

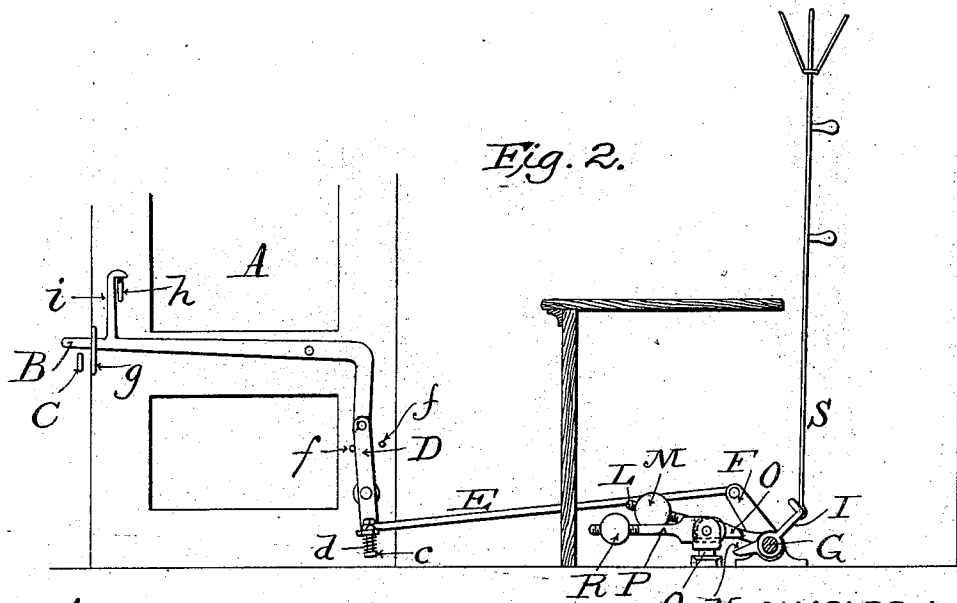
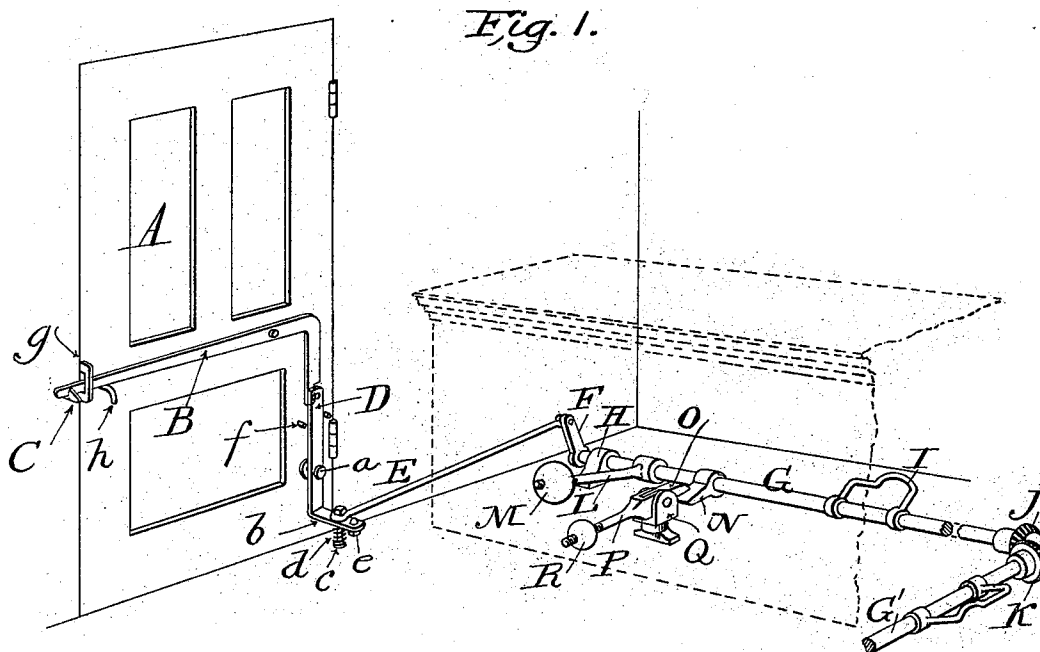
(No Model.)

2 Sheets—Sheet 1.

C. L. RICE.
DOOR OPERATING DEVICE.

No. 503,985.

Patented Aug. 29, 1893.



Attest:

James F. Duhamel
Chas. W. Bull.

CHARLES L. RICE,
Inventor,
by Dodge & Sons
Attys.

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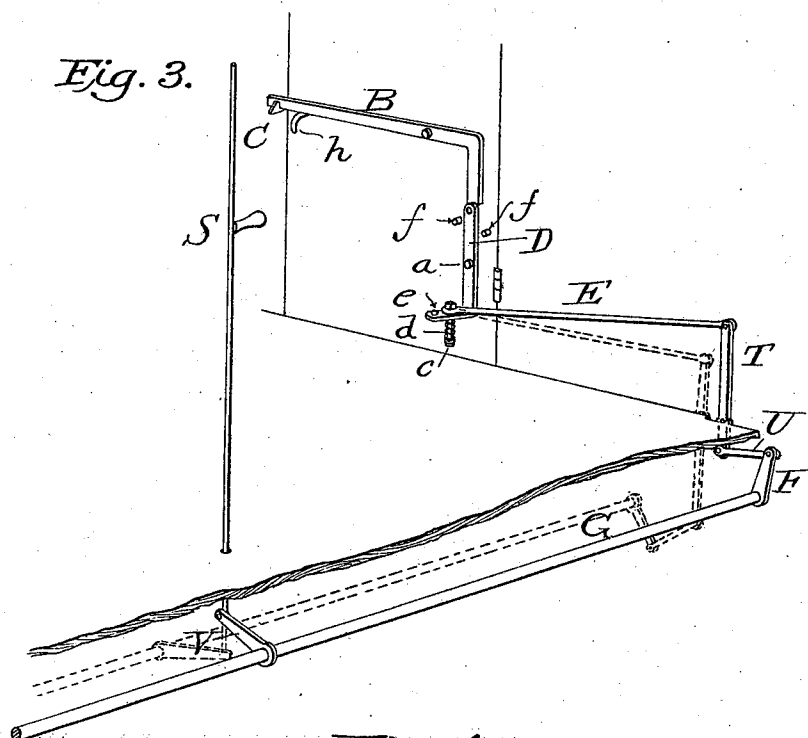
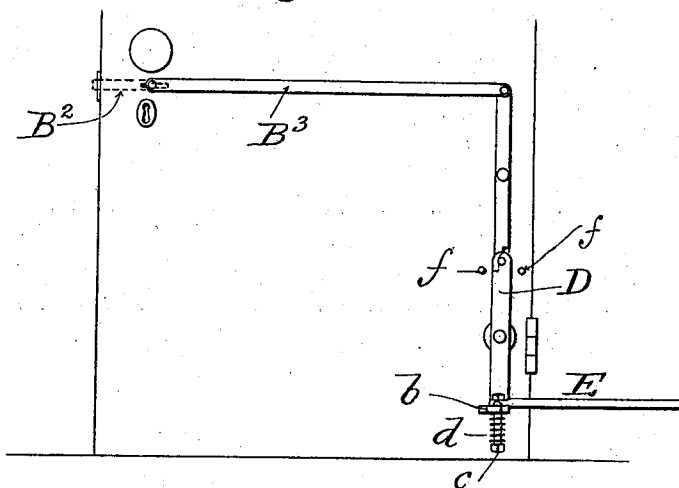


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES L. RICE, OF GRANITE FALLS, MINNESOTA, ASSIGNOR OF ONE-
THIRD TO OLE H. SORLIEN, OF SAME PLACE.

DOOR-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 503,985, dated August 29, 1893.

Application filed September 13, 1892. Serial No. 445,739. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. RICE, a citizen of the United States, residing at Granite Falls, in the county of Chippewa and State of Minnesota, have invented certain new and useful Improvements in Door-Operating Devices, of which the following is a specification.

My invention relates to door-opening or closing or door-opening and closing devices, and consists in a novel construction and arrangement of the same as hereinafter set forth and claimed.

In the accompanying drawings,—Figure 1 is a perspective view partly in section showing my improvements applied to a door; Fig. 2, a face view of the door showing the main actuating shaft at right angles, and also showing slight modifications in certain details; Fig. 3, a view illustrating a further modification in which the actuating shaft is located wholly beneath the floor; and Fig. 4, a view illustrating a modified arrangement of the latch or bolt.

A indicates a door, and B a latch or bolt secured thereto. In the construction shown in Figs. 1, 2 and 3 this latch or bolt B is made in the form of an elbow-lever and is designed to engage the keeper or striker C. The lower end of the latch B is arranged in position to be struck by the upper end of a lever D (or a pin carried thereby), which lever is pivoted at *a* to the door, as shown in the drawings. The lower end of this lever D is bent outward laterally and slightly forward, or provided with a laterally extending arm *b* to which is pivotally secured one end of a rod E. This rod E has at its end an eye or perforation to receive a bolt *c*, which passes through the rod and through the laterally extending arm *b*; said bolt being encircled beneath the arm *b* by a coiled spring *d* which permits a limited movement of the bolt upward through the arm *b* for a purpose presently explained.

In the outer end of the arm *b* is a pin, stud, or projection, *e*, which, as the door is opened, swings under and strikes against the under face of the rod E and raises said rod slightly,—the spring *d* which encircles the bolt *c* allowing for this upward movement of the bolt and the rod E. When the stud or projection *e* has passed under and beyond the

rod E, it will be seen that the door will be prevented from closing accidentally, as it will require the exercise of some force to carry the pin or stud *e* back under the rod E. The tipping or rocking movement of the lever D is limited either by means of pins or studs *f* secured to the door, as in Figs. 1, 2, 3 and 4, or by means of a loop or guiding plate *g* secured to the door, as in Figs. 1 and 2. Any other suitable arrangement of devices may be employed to limit the movement of the lever D and latch B. The latch B may extend over and rest upon the ordinary lever or latch-operating handle *h*, as in Figs. 1 and 3, or it may be provided with an upward hooked extension *i*, as shown in Fig. 2, to engage such handle or actuating lever *h*.

Instead of swinging in a vertical plane as represented in Figs. 1, 2 and 3, the latch may be composed of two or more pieces or members *B*², *B*³ arranged to slide horizontally, as shown in Fig. 4, and to be retracted from either side of the door by means of the knob or latch which actuates the bolt of the mortise or other lock.

In order to rock or tip the lever D and thereby actuate the latch B, I connect the rod E with an arm F projecting radially from a shaft G which is journaled in suitable bearings H secured to the floor as clearly shown in Figs. 1 and 2. This shaft G is provided with an actuating arm or foot-piece I which is made in the form of an open bail or loop, having its rear member curved or bent upward so as to facilitate the insertion of the foot beneath the bail or loop in case the latter should be resting upon the floor.

Where it is desired to have the door operated from several different points in a room or building, the shaft G will be provided with a beveled pinion J, which is designed to mesh or engage with a similar beveled pinion K secured upon a second shaft G' as shown in Fig. 1. The shaft G is provided with an arm L which carries at its free end an adjustable weight M, adjustment of which is readily secured by threading the arm and the hole in the weight which receives the arm. The shaft G is further provided with a short arm or projection N which is adapted to engage a dog or block O pivoted at the inner end of a lever

P, as shown in Figs. 1 and 2, the arrangement being such that when the arm N is carried upward it will raise the dog or block O without affecting the position of the lever P, but when the arm moves downward toward the floor it will strike the block or dog O and raise the lever P a limited distance and then ride off of the dog or projection O. This lever P to which I have referred is pivoted in a standard or support Q adjustably secured to the floor and has its outer end threaded as shown in Figs. 1 and 2 to receive a ball or weight R which is threaded to screw upon the lever, so as to vary the action of the lever. Now when it is desired to open the door the operator presses down upon the bail or foot-piece I, thus imparting to the shaft G a partial rotation backward or away from the door. The motion thus imparted to the shaft G is conveyed by means of the radial arm F and rod E to the lever D,—the latter being rocked or tipped upon its pivot *a* until prevented from such farther movement by the pin *f* or the guide *g*. This movement of the lever D is sufficient to raise the latch B up out of engagement with the keeper C. Now as further movement of the lever D and latch B relatively to or upon the door is prevented by the means just described, it will be seen that a further movement of the shaft G will tend to swing the door upon its hinges. As the door thus swings around or opens, the pin or stud *e* at the outer end of the arm *b* of lever D is carried under the rod E and the latter is raised slightly against the tension of the spring *d*, but as soon as the pin or stud is carried beyond the rod then the spring returns the bolt *c* and the rod E to their proper positions. As the shaft was being turned to unfasten and open the door, the weighted arm or lever L was being at the same time raised or elevated, and the short arm N was being carried up past and above the block or dog O of the lever P. Now if it is desired to close the door it is only necessary to remove the foot from the bail or foot-piece I when the large weight at the end of the lever L will tend to return the shaft G to its normal position. But as the shaft is being thus returned to such position the short arm N strikes upon the upper face of the block or dog O and raises

the outer end of the weight or lever P, this action tending to retard or prevent the sudden closing and slamming of the door by means of the weighted lever N. From this construction it will be seen that the door will be closed gradually and without sudden jar and without the exercise of any power or exertion on the part of the operator.

If desired suitable hand-rods S may be connected to the shaft G as shown in Fig. 2 so as to operate the door-closing mechanism by hand instead of by foot.

In the two arrangements shown in Fig. 3 I have placed the shaft below the floor and have made slight modifications in the connection between the arm F on the end of the shaft and the rod E connected with the lower end of the lever; such modified construction embodying a lever T pivoted to the floor or to the wall near the floor and connected to the radial arm by means of link U. The hand rod S is, under this arrangement connected to a radial arm V corresponding in function and position to the foot-piece or bail I.

Having thus described my invention, what I claim is—

1. In door-operating mechanism, the combination with the door, of a latch secured thereto, a lever D provided with an outwardly extending arm *b* and pivoted to the door, so as to actuate the latch, a rod E connected with the arm *b* so as to swing horizontally and to rise vertically, the stud or projection *e* secured to the outer end of the arm *b*, and means for reciprocating the rod E.

2. In door-operating mechanism the combination with the door, of a latch therefor, a shaft G and intermediate connections for actuating the latch, a weighted lever L secured to said shaft, a weighted lever P provided with a pivoted dog O and an arm N secured to the shaft and adapted to strike the dog during the closing of the door, all substantially as shown and described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

CHARLES L. RICE.

Witnesses:

CARL C. BROWN,
D. A. McLARTY.