F. C. SHERMAN.

AUTOMATIC DOOR LOCK AND OPENER.

APPLICATION FILED NOV. 17, 1916.

1,334,805.

Patented Mar. 23, 1920.

2 SHEETS—SHEET 1.

Fig. 4.

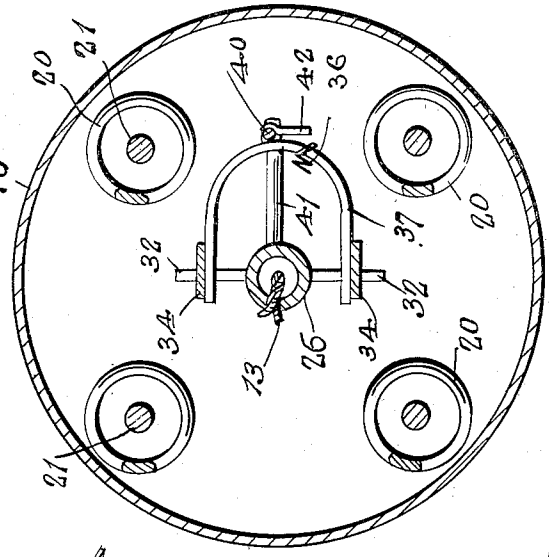


Fig. 1.

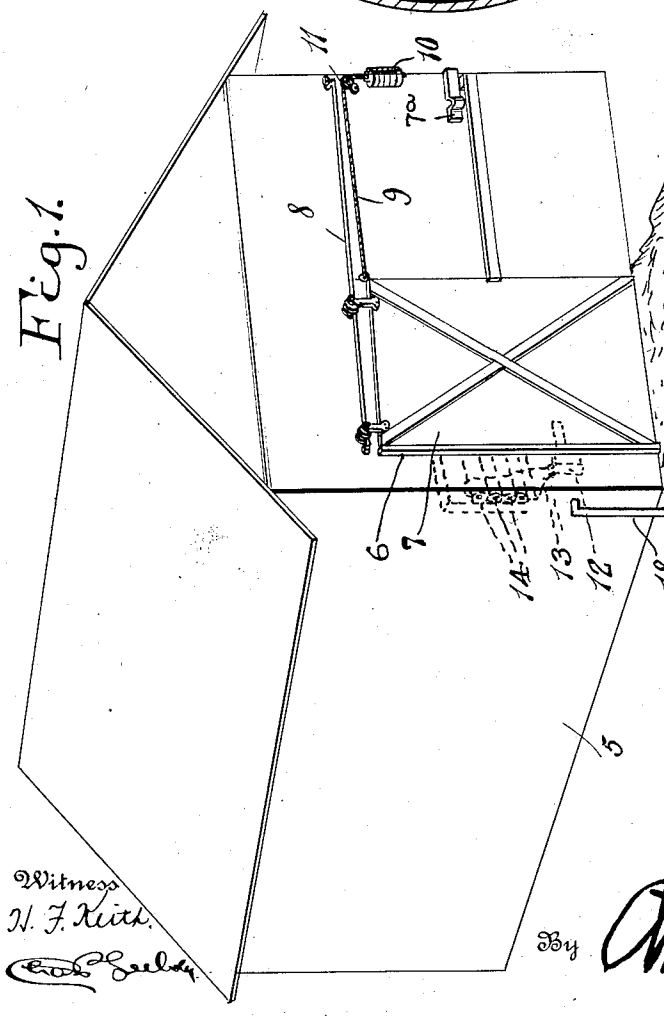
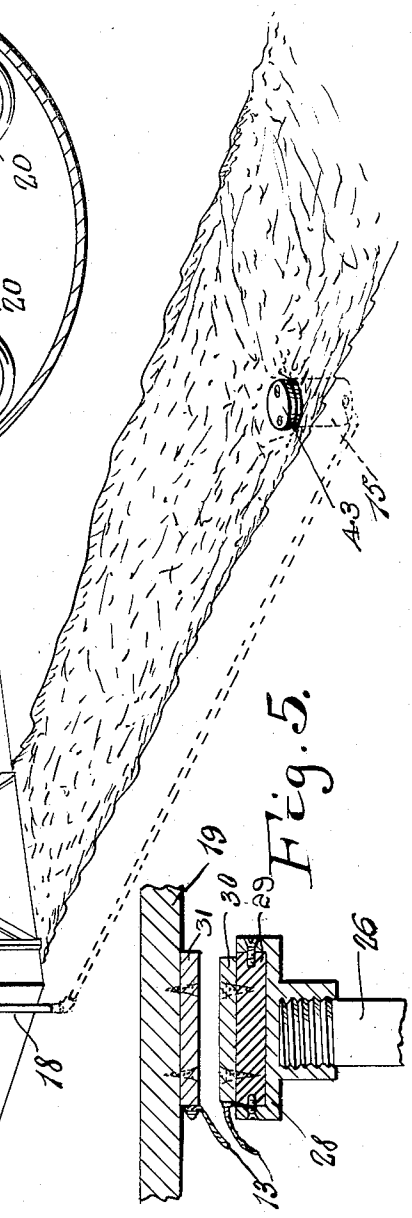


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 2.

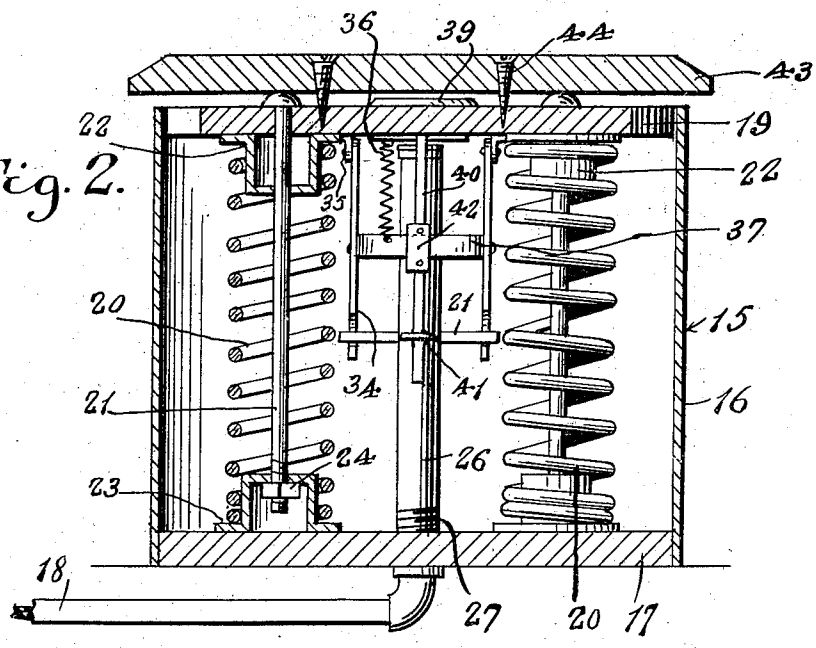
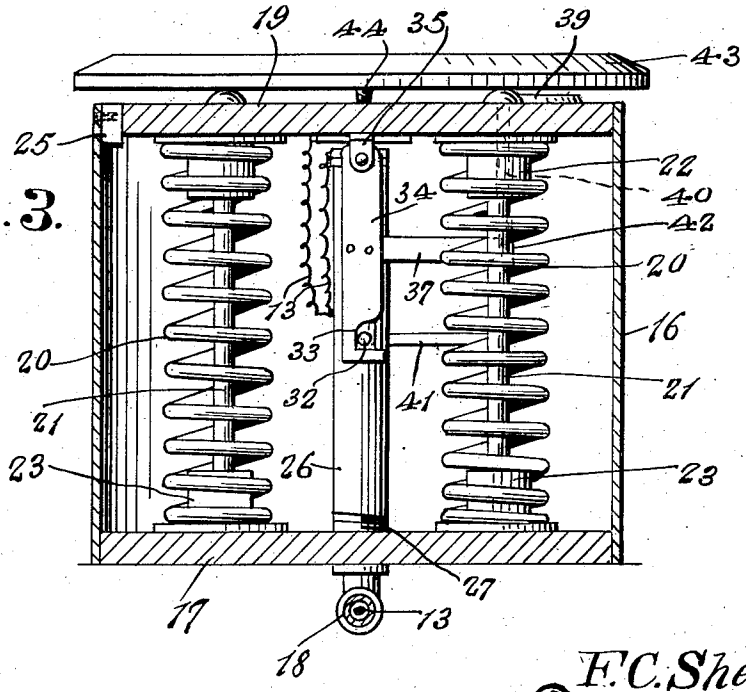


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DOOR LOCK AND OPENER.

1,334,805. Specification of Letters Patent. Patented Mar. 23, 1920.

Application filed November 17, 1916. Serial No. 131,862.

To all whom it may concern:

Be it known that I, FRANK C. SHERMAN, a citizen of the United States, residing at Alden, in the county of Erie and State of New York, have invented certain new and useful Improvements in Automatic Door Locks and Openers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object to provide an improved and efficient automatic door lock and opener particularly designed for use in connection with garage doors, whereby the door lock is automatically released by the approaching vehicle and is automatically opened by a weight.

Another object is the provision of an automatic door lock of the electrically operated type embodying a vehicle operated circuit closer by which the door lock is automatically released by the approaching vehicle.

Another object is the provision of a novel type of vehicle operated circuit closer embodying features of construction by which the tension of the vehicle operated springs may be adjusted to adapt the circuit closer for use in connection with vehicles of varying weights.

With these and other objects in view, the invention consists in the novel construction, combination and arrangement of parts as will be hereinafter specifically described, claimed and illustrated in the accompanying drawings, in which:

Figure 1 represents a perspective view of a garage, showing the invention applied to use,

Fig. 2 represents a vertical sectional view through the vehicle operated circuit closer,

Fig. 3 represents a vertical sectional view, taken at right angles to Fig. 2,

Fig. 4 represents a horizontal sectional view through the circuit closer, and

Fig. 5 represents a fragmentary sectional view through the relatively stationary and movable contact members of the circuit closer.

Referring to the drawings in detail, wherein similar reference numerals designate corresponding parts throughout the several views, the numeral 5 indicates a preferred type of garage or other building having a doorway 6 therein, adapted to be closed by a slidable door 7, which is supported upon a track 8 and is connected with a flexible cable 9. A spring retarding member 7^a is fastened to the building 5 and is adapted to engage the rear surface of the door 7, during the opening movement thereof, to yieldably retard its movement. The cable 9 is extended over a pulley 11, and is connected by a weight 10, which, when the door is released, automatically moves said door to open position. The door 7 is adapted to be locked in closed position by an approved type of electrically operated lock 12, which is connected with electrical conductors 13 and a battery 14, or other source of electro-motive force.

In order to automatically close the circuit to the electrically operated lock 12 and release the door 7 to permit the latter to move to closed position under the pull exerted by the weight 7, I provide an improved type of vehicle operated circuit closer, designated generally by the numeral 15, and including an outer casing 16 of cylindrical formation connected with a base member 17. The casing 16 is sunk into the roadway leading to the garage 5 at a suitable distance therefrom and connects with a conduit 18 in which are housed the wires, or conductors, 13 leading to the electrically operated switch 12. A vertically movable plate 19 is resiliently supported in elevated position within the casing 15 by a plurality of vertically disposed coil springs 20, which are coiled about bolts 21, fastened at their upper ends to the plate 19, extend downwardly through flanged spring retainers 22, arranged under the plate 19, and through spring retainers 23 slidably mounted upon the lower ends thereof. The lower terminals of the bolts, or rods, 21 are externally screw-threaded and are received by nuts 24, whereby the retaining members 23 may be advanced or moved upwardly upon the bolts 21 to increase the tension of the springs 20. The retaining members 23 constitute seats which rest upon the base plate 17 and support the plate 19. The plate 19 is formed with a circumferential recess receiving a key 25, whereby the plate is prevented from rotating in the outer casing 15.

A hollow post 26 is threaded in an axial opening 27 formed in the circular base plate 17 and terminates below the base plate 17. A cap 28 is detachably fitted over the upper terminal of the post 26 and is secured to a

rectangular insulator 29 upon which is supported a relatively stationary contact member 30. The wires 13 are extended through an aperture formed adjacent the upper terminal of the hollow post 26 and one of them is electrically connected to the relatively stationary contact 30.

A movable contact member 31 is rigidly fastened to the under side of the plate 19 directly over contact member 30, and is adapted, during downward movement of the plate 19, to engage the contact member 30 and complete a circuit through the wires 13 to the electrically operated lock 12.

A pair of diametrically opposed and radially projecting arms 32 are rigidly secured to the hollow post 26 intermediate the ends of the latter, and are adapted to engage in recesses 33 formed in a pair of latch members 34, pivotally secured at 35 to brackets attached to the under side of the plate 19, whereby the said plate and parts connected therewith are prevented from being removed from the casing 15 by an unauthorized person. The latch members 34 are normally retained in engagement with the arms 32 by a spring 36, which is attached at one end to the plate 19 and at its opposite end to a substantially U-shaped strip 37 connecting the latch members.

An approved type of rotary barrel lock 39 is rigidly fastened in the top plate 19 and the key operated barrel thereof is connected with a vertically disposed rod 40, which is journaled adjacent its lower end in a guide arm 41 attached to the hollow post 26, whereby when the key is inserted in the barrel of the lock 39 the rod 40 may be rotated so as to swing the laterally projecting plate 42 carried thereby against the web of the U-shaped member 37 to move the latter outwardly and disengage the latch members 33 from the arms 32 and permit removal of the plate 19, springs 20 and parts associated therewith.

A wheel-engaging plate 43 of greater diameter than that of the casing 16 is secured by screws, or equivalent fastening means to the top of the plate 19, and is arranged in proximity to the surface of the roadway so as to be engaged and depressed incident to the passage of the vehicle wheel thereover.

In use, a vehicle approaching the garage engages and depresses the plates 43 and 19, against the tension of the springs 20, moving the contact member 31 into engagement with the contact members 30 and closing the circuit to the electrically operated lock 12, thus releasing the door 7 and permitting the latter to move to open position under the pull exerted by the weight 10. The tension of the springs 20 may be varied so as to cause the plates 43 and 19 to be depressed by vehicles of various weights, by adjusting the nuts 24 longitudinally upon the bolts or rods 21, and the post 26 may also be adjusted, with relation to the plate 17, simultaneously with the adjustment of the springs 20.

The plate 19 is normally locked against removal from the casing 16 by the latch members 33 engaging the arms 32, but when it is desired to remove the interior mechanism of the vehicle operated circuit closer to adjust or repair the parts thereof the key is inserted in the lock 39 and rotated, thereby rotating the rod or shaft 40 and engaging the plate 42 with the U-shaped member 37 and swinging the latch members 34 out of engagement with the arms 32.

What I claim is:

A vehicle operated circuit closer including a base carrying a casing, a post secured to the base and extending upwardly in the casing, a stationary contact secured to the post, a plate mounted for movement in said casing, a movable contact secured to said plate, tension means between the plate and base, oppositely disposed lugs formed on said post, latch members pivoted to the plate and having notches to receive the lugs, a U-shaped member connecting said latch members, a spring connected to said U-shaped member and to the plate, a vertically disposed rod journaled in the casing adjacent the post, a lateral projection on said rod and adapted to engage the U-shaped member for disconnecting the latch members from the lugs, and a key barrel controlled by a key and connected to said rod for rotating the same.

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

FRANK C. SHERMAN.

Witnesses:
JENNIE O. COOKE,
E. F. COOKE.