

(No Model.)

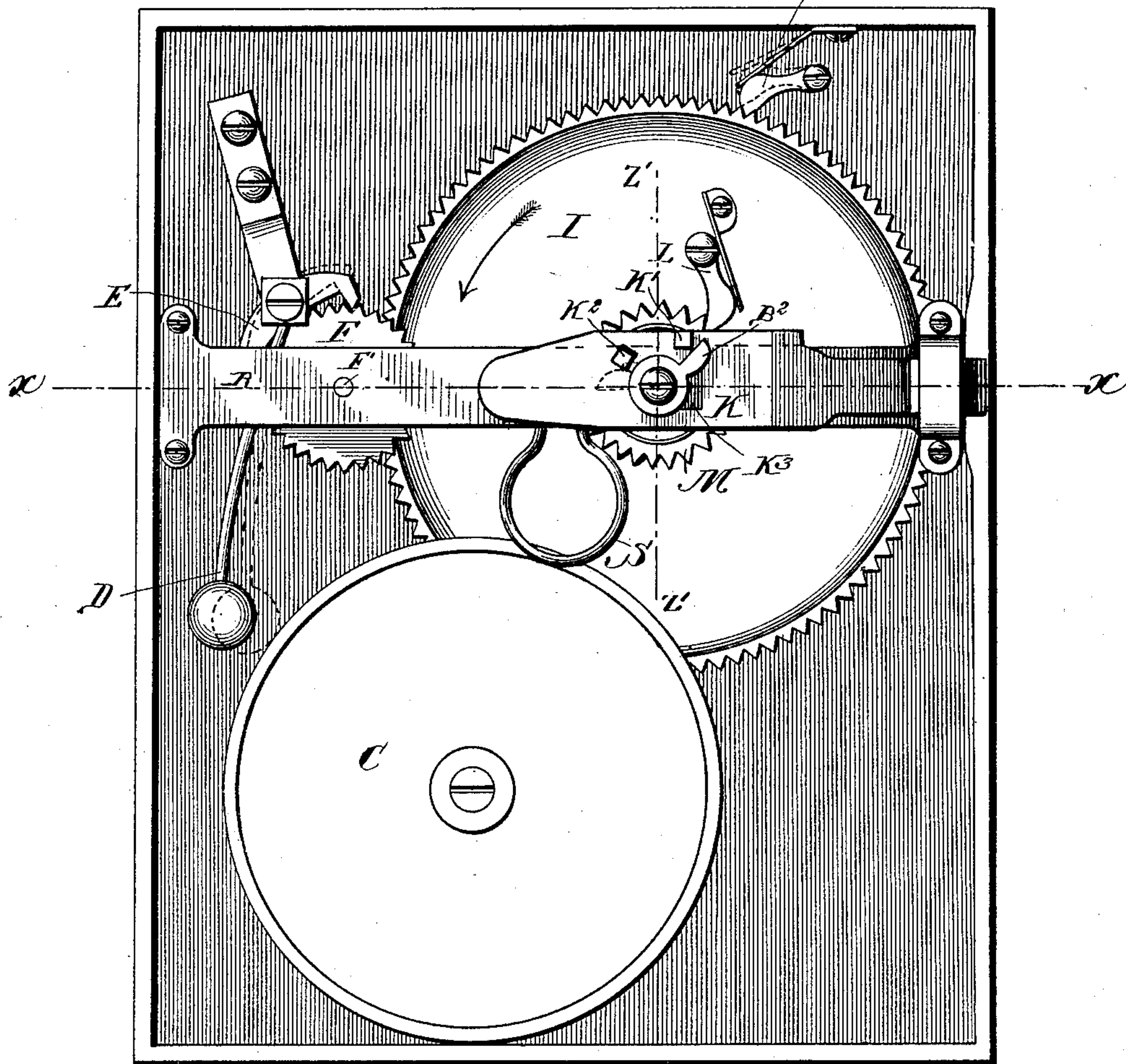
2 Sheets—Sheet 1.

J. ASHWORTH.  
FIRE ALARM SIGNAL BOX.

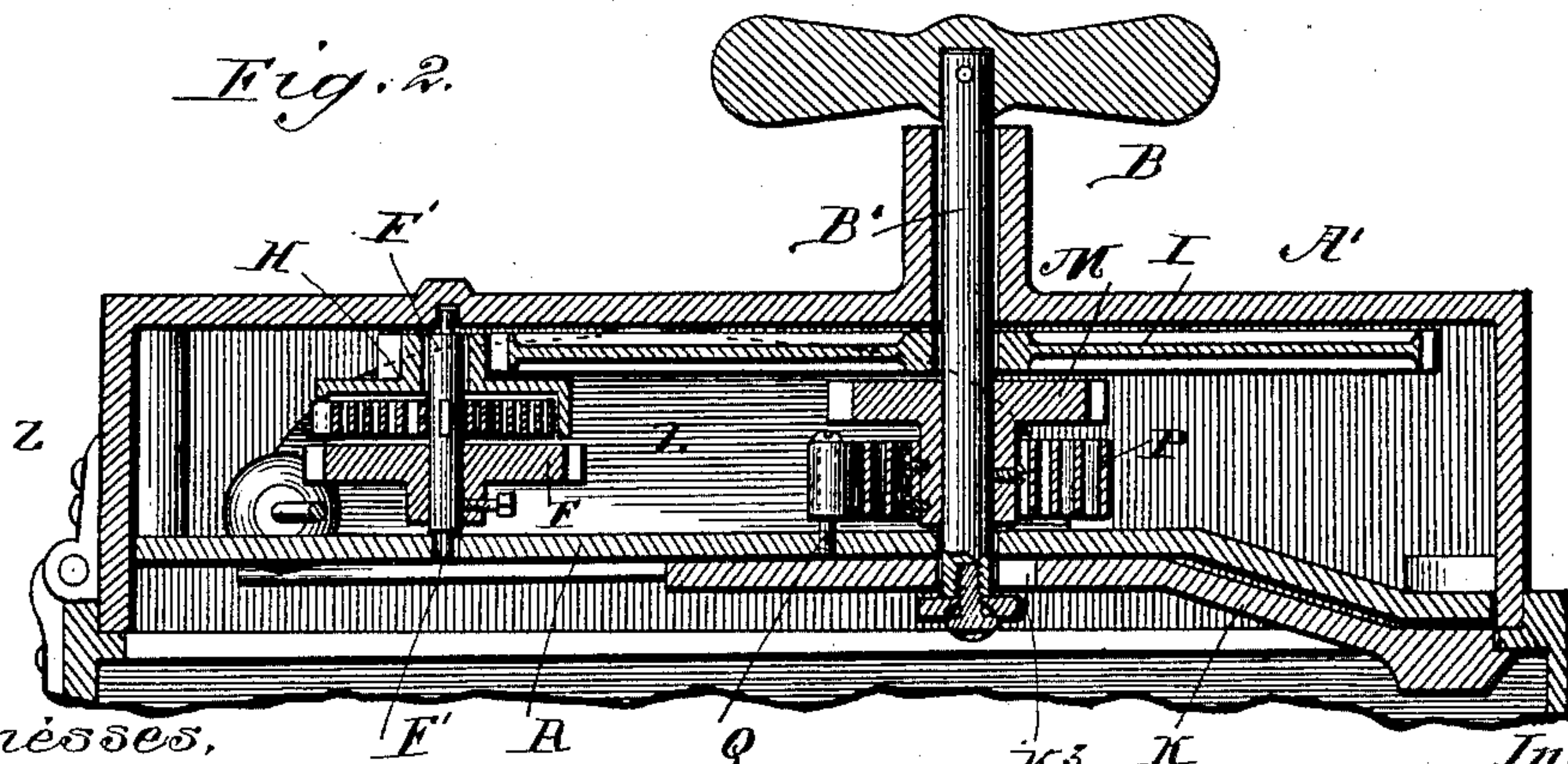
No. 353,475.

Patented Nov. 30, 1886.

*Fig. 1.*



*Fig. 2.*



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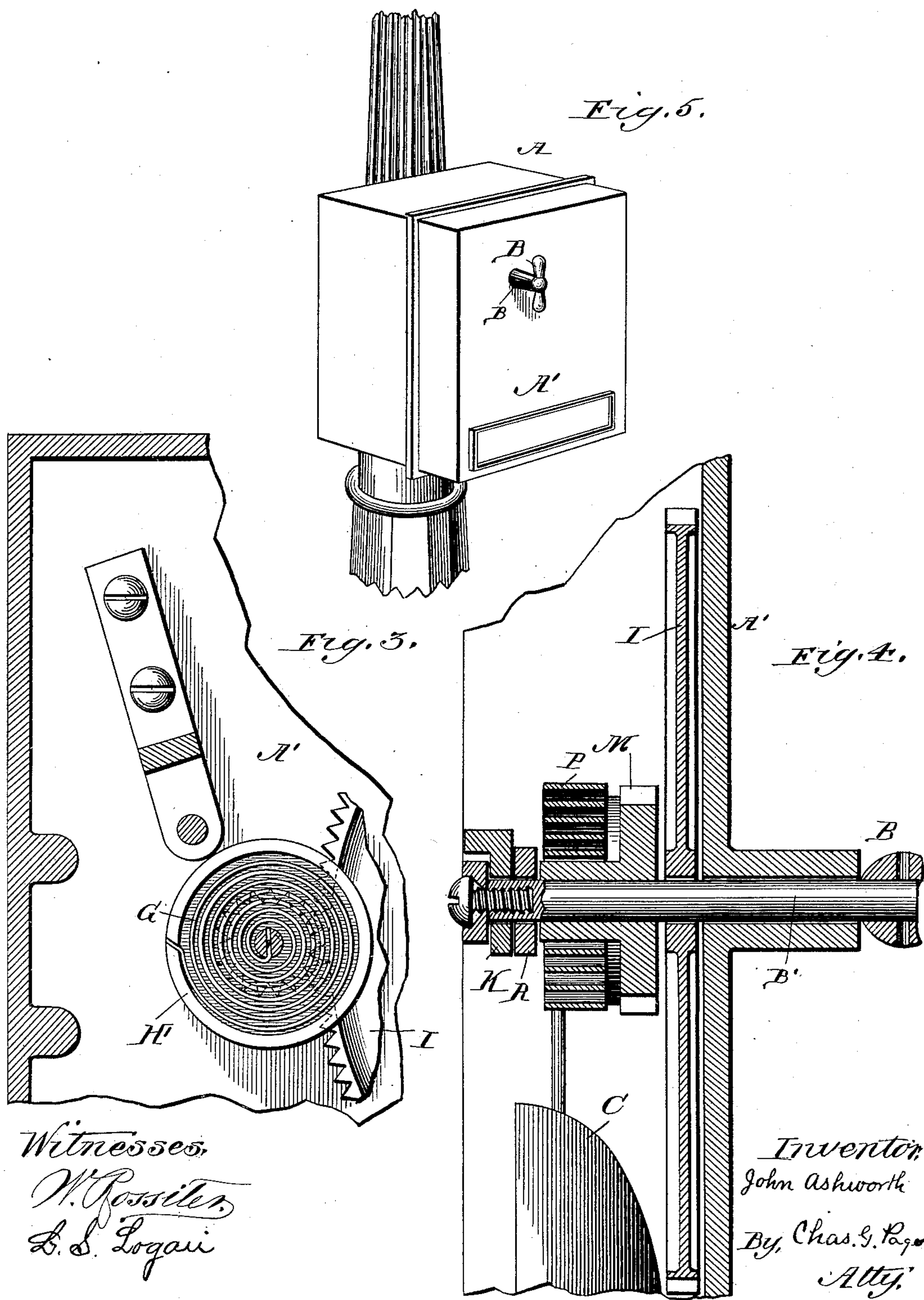
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# UNITED STATES PATENT OFFICE.

JOHN ASHWORTH, OF CHICAGO, ILLINOIS.

## FIRE-ALARM-SIGNAL BOX.

SPECIFICATION forming part of Letters Patent No. 353,475, dated November 30, 1886.

Application filed August 19, 1886. Serial No. 211,247. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ASHWORTH, 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 Fire-Alarm Boxes, of which the following is a specification.

This invention relates to an improvement upon what is commonly known as the "Tooker" fire-alarm box, wherein a gong or bell is sounded by and during the act of turning a handle, which operates to retract the latch, and thus permit the door of the box to be swung open. The object of thus mechanically ringing a gong or bell is to sound a local alarm, in order that notice may be given of an attempt to open the box, and hence the surreptitious opening of the same by unauthorized persons be easily detected by reason of its unavoidable publicity. In said fire-alarm boxes as now constructed and in use the gong or bell striking mechanism is liable to and in some instances has become so clogged or impeded either by the bending of the hammer tongue or escapement, or by other injury to or disarrangement in its organization, as to prevent the handle from being turned in a manner to draw the bolt or latch. Said objectionable feature is due to the mode of connecting the handle with a gear or ratchet, by which an escapement-pawl carrying the tongue or hammer is operated, the connection between said gear and handle being in the nature of a positive-gear connection when the handle is turned to draw back the latch.

Experience has fully demonstrated the liability of a mechanism of the aforesaid character to get out of order to an extent to prevent the handle from being turned sufficiently to open the box, and since the box is made of cast metal the time consumed in going to another fire-alarm-signal box, or in drilling through the box, so as to permit the latch to be pushed back, would at the occurrence of a fire occasion incalculable damage.

The object of my invention is to obviate said defect in fire-alarm-signal boxes and to provide means whereby, so long as the alarm mechanism is in working order, the operation of a device for drawing back the latch or bolt shall likewise cause the operation of the alarm mechanism, while, on the other hand, should the

alarm mechanism, from any cause whatsoever, become inoperative, the latch or bolt actuating device may still be freely operated for the purpose of drawing back the bolt or latch, although the alarm mechanism may be held stationary during such operation.

Further objects are to provide novel and improved details of construction tending to the general efficiency of an apparatus for the foregoing specified purpose.

To the attainment of these and other useful ends my said improvement consists in matters hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 represents in elevation the inner side of the door of a fire-alarm box provided with an apparatus embodying the principles of my invention. Fig. 2 represents a transverse section on the line  $x x$  of Fig. 1. Fig. 3 is a detail section on the line  $z z$  of Fig. 2, and is mainly designed to show the coil-spring  $G$  attached at one end to the spindle of a wheel belonging to the alarm-striking mechanism, and at its other end attached to a hub or casing forming a portion of the cog or gear  $H$ , which latter is shown in dotted lines. Fig. 4 is a detail section on line  $z' z'$ , Fig. 1, said Figs. 3 and 4 being drawn on a somewhat larger scale than the preceding figure. Fig. 5 represents, in perspective and on a smaller scale, the fire-alarm-signal box in a closed condition.

In said drawings,  $A$  denotes as a whole an ordinary fire-alarm-signal box, provided at the front with a hinged door,  $A'$ , as usual. The latching or locking mechanism and the local-alarm mechanism are desirably arranged upon the inner side of the door, which latter carries at its outer side a handle,  $B$ , that can be operated from without the box for the purpose of actuating the locking device or mechanism, for the twofold purpose of drawing back the latch or bolt and simultaneously therewith sounding the local alarm.

The local-alarm mechanism herein shown comprises a bell or gong,  $C$ , and a suitable striking device or contrivance—such, for example, as a pendulous hammer or clapper,  $D$ —attached to a pawl,  $E$ , that is operated by a spur-wheel,  $F$ , in a manner somewhat similar to the operation of an ordinary anchor-escapement. The spur-wheel  $F$  is operated from the



handle of the locking mechanism through the medium of a connection wherein a coil or convolute spring, G, is interposed in a manner to interrupt but form a part of said connection, 5 so as to provide between the latch or bolt operating device or mechanism and the alarm mechanism a yielding spring resistance, which, in the event of the alarm mechanism becoming caught or otherwise impeded from free action, 10 will yield sufficiently to permit the latch-operating mechanism to be freely actuated for the purpose of drawing back the latch or bolt when the door is in a closed condition.

To the attainment of the foregoing end one 15 end of the spring G is held in connection with the striking mechanism, while the remaining end of said spring is held in connection with a power-transmitting device or mechanism which, when the handle B is turned in a direc- 20 tion to draw back the latch or bolt, will be operated from said handle in a manner to wind up the spring G.

As a simple and efficient disposition of the spring G and means for winding up the same, 25 the inner end of said spring can be secured to a spindle, F', upon which the spur-wheel F is fastened, and the outer end of said spring is connected with a small cog, H, arranged to run loose upon the spindle of the spur-wheel. De- 30 sirably, the cog H is at one end united to or expanded, so as to provide a marginally-flanged disk, H', which serves as a suitable casing for containing the spring G, the said spring being in such instance attached at its outer end to 35 the flange of said case, in which way the spring is conveniently disposed of, and at the same time it is arranged to constitute the sole connection between the loose cog H and the spur-wheel of the striking mechanism. The small 40 cog H is engaged by and operated from a large gear, I, that is to be turned by or from the handle of the latch-operating mechanism when said handle is operated in a manner to draw back the bolt K.

In order to permit the gear I to be operated 45 from the handle when the latter is turned in a direction to draw back the bolt, and to cause said gear to be held stationary during a reverse movement on the part of the handle, the 50 gear is arranged loose upon the spindle or shank B' of the handle, and provided with a spring-controlled pawl, L, applied so as to engage a ratchet-wheel, M, that is fixed upon the shank or spindle of the handle, whereby, when 55 the handle is turned in a direction to draw back the latch or bolt, a positive connection will be established between the handle and the gear I through the medium of the aforesaid pawl and ratchet. When, however, the handle is turned 60 in a reverse direction, the said gear I will be held stationary by means of a spring-controlled pawl, N, while the ratchet M in such instance will freely pass its allotted spring-pawl L.

As a means for operating the latch or bolt 65 from the handle, and at the same time for permitting the handle to be turned preparatory to its engagement with the latch or bolt to an

extent to cause a prolonged operation of the alarm mechanism, the shank or spindle of the handle is provided at its inner end with a lat- 70 erally-arranged lug or finger, B<sup>2</sup>, while the bolt or latch is provided with a stud or abutment, K', with which latter the finger of the handle-spindle can be brought in engagement, 75 as in full lines, Fig. 1, for the purpose of drawing back the bolt or latch. The handle is normally held by a spring, P, in position to hold the finger of its shank or spindle back against a stop, K<sup>2</sup>, upon the latch or bolt, the 80 said normal position of the finger being illustrated in dotted lines in Fig. 1. When the handle is turned in a direction proper for throwing back the latch or bolt, the finger of the handle-spindle will, before its engagement 85 with the stud K' upon the latch or bolt, have a clear sweep for the greater part of its circle, during which time the connection between the handle and the gear I will necessarily cause the latter to turn in a manner to operate the 90 alarm mechanism. As soon as the finger of the handle-spindle is brought into engagement with the stud K' on the latch or bolt the latter can be drawn back by a further turn of the handle, which operation will also cause a 95 prolongation of the action of the alarm mechanism. When the handle is thus operated, it is turned against the resistance of spring P, which latter can be applied in any suitable way—as, for example, one end of said spring 100 can be secured to a hub on one end or side of the ratchet-wheel M, and its other end attached to any suitable fixture upon the inner side of the door—such, for instance, as to a stud, Q, rigid with a cross plate or bar, R, that is secured to the door and adapted to provide 105 appropriate bearings both for the spindle of the spur or escapement wheel F and for the shank or spindle of the handle B. The latch or bolt is conveniently arranged to slide along- 110 side said bar or plate R, and is provided with a slot, K<sup>3</sup>, through which the shank or spindle of the handle is arranged to extend, thereby permitting the desired latitude of movement on the part of said latch or bolt.

The latch or bolt is thrown to and normally 115 held in its forward position by a spring, S, while the finger of the handle shank or spindle is normally held in its back position against the stud or stop K<sup>2</sup> by means of the spring P, it being seen that after the handle has been 120 turned to an extent sufficient to draw back the bolt and then released the spring P will serve to throw the handle into its said back position.

So long as the alarm mechanism is in per- 125 fect order, the operation of the handle or latch actuating device in a direction necessary to draw back the latch or bolt will tend to wind up the spring G, which latter, in automatically unwinding itself, will operate the wheel F of 130 the local-alarm mechanism, thereby causing a rapid and effective vibratory action on the part of the striking-hammer of the gong or bell. Should, however, the alarm-striking



mechanism become disarranged and prevented from acting from or by any cause whatsoever—such, for example, as by such bending of the tongue of the hammer or by the bending or clogging of the pawl E or the wheel F—no obstacle will be offered to or placed in the way of the free operation of the handle for the purpose of drawing back the bolt, since when the handle, under the aforesaid circumstances, is operated for such purpose, the spring G will still be free to be wound up, although the wheel F, with which it is connected, may be held stationary, the spring in such case simply presenting a yielding resistance in opposition to the operation of the latch or bolt actuating device.

While the special construction and arrangement of devices herein set forth are herein made the subjects of special claims, I desire to be understood, for the broader purposes of this invention, as covering in its broadest sense a yielding spring resistance interposed in the connection between the local-alarm mechanism and the latch or bolt operating device, and susceptible, when said alarm mechanism is in working condition, of transmitting power thereto from the latch or bolt operating device, but adapted, when the alarm mechanism is inoperative, to present to the operation of the latch or bolt actuating device a yielding resistance which shall in no wise prevent the latter from being operated in a manner to draw back the bolt, and thereby permit the door of the fire-alarm-signal box to be opened.

What I claim as my invention is—

1. The combination, with a fire-alarm-signal box provided with a bolt or latch actuating device, and an alarm mechanism operated from the latch-actuating device when the latter is operated to permit the box to be opened, of a yielding-spring resistance placed in and forming a portion of the connection between the alarm mechanism and the bolt or latch actuating device, said spring-resistance being susceptible of either transmitting power from the latch-actuating device to the alarm mechanism when the latch is in working condition or of simply presenting a yielding resistance to the free action of the latch-actuating device at such times as the alarm mechanism may be inoperative, substantially as and for the purpose described.

2. The combination, with a fire-alarm-signal box, of the local-alarm mechanism, the latch or bolt operating device, and a coiled spring, P, interposed in a connection between said local-alarm mechanism and the latch or bolt operating device, substantially as and for the purpose described.

3. The combination, with the alarm-striking mechanism, of the latch-actuating device, a spring, P, connecting the said alarm mechanism with gearing which is operated from the latch-actuating device, and means for placing said latch-actuating device in positive connection with the gearing when it is operated to draw back the latch or bolt, but permitting a free reverse action on the part of the latch-actuating device independent of said gearing, substantially as described.

4. The combination, with the latch-actuating handle, of the gear I, a pawl-and-ratchet connection between the spindle of the handle and the gear, an alarm striking mechanism, and power-transmitting connection between the alarm-striking mechanism and the said gear I, substantially as described.

5. The combination, with the fire-alarm box, of the handle, having its spindle extended into the box and adapted to engage and operate the latch or bolt, the gear I, having a pawl-and-ratchet connection with said handle, a pawl for checking a back motion on the part of said gear, and a spring connecting a cog which is engaged by gear I with an alarm-striking mechanism, substantially as described.

6. The combination, with a fire-alarm-signal box provided with an alarm mechanism comprising a gong, a striking-hammer carried by an oscillatory pawl, and a wheel, F, for actuating said pawl, of the spring P, connecting said wheel with a cog, H, the gear I in engagement with said cog, the handle having its spindle adapted for drawing back the latch, substantially as described, and a pawl-and-ratchet connection between said spindle and the gear I, substantially as set forth.

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Witnesses:

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