

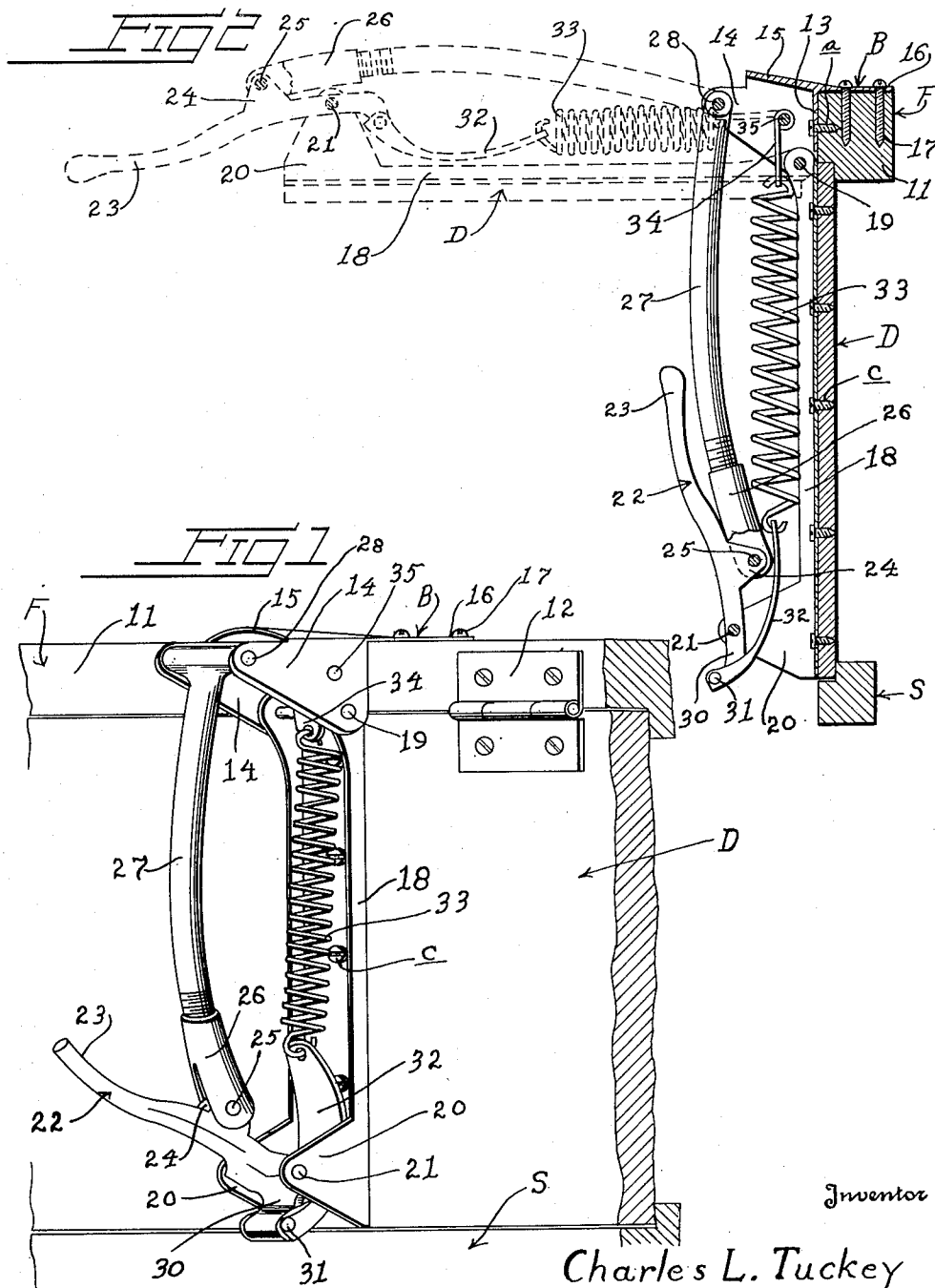
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DOOR OPENER

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DOOR OPENER

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The invention relates to door openers and the primary object of the invention is to provide an overhead door opener adapted to be used also as a means for securing a door in closed position.

Another object of the invention is to provide a door opener of the character indicated above which opens the door easily and readily when the opener is adjusted in door releasing position.

A further object of the invention is to provide a door opener of the character indicated above which automatically secures the door in open position whenever the door is opened fully.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved door opener, whereby certain advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in perspective of a door opener embodying the invention and in applied position; and

Figure 2 is a view partly in section and partly in side elevation, a second position of certain of the parts being indicated by broken lines.

In the embodiment of the invention as illustrated in the accompanying drawings, the bracket B is secured in desired position on an outer or vertical face of the top or crown member 11 of a door frame F and to which member 11 is hingedly secured, as at 12, for up and down swinging movement, a door D. The bracket 10 comprises a back plate 13, anchored, as by a screw a to the member 11 and the side marginal portions of the plate 13 are provided with the outstanding and substantially perpendicularly related side plates 14 substantially in parallelism.

The upper rear marginal portions of the side plates 14 are connected by a top plate 15 disposed forwardly and upwardly on a predetermined incline, which plate 15 is herein disclosed as arcuate in cross section with its outbow upwardly disposed.

The rear margin of the back plate 13 is herein shown as continued by an anchored plate 16 extending over the adjacent portion of the member 11 of the frame F and secured thereto, as at 17, by screws.

An elongated channel member 18 has one extremity extending between the lower rear portions of the side plates 14 and pivotally held

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thereto by the pin 19. This pin 19 is axially alined with the pintles b of the hinges 12 to assure unobstructed up and down swinging movement of the door D to which the member 18 is secured by the screws c or otherwise as may be preferred.

The member 18 is disposed over the door D from substantially the top to the bottom thereof and the lower portion of the member 18 is provided with the outstanding and transversely spaced ears 20. Extending between these ears 20 is an end portion of an elongated operating lever 22 pivotally held by the pin 21 to the ears 20.

The lever 22 has an elongated portion 23 which is normally upwardly disposed or in a direction toward the top hinged portion of the door D. The portion 23, which constitutes the handle for the lever, is provided at a point inwardly of the ears 20 but in close proximity thereto, with inward lugs 24 to which is pivotally engaged, as at 25, a clevis 26 threaded upon an end portion of a rod 27. The opposite extremity of the rod 27 is pivotally engaged, as at 28, with and between the side plates 14 at a point materially above and in advance of the pivot 25.

The lever 22 has a short arm 30 downwardly from the pivot 25 and curved outwardly in a direction away from the door D. Pivotaly connected, as at 31, to the outer and free extremity of the arm 30 is an end portion of an elongated link 32 which extends from the pivot 31 toward the pivot 19 between the door D and the lower portion of the rod 27. To assure this position at all times the link 32 is longitudinally curved as shown.

Secured to the upper or free extremity of the link 32 is an end of a retractile member 33 of requisite tension and herein disclosed as a coil spring. The opposite end of the spring 33 is secured to the lower or free extremity of a plate 34 freely suspended from a pin 35 supported by and bridging the space between the side plates 14. This pin 35 is herein shown as substantially midway of the pivotal mountings 19 and 28 and slightly in advance of the pivotal mounting 19.

When the door D is to be held fully closed against the bottom sill S, the handle portion 23 of the lever 22 is forced towards the door D urging the rod 27 upwardly and inwardly until the pivot 25 passes dead center between the pivotal mountings 21 and 28. The give of the door D allows for such movement.

After the pivot 25 passes dead center, the member or spring 33 will urge inwardly arm 32

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and lever 22 and thereby hold the door lightly in closed position until the handle 23 of the lever 22 is pulled away from the door D to return the pivot 25 past dead center whereupon the member spring 33 will swing the door D upwardly into open position.

When the door D is in fully opened position, the pivot 25 will have passed around and beyond the dead center of the pivots 21 and 28 and thereby locking the door D in said open position.

From the foregoing description it is thought to be obvious that a door opener constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. A door opener of the character stated for a door hingedly mounted in a door frame, said opener comprising a rigid bracket mounted on said frame at the hinge edge of the door, a connecting rod pivotally supported at one end by said rigid bracket and extending across the face of the door, an elongated bracket secured to and extending across the said face of the door and pivotally connected at one end with the rigid bracket adjacent to the pivoted end of the rod, a hand lever pivotally supported on the other end of said elongated bracket remote from the rigid bracket, and a pivot connection between the other end of the connecting rod and the hand lever.

2. A door opener of the character stated for a door hingedly mounted in a door frame, said opener comprising a rigid bracket mounted on said frame at the hinge edge of the door, a connecting rod pivotally supported by said rigid bracket, an elongated bracket secured to and extending across the door and pivotally connected with the bracket, a hand lever pivotally supported on the elongated bracket remote from the rigid bracket, the connecting rod being pivotally connected with the hand lever, said hand lever being supported intermediate its ends, the end portion of said lever adjacent to the edge of the door remote from the hinge edge being curved away from said door, and a helical spring secured at one of its ends to the rigid bracket and secured at its other end to the curved end portion of the hand lever.

3. A door opener of the character stated for a door hingedly mounted in a door frame, said opener comprising a rigid bracket mounted on said frame at the hinge edge of the door, a connecting rod pivotally supported by said rigid bracket, an elongated bracket secured to and

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extending across the door and pivotally connected with the bracket, a hand lever pivotally supported on the elongated bracket remote from the rigid bracket, the connecting rod being pivotally connected with the hand lever, said hand lever being supported intermediate its ends, the end portion of said lever adjacent to the edge of the door remote from the hinge edge being curved away from said door, and a helical spring secured at one of its ends to the rigid bracket and secured at its other end to the curved end portion of the hand lever, the combined length of the distances between the two pivot points of the connecting rod and the two pivot points on the hand lever being slightly longer than the distance between the pivot point of the connecting rod on the rigid bracket and the pivot point of the hand lever on the elongated bracket, the hand lever providing means to lock the door in either closed or opened position.

4. An opener of the character stated for a door hingedly mounted in a door frame, said opener comprising a hand lever, a single pivot directly pivotally coupling said lever adjacent to one end to the door at a location remote from the hinge edge thereof, a connecting rod extending across the face of the door and pivotally secured at one of its ends to the frame adjacent to the hinge edge of the door, and a lug on the hand lever, the other end portion of the connecting rod being pivotally connected with said lug.

5. An opener of the character stated in claim 4, wherein said lug is at the side of the hand lever pivot nearest to the hinge edge of the door, a coil spring, a pivotal coupling between an end of the spring and lever on the side of the lever pivot remote from the lug, and a coupling between the other end of the spring and said frame, said spring lying between the said face of the door and the connecting rod.

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