No. 703,372. Patented July 1, 1902.

P. J. BEISEL.

DOOR OPERATING DEVICE.

(Application filed Nov. 4, 1901.)

(No Model.)

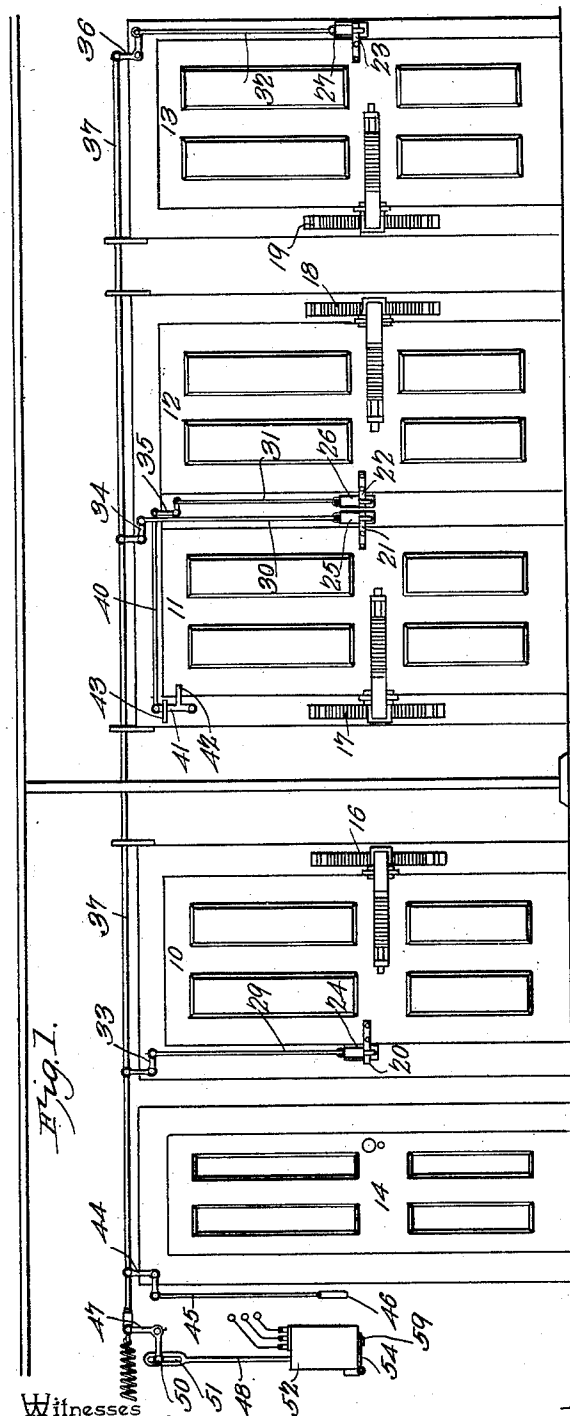


Fig. 7.

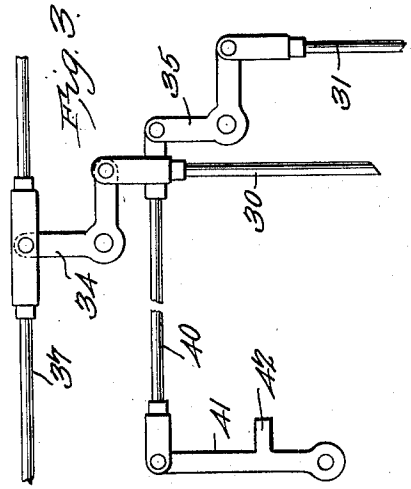


Fig. 3.

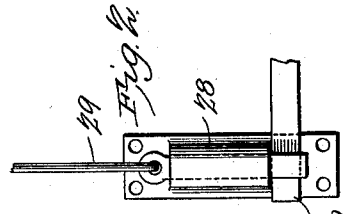


Fig. 6.

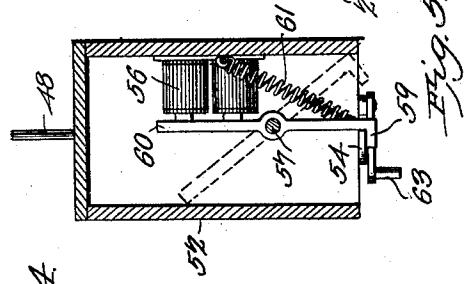


Fig. 5.

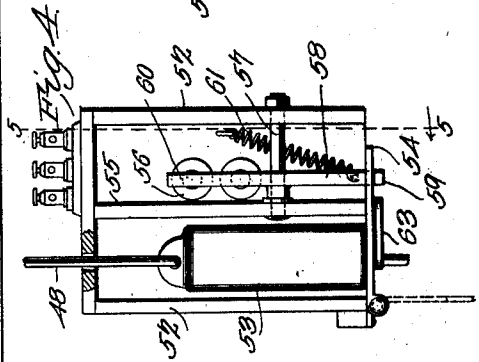


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

PETER JOSEPH BEISEL, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HARRY F. SMITH, OF ALLENTOWN, PENNSYLVANIA.

DOOR-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 703,372, dated July 1, 1902.

Application filed November 4, 1901. Serial No. 81,134. (No model.)

To all whom it may concern:

Be it known that I, PETER JOSEPH BEISEL, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Door-Operating Device, of which the following is a specification.

My invention relates generally to mechanism for opening doors, and has for its principal object to provide improved mechanism of this class especially applicable to the opening of the doors of horse-stalls in fire-engine or patrol houses, such mechanism being operable by the general alarm system, but provided with hand-operating means for use in emergencies or when practicing the horses.

With this and other objects in view the invention consists in the improved construction, arrangement, and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation of a series of doors equipped with opening mechanism arranged and constructed in accordance with my invention. Fig. 2 is a detail view, on an enlarged scale, of one of the door-latches. Fig. 3 is a detail view illustrating the means employed for causing one door upon opening to release the latch of another door. Fig. 4 is a sectional elevation, on an enlarged scale, illustrating the operating-weight and the electromagnetic trip therefor. Fig. 5 is a transverse sectional elevation of the same on the line 5 5 of Fig. 4.

Similar numerals of reference are employed to designate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, 10, 11, 12, and 13 indicate the doors of a series of stalls arranged side by side, as is usual in fire-engine or patrol houses, and 14 indicates a door unconnected with the opening mechanism for ingress or egress of the attendants.

Each of the stall-doors 10, 11, 12, and 13 is provided with an opening-spring, as at 16, 17, 18, and 19, and a latch-bar, as at 20, 21, 22, and 23, all of said latch-bars and all of their catch-bolts 24, 25, 26, and 27 being duplicates in construction. In Fig. 2 is illustrated in detail one of said latch-bars and its operating-bolt, selecting the bar 20 on door 10 with the bolt 24 for this purpose. In this figure it will be seen in detail that the latch-bar 20 is rigidly secured to the door 10 in a horizontal position and that it is held behind the lower end of the bolt 24 when the bolt is lowered, said bolt working vertically in a keeper 28 on the door-jamb, there being a similar keeper to each latch. The bolt is pivotally connected at its upper end to a vertical rod 29, the upper end of which is pivotally connected to the horizontal arm of a bell-crank lever 33, pivoted to the door-frame or wall. In similar manner the bolts 25 and 27 are connected by rods 30 and 32 to the bell-crank levers 34 and 36, respectively, and the bolt 26 is connected by a vertical rod 31 to a bell-crank lever 35. The upper ends of the bell-crank levers 33, 34, and 36 are pivotally connected to a main operating-rod 37, mounted in suitable supporting-brackets 38 and extending over the whole series of doors. The rod 37 is normally maintained in position to hold all of the bolts in locking position by an expansion-spring 39 at one end.

The bell-crank lever 35 has the upper end of its vertical arm pivotally connected to a short horizontally-movable rod 40, connected at its opposite end to the upper end of a bar 41, pivoted to the frame of the door 11 and provided with an arm 42 in the path of the door 11 when opening and guided between a bracket 43 and the door-frame.

When the rod 37 is moved horizontally in the direction of the arrow against the stress of the spring 39, the latch-bolts are all drawn upwardly, releasing the latches and permitting the several door-springs to open the doors of the stalls. To permit of this operation by hand when it is desired to practice the horses, a bell-crank lever 44 is pivoted to the wall and has its upper end pivotally connected to the rod 37, and the end of its horizontal arm carries a cord or rod 45, to which is attached a suitable handle 46. The operating-rod 37 is, however, usually operated by the electric current which sounds the alarm or by a local current actuated by a relay in the alarm-circuit, and this is effected by the mechanism illustrated more clearly in Figs. 4 and 5.

47 indicates a bell-crank lever, the upper end of the vertical arm of which is pivotally connected to the rod 37, and the end of whose horizontal arm is provided with a pin 50, adapted to a vertical slot 51 in the upper end of a vertical rod 48. The lower end of the rod 48 passes through an opening in the top of the box 52 and is secured to a weight 53, sufficiently heavy to overcome the force of the spring 39 and move the rod 37 to the left, as before mentioned. This weight 53 is ordinarily supported by a pivoted bar 54 and falls when said bar is released. The box 52 is divided by a partition 55 into two compartments, in one of which the weight 53 is situated. In the other compartment is placed a bipolar electromagnet 56, connected in the alarm-circuit or, as previously described, in a local circuit operated by a relay in the alarm-circuit. In this compartment is also situated a pivot bar or shaft 57, on which is fulcrumed a trip-lever 58, having at its lower end a tongue or finger 59 to engage under the bar 54. The upper end of the trip-lever carries an armature 60 in the field of the electromagnets 56, and when the circuit is closed the armature is attracted and held and the bar 54 is locked in position and holds the weight raised. Should the circuit be broken either by the sounding of the alarm or by the operation of a push-button or other circuit-breaker, a spring 61 will act to pull the trip-lever from the bar 54, the latter swinging on its pivot-point and permitting the weight 53 to fall. When the weight falls, the rod 48 is carried with it, and owing to the slotted connection between the rod and bell-crank lever 47 the weight will have acquired sufficient momentum to overcome the resistance of the spring 39 by the time the end of the slot comes into contact with the pin 50 on the bell-crank lever 47. This slotted connection also serves to permit of the movement of the various parts by the hand-operated rod or cord 45 without disturbing the rod 48.

In order to retain the weight in the elevated position during tests or when it is desired to prevent the operation of the door-opening devices by the alarm-circuit, the lower portion of the partition 55 is provided with a pivoted arm 63, which may be moved under the weight-supporting bar 54 to retain the same in locking position.

While the construction herein illustrated and described is the preferred form of the apparatus, it is obvious that many changes in the form and arrangement of parts may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim is—

1. The combination with a series of spring-opening doors, of a series of locking-bolts adapted to hold said doors in closed position, a main operating-rod, a series of rods and bell-crank levers connecting said main operating-rod to the series of bolts, a vertical rod, a bell-crank lever connecting the same to the main operating-rod, an actuating-weight secured to said vertical rod, a pivoted lever supporting said weight, a pivoted trip-lever adapted to engage with the weight-supporting lever, an armature carried by said trip-lever, and an electromagnet arranged in a closed electric circuit and normally acting to hold the trip-lever in engaging position, substantially as specified.

2. The combination with a door provided with a latch-bar, of a bolt for securing the latch-bar, a bell-crank lever for operating said bolt, a rod operatively connected to said bell-crank lever, a vertical bar, a bell-crank lever connected to said rod and to the vertical bar, a weight on said vertical rod, a pivoted weight-supporting lever, a trip-lever in locking engagement therewith, an electromagnet disposed in a normally closed circuit and adapted to hold said trip-lever in engaging position, and a spring for disengaging said lever when the magnet is deënergized.

3. The combination with a spring-opening door, of a bolt, an operating-rod operatively connected to said bolt, a spring acting on said rod and normally tending to hold the bolt in locked position, a bell-crank lever having one end connected to the operating-rod, a weighted vertical rod having a slotted connection with the opposite end of said bell-crank lever, means for normally sustaining the weighted vertical rod in elevated position, an electrical alarm system, and means actuated by the alarm system for releasing said weighted bar, substantially as specified.

4. The combination with a plurality of doors, latches arranged on each door, bolts for engagement with said latches, a main operating-rod, bell-crank levers and connecting-rods extending between the main operating-rod and the several bolts, a spring acting on said main operating-rod and tending to normally maintain the bolts in locking position, a bell-crank lever having its vertical arm connected to said main operating-rod, a hand-operating rod or cord connected to the horizontal arm of said bell-crank lever, a weighted vertical rod having an elongated slot in its upper end, a bell-crank lever connecting the slotted end of the vertical rod to the main operating-rod, means for supporting the weighted rod in an elevated position, an electrical alarm system and means actuated by the alarm system for releasing said weighted bar, substantially as specified.

5. The combination with a door provided with a latch-bar, of a bolt for securing the latch-bar, a bell-crank lever for operating the bolt, means for operating said bell-crank lever to effect the release of the latch, a second door provided with a latch-bar, a locking-bolt therefor, a pivoted arm arranged in the path of the first door in opening, and mechanism operatively connecting said pivot-arm to said locking-bolt, substantially as specified.

6. The combination with a door provided with a latch-bar, of a bolt for securing the latch-bar, a bell-crank lever for operating the bolt, a rod for operating the bell-crank lever, an electrical alarm-circuit, means actuated by the alarm-circuit for operating the rod to release the door, a second door provided with a latch, a bolt, a vertical rod and bell-crank levers, a second horizontal rod connected to the vertical arm of the last-mentioned bell-crank lever, a bar pivoted to the second door-frame and connected to the opposite end of said second horizontal rod, and an arm on said pivoted bar in the path of the first door in opening, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PETER JOSEPH BEISEL.

Witnesses:
HARRY F. SMITH,
ROBERT W. KURTZ.