in which is seated a valve 27. The valve 27 comprises a threaded nut 28 inserted in a threaded opening in the upper wall of the gas storage chamber 24 and having a depending collar 29, on which is mounted a spiral spring 30 inclosing the valve stem 31, which is inserted in the axial opening 32 of the depending collar 29, the spiral spring 30 being adapted to normally hold the valve 27 in its closed position. By providing a gas storage chamber 24 the outgoing gas may be accumulated therein and thereby a volume of gas under practically constant pressure will be available to operate the whistle and consequently produce a substantially continuous prolonged tone.

In addition to the aural alarm of the whistle 14 I may provide in conjunction therewith a visual signal located under the barrel 12. The light signal preferably comprises a chamber 33 having an insulated lining 34, in which is located a suitable storage battery 35 having an electric light 36 mounted in a socket 37. The battery 35 is provided with a terminal 38 extending through an opening in the insulated lining 34 and in contact with the upper wall of the chamber 33, while a terminal 39 is in contact with a metal plate 40, the arm 41 of which extends laterally, so as to be in a position to be engaged by a contact pin 42 attached to a spring 43 fastened to the side wall of the chamber 33 and adapted to normally hold the pin 42 out of contact with the metal arm 41. By pressing the spring 43 the electric circuit is completed and the light 36 lighted. The light 36 may be kept lighted or lighted intermittently or operated independently of the whistle 14 as may be desired, and when accompanied by the sound of the cartridge explosions and the whistle 14 produces effectively both an aural and a visual signal.

In another form of my invention shown in Fig. 12, I employ an air chamber 44 mounted above the receiver R and having therein a piston 45 provided with a leather cup or

other suitable packing L and with a rod 46 connected at its outer end to an arm 46^a operating in a slot 47 in the upper wall of the receiver R and attached to the bolt 1 of the piston. At the inner end of the air chamber 44 is an opening 48 leading into an air storage chamber 49 in the grip G. At the upper end of the air storage chamber and above the opening 48 is located a whistle 14, while seated in the opening 48 is a valve 50 comprising a threaded nut 51 inserted in a threaded opening in the outer wall of the air storage chamber 49, and having an axial opening 52 into which is inserted the valve stem 53. A spiral spring 54 incloses the valve stem 53 and is adapted to normally hold the valve 50 in its closed position. In this form of my invention the piston 45 is adapted to be pushed inwardly by the rearward or recoil movement of the bolt 1, thereby forcing air to open the valve 50 and through the opening 48 into the air storage chamber 44, and consequently to operate the whistle 14. The valve 50 then closes and the operation is repeated on each recoil of the bolt 1, the valve 50 alternately opening and closing and the surplus air being accumulated in the air storage chamber 49, so that thereby a substantially continuous, prolonged tone will be produced by the whistle 14 as in the form shown in Fig. 11.

In the form shown in Fig. 13, an air chamber 55 is mounted above the barrel 12 and has operating therein a piston 56, which is provided with a leather cup or other suitable packing L and with a rod 57 connected at its inner end to an arm 58 operating in a slot 59 in the upper wall of the receiver R. The arm 58 is attached to the bolt 1, in which is a movable firing pin 60 having a spindle 61 extending rearwardly, which is inclosed by a spiral spring 62 resting against a plug 63 and the rear end of the firing pin 60, the spring 62 being adapted to force forward by its expansion the firing pin 60 just previous to the initial firing. A spiral spring 64 engaging the bolt 1 and a stud 65 in the rear of the receiver R forces forward the bolt 1 by its expansion after compression incident to the recoil of the bolt 1. An actuator arm 66 extends upwardly from the firing pin 60 through a slot 67 in the firing pin 60 and the slot 59 in the receiver R and engages a spring detent 68 mounted on the upper wall of the receiver R, by freeing which from engagement with the actuator arm 66 the firing pin 60 is forced forward by the spring 62 and initial firing is accomplished after which the firing pin 60 is held forward in a fixed position by the spring 62 during succeeding firing of the pistol, until the detent 68 again engages the actuator arm 66 and the firing pin 60 is again locked in position for initial firing as shown in Fig. 13. The detent 68 is provided with a lat-

eral finger (Fig. 14) by means of which the detent may be lifted by the finger or thumb. At the outer end of the air chamber 55 is an opening 69, in which is inserted a whistle 14, which is operated when the piston 56 is pushed forward by the forward movement of the bolt 1, thereby forcing air through the opening 69 and the whistle 14.

As illustrated in Fig. 15 the invention is not limited to devices having automatic or semi-automatic firing mechanism but may also be embodied in manual devices. The device shown in Fig. 15 comprises a gun of the double-acting revolver type provided with a grip G, a revolving magazine *m*, an enlarged barrel 19 and siren 14, the barrel and siren being as shown in Fig. 9. While the device must be actuated manually it possesses the advantage that the firing chamber remains closed after firing and thereby prevents the gases from escaping rearwardly more effectually than in the case of automatic guns. By employing firing means in which the firing chamber is entirely sealed and in which the breech remains locked after firing the gas may be entirely prevented from escaping to the rear, thereby being utilized completely. Moreover, where the firing chamber remains sealed indefinitely after firing, as for example in a single shot pistol, the gas pressure may be allowed to operate the signal until completely exhausted before opening the breech to insert a fresh cartridge. However, it is to be understood that a check-valve may be used between the firing chamber and siren in any embodiment of the invention. It is also to be understood that any suitable breech closing mechanism, firing mechanism, magazine, etc., may be employed.

From the foregoing it will be noted that the operation of the whistle 14 in all forms of my invention is either directly or indirectly under the control of or incident to the firing of the gun, while the light 36 is under manual control and may be operated continuously or intermittently and in conjunction with the operation of the whistle, as may be desired.

I claim:

1. A signal device comprising a gun adapted to produce gas pressure and a signal arranged to be operated by said gas pressure, said signal being permanently attached to the gun.

2. A signal device comprising means for firing cartridges and means controlled by the explosive force of the cartridges for producing a signal, said means forming an integral part of the device.

3. A signal device comprising means for firing cartridges and means controlled by the explosive force of the cartridges for producing a signal, said last means including a siren.

4. A signal device comprising means for firing cartridges and means for producing a signal, said last means including a siren arranged to be operated by the explosive gases passing therethrough.

5. A signal device comprising a firing chamber, means for firing cartridges in said chamber, and a siren communicating with said chamber so as to be operated by the explosive gases of the cartridges.

6. A signal device comprising a firing chamber, means for firing cartridges in said chamber, a gas chamber communicating with said firing chamber, and a siren communicating with said gas chamber, whereby the explosive gases may flow from the firing chamber to the gas chamber and thence through the siren.

7. A signal device comprising a firing chamber, means for firing cartridges in said chamber, a barrel extending forwardly from said chamber, and a siren mounted on said barrel so as to receive at least a part of the explosive gases passing through the barrel.

8. A signal device comprising a firing chamber, means for firing cartridges in said chamber, a gas chamber associated with said barrel, and a siren communicating with said gas chamber, whereby the explosive gases may flow from the firing chamber through the barrel to the gas chamber, and thence through the siren.

9. A signal device comprising a firing chamber, a gas chamber communicating with said firing chamber, a signal controlled by gas pressure in the gas chamber, and a

safety means for relieving the pressure in the gas chamber when the pressure exceeds a predetermined amount.

10. A signal device comprising a firing chamber, a gas chamber communicating with said firing chamber, a signal controlled by gas pressure in the gas chamber, and means for trapping the gas in said gas chamber.

11. A signal device comprising a firing chamber, a gas chamber communicating with said firing chamber, a signal controlled by gas pressure in the gas chamber, means for trapping the gas in said gas chamber, and a safety device for relieving the pressure in the gas chamber when the pressure exceeds a predetermined amount.

12. A signal device comprising a gun having its barrel enlarged to form a gas chamber, and a signal device arranged to be controlled by the pressure in said chamber.

13. A signal device comprising a gun adapted to fire cartridges, the gun having means incorporated therein for producing a light signal independently of the explosion of the cartridges.

14. A signal device comprising a firing chamber, means for firing cartridges in said chamber, a barrel extending forwardly from said chamber, the barrel having a chamber longitudinal of the bore, and a visual signal arranged in said chamber to be operated in conjunction with the firing of the device.

Signed by me at New York, N. Y., this 18th day of October, 1919.

JOHN T. THOMPSON.