No. 689,177. Patented Dec. 17, 1901.

I. L. GARSIDE.

GRAVITY LOCK.

(Application filed Feb. 21, 1901.)

(No Model.) 2 Sheets—Sheet 1.

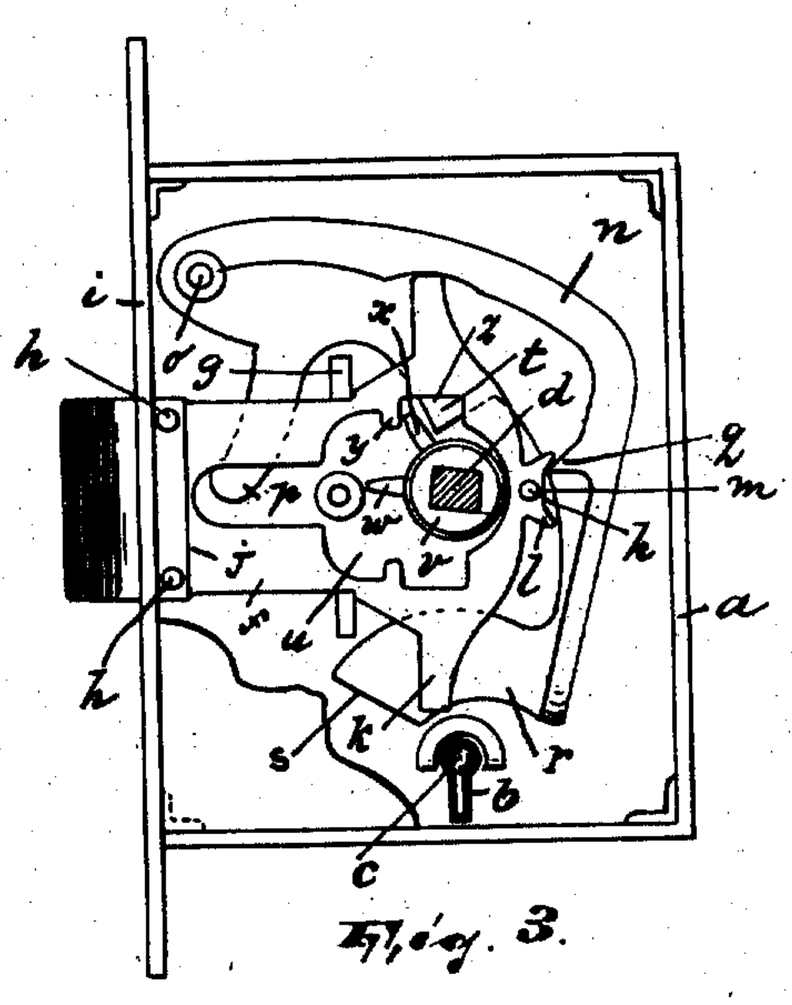

Fig. 3.

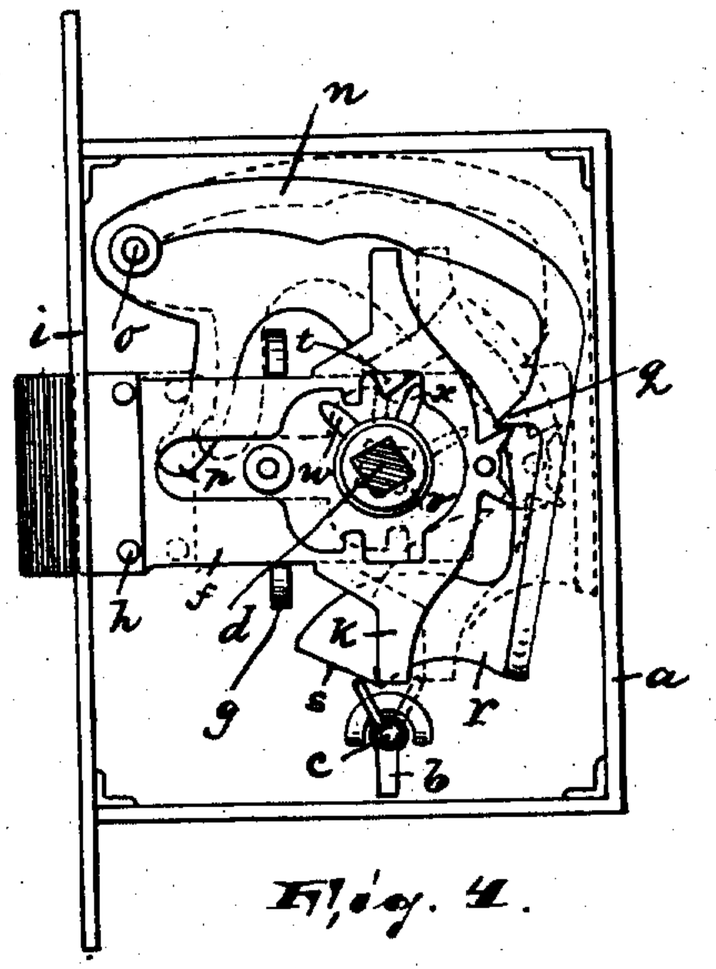

Fig. 4.

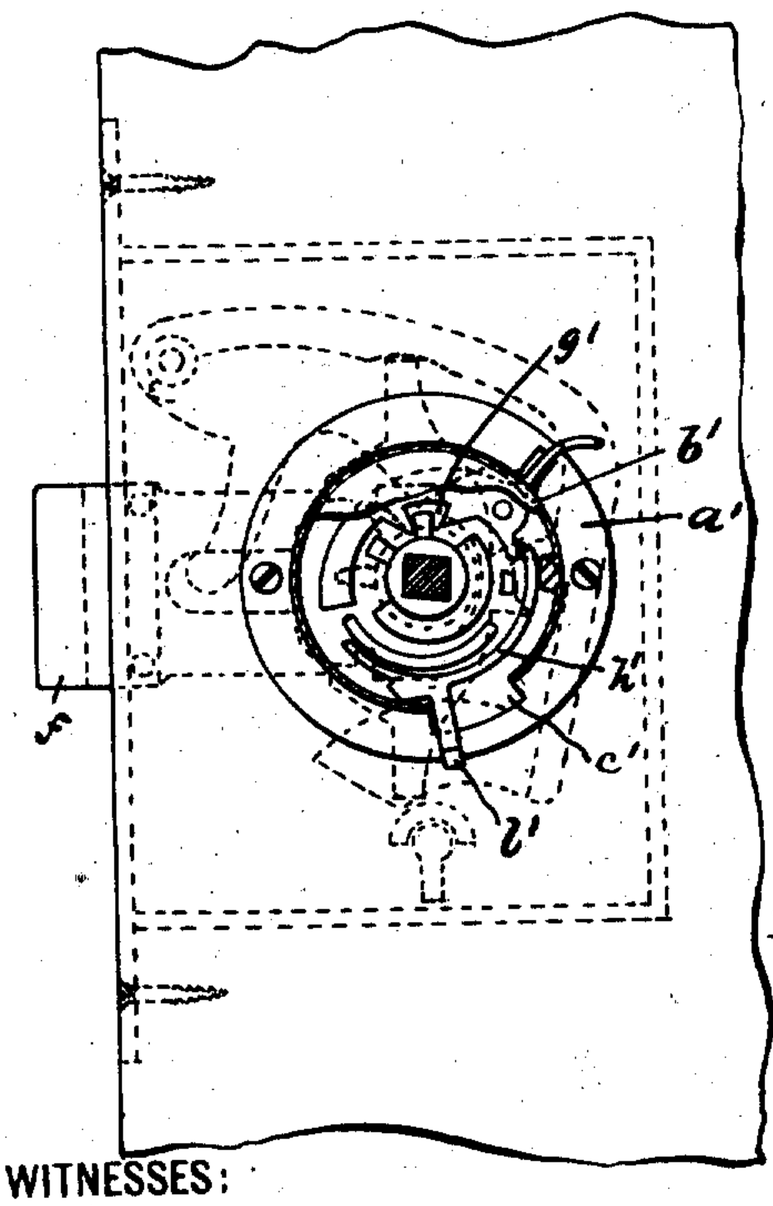

Fig. 2.

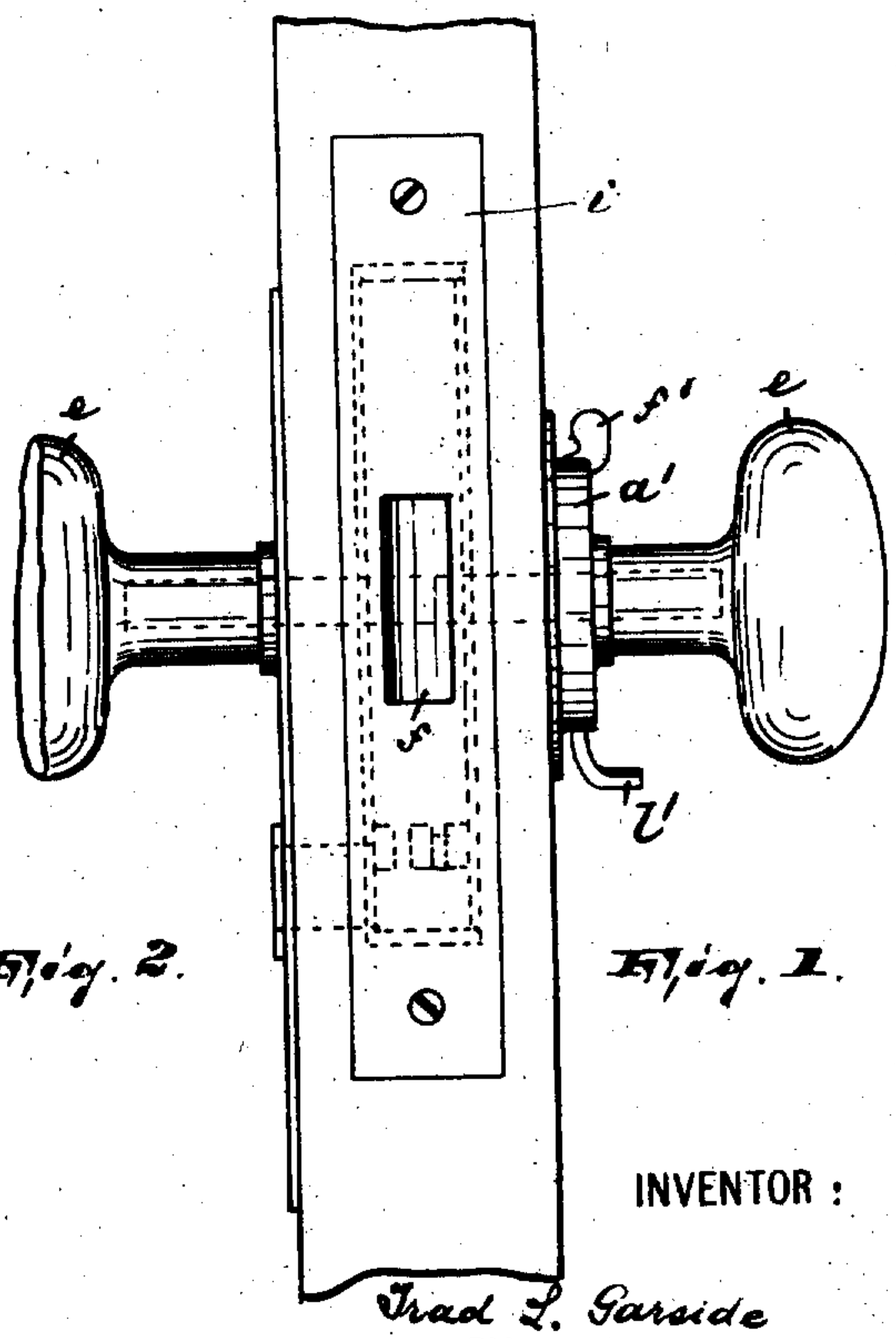

Fig. 1.

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I. L. GARSIDE.

GRAVITY LOCK.

(Application filed Feb. 21, 1901.)

(No Model.) 2 Sheets—Sheet 2.

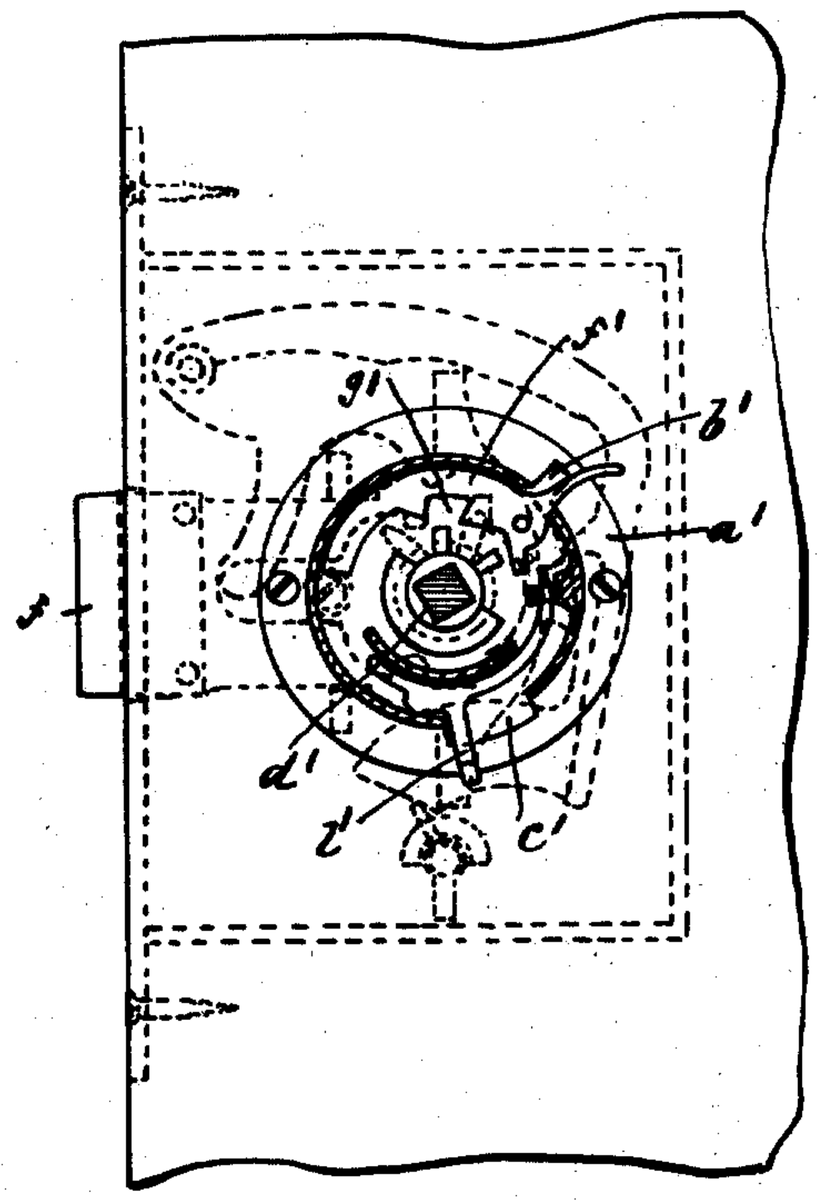

Fig. 5.

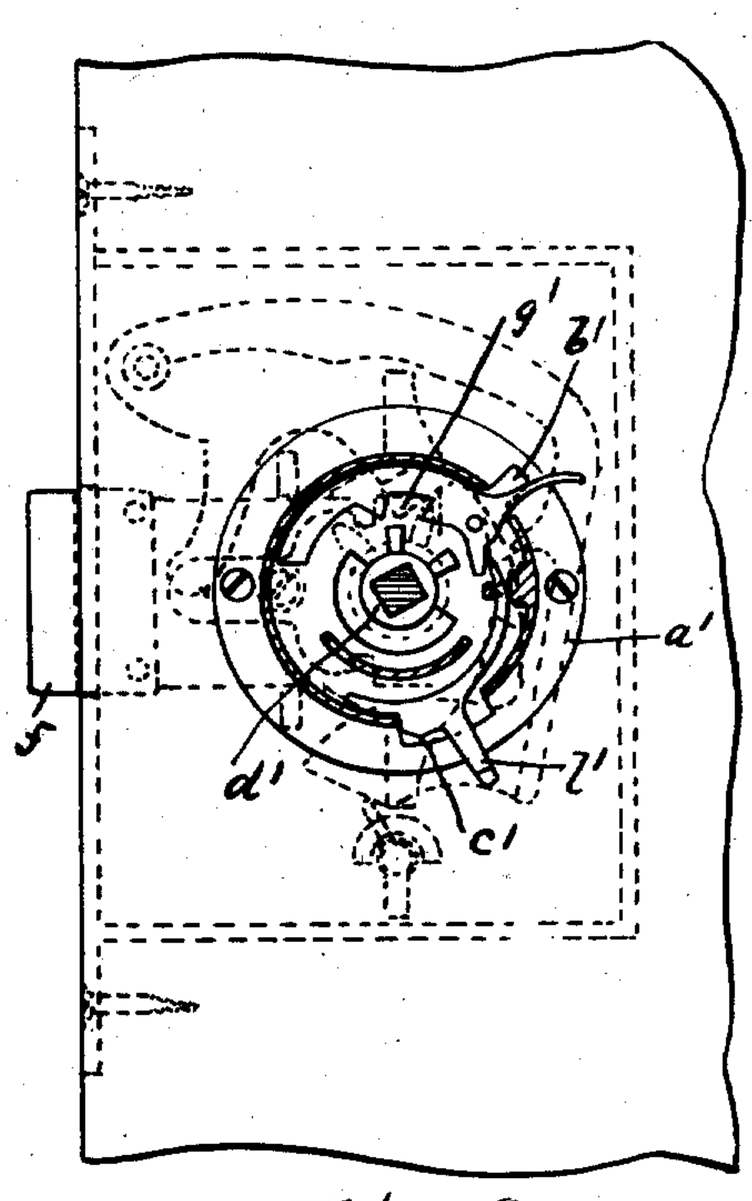

Fig. 6.

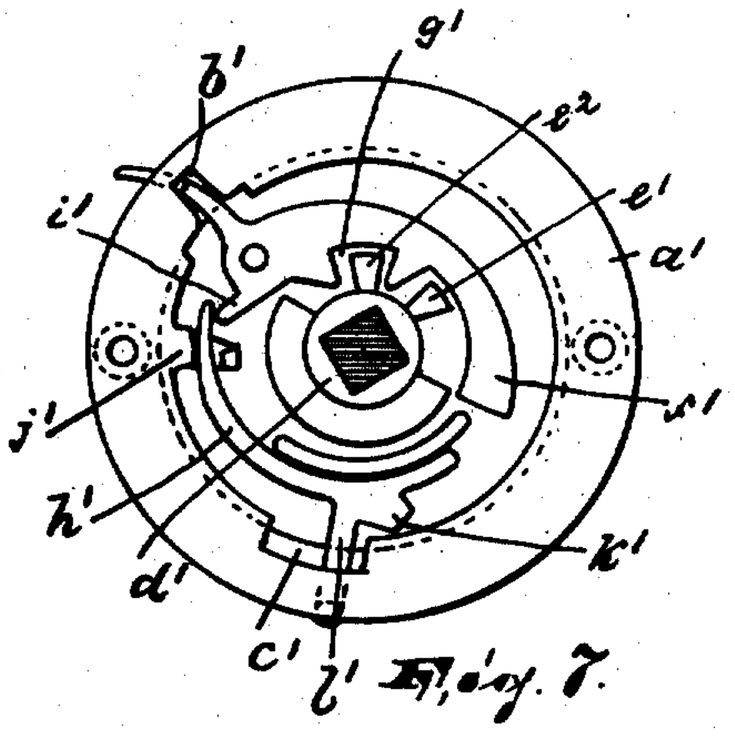

Fig. 7.

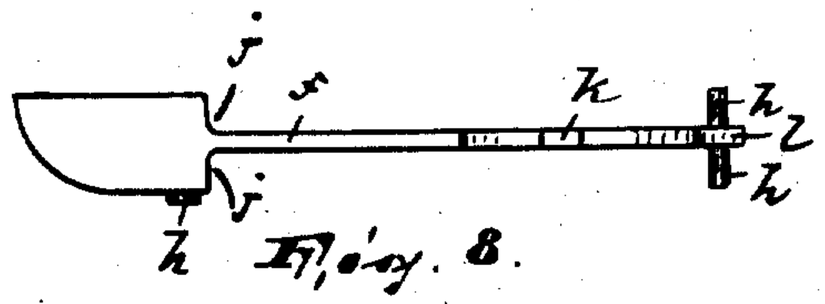

Fig. 8.

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UNITED STATES PATENT OFFICE.

IRAD L. GARSIDE, OF PATERSON, NEW JERSEY, ASSIGNOR OF ONE-FOURTH TO JAMES G. OXLEY, OF PATERSON, NEW JERSEY.

GRAVITY-LOCK.

SPECIFICATION forming part of Letters Patent No. 689,177, dated December 17, 1901.

Application filed February 21, 1901. Serial No. 48,216. (No model.)

To all whom it may concern:

Be it known that I, IRAD L. GARSIDE, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Gravity-Locks; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a simple and efficient securing mechanism for doors and the like which shall combine in a single structure the functions of a free latch, a dead-latch, and a combined lock and bolt.

The invention will be found fully illustrated in the accompanying drawings, wherein corresponding reference characters indicate like parts in the several figures, and wherein—

Figure 1 is a view in front elevation of the mechanism arranged in position in a door. Fig. 2 is a view in side elevation of substantially what is shown in Fig. 1. Fig. 3 is a side view of the lock proper with its cover removed to disclose the internal mechanism, the parts being disposed as when bolting the door. Fig. 4 is also a side view of the lock proper with its cover removed to disclose the internal mechanism, dotted lines being used to illustrate positions which certain of the parts may assume. Figs. 5 and 6 are views substantially like Fig 2, except that the positions of certain of the parts are changed. Fig. 7 is an inside view of a certain mechanism serving to control the knob-spindle, and Fig. 8 is a plan view of the bolt.

In said drawings, *a* designates a rectangular lock-case having the usual keyhole *b* for the reception of the key *c*, while *d* denotes the knob-spindle, arranged to turn in said lock-case in the usual manner and carrying knobs *e*.

f is the bolt. This bolt has rectilineal movement between guiding-lugs *g*, projecting inwardly from one of the side walls of the case, and it is provided with studs *h*, which are adapted to bear against said side walls to insure the true movement of the bolt. One or more of these studs are adapted to engage the inner face of the wall *i* of the case to limit the outward movement of the bolt. The body portion of the bolt is reduced in thickness relatively to the protruding portion thereof, so that on each face it presents an abutment *j*. Its inner or rear end is formed with upwardly and downwardly projecting arms *k*, and at its inner extremity is formed a pair of detents or rests *l*, between which, as at *m*, the material of the bolt is preferably slightly recessed. The abutments *j*, arms *k*, and detents or rests *l* are not only duplicated, but they are also correspondingly disposed so that thus the bolt is made reversible in the lock-case.

n designates a controlling-dog for the bolt, said dog being preferably fulcrumed in the case, as at *o*, and gravity-actuated. This dog is formed with an arm *p*, which engages one of the abutments *j*, a tooth or lug *q*, adapted to normally seat upon the upper detent or rest *l*, and also to take against the inner end of the bolt in the recess *m* under certain conditions hereinafter explained, and a projection *r*, which extends into proximity to the keyhole and has its extremity formed to present an oblique or cam-like edge *s* to the key. Said dog is also formed with a tapering detent *t*, situated just above the spindle *d*.

The body portion of the bolt is cut away to form an opening *u*, through which the knob-spindle extends, and in this opening, arranged on said spindle to turn therewith, is a segment *v*, having two teeth *w x*. The tooth *w* is adapted to engage a lug *y* of the bolt projecting into said opening, while the other tooth *x* extends into a recess *z* of the bolt, constituting an extension of said opening. This lug and recess are of course duplicated and the thus-duplicated parts correspondingly disposed in the bolt for the reason already sufficiently explained. It should be remarked that the tapering detent or cam *t* of the dog is adapted to overlap said recess *z*, as seen in Figs. 3 and 4.

From the description so far afforded and upon a view of the drawings it will be seen, first, that the bolt is normally pressed outwardly under the action of the gravity-ac-

tuated dog *n;* secondly, that in the normal rest position of the parts said dog is sustained by the bolt by virtue of its tooth *q* seating on the upper rest *l;* thirdly, that by virtue of the fact that one of the seating-faces of the tooth *q* and rest *l* is substantially parallel to the direction of movement of the bolt the latter is at this point susceptible of a longitudinal movement independently of the dog; fourthly, that upon forcing the bolt forward from its normal rest position (see Fig. 4) the tooth of the dog will be dislodged from said rest *l*, and the dog falling farther and meantime reengaging and pressing the bolt still farther outwardly by means of its arm *p* will assume a position opposite the end of the bolt, so as to positively lock the same against movement; and, fifthly, that upon reversing the action of the spindle its tooth *x* will first engage the detent *t* of the dog, so as to elevate the latter and move its lug *q* out of the way preliminarily to engaging and forcing back the bolt.

At this point it may be well to remark that by overlapping the recess *z* the detent *t* acts as a keeper for normally maintaining the tooth *x* of the segment whichever side of it said tooth is forced, as respectively illustrated in Figs. 3 and 4. Thus accidental turning of the knob-spindle is obviated.

To the inside of the door and penetrated by the knob-spindle is secured a hollow rose *a'*, having two openings *b' c'* in its peripheral wall. Mounted on the spindle and turning therewith within said rose is a segment *d'*, having a pair of teeth *e' e²*. Said rose incloses a weighted catch *f'*, which is pivoted therein and which has a notch *g'*, adapted to receive either of the teeth *e' e²*. One end of this catch protrudes through the opening *b'* of the rose to form a handle. Said rose also incloses a release lever or trip *h'*, said trip being of curved form and having one end arranged to engage a toe *i'* of the catch and actuate the latter when said trip is moved as a lever upon a fulcrum afforded in a lug *j'* of the rose. The free end of this trip has a notched enlargement *k'*, movable into the opening *c'* of the rose and adapted to engage the edge thereof to keep it there. Said trip also has a thumb-piece *l'*, which protrudes through the opening *c'*. The tendency of the catch is thus to automatically lock the spindle against movement. Thus unless held out of engagement with the segment *d'* by the trip the spindle can be operated from the inside only, where its release by manually disengaging the catch is possible. Therefore by either thus locking or releasing the spindle the mechanism is made to have the function of either a free latch or a dead-latch at will.

The arms *k* of the bolt are made of sufficient length so that the lower one will, like the cam-like edge *s* of the projection *r* of the dog, lie in proximity to the keyhole, and thus the bolt is rendered controllable from the outside by the key *c*. It is, however, to be noted that even this medium of outside manipulation of the mechanism may be rendered ineffective, so that said mechanism can only be operated from the inside, where access to the catch may be had, if said catch is arranged so that it engages the tooth *e'* of the segment *d'*, thus locking the bolt in the bolting position.

It should be remarked that one or the other of the upper or lower bearing-surfaces of the rest *l* and tooth *q*, respectively, should be at least substantially parallel to the direction of movement of the bolt, so that though a sufficiently stable rest for the dog is afforded, yet the manual throwing forward of the bolt may be readily effected. Moreover, the recess *m* is not essential, it being only necessary that one of the bearing-surfaces of the dog and bolt at this point have a disposition at least substantially parallel with the direction of movement of the dog.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a case, of a sliding bolt, a movable dog having a cam-like engagement with said bolt and adapted to force the same longitudinally, said bolt and the dog having coengaging wiping-surfaces arranged the one substantially parallel with the direction of movement of the bolt and adapted, when engaged with each other, to permit said bolt to move independently of the dog, and means for manually actuating said bolt, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, substantially as described.

2. The combination, with a case, of a sliding bolt, a movable dog having a cam-like engagement with said bolt and adapted to force the same longitudinally, said bolt and the dog having pairs of coengaging wiping-surfaces of which one in one pair is arranged substantially parallel to the direction of movement of said bolt so that when engaged with the other in the same pair, the bolt will be free for movement independently of the dog, while one in the other pair is arranged substantially parallel with the direction of movement of said dog, and means for manually actuating said bolt, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, substantially as described.

3. The combination, with a case, of a sliding bolt, a movable dog having a cam-like engagement with said bolt and adapted to force the same longitudinally, said dog being movable substantially transversely to the direction of movement of said bolt and said bolt and the dog having pairs of coengaging wiping-surfaces of which one in each pair is arranged substantially parallel with the direction of movement of the bolt while one in the other pair is arranged substantially parallel with the direction of movement of said dog, an operating-spindle arranged to turn in the

case, a projection on said spindle, and a cam-like detent on the dog adapted to be engaged by said projection, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, substantially as described.

4. The combination, with a case having a keyhole, of a sliding bolt, and a pivoted dog having a wiping engagement with said bolt and adapted to force the same longitudinally, said bolt and the dog each having a projection extending in proximity to the keyhole and said bolt and the dog also having pairs of coengaging wiping-surfaces of which one in one pair is arranged substantially parallel with the direction of movement of said bolt while one in the other pair is arranged substantially parallel with the direction of movement of said dog, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, substantially as described.

5. The combination, with a case, of a sliding bolt, a movable dog having a cam-like engagement with said bolt and adapted to force the same longitudinally, said bolt and dog having pairs of coengaging wiping-surfaces of which one in one pair is arranged substantially parallel to the direction of movement of said bolt while one in the other pair is arranged substantially parallel with the direction of movement of said dog, a spindle arranged to turn in said case and having operative connection with said bolt, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, and manually-controlled spindle-locking means, substantially as described.

6. The combination, with a case, of a sliding bolt, a movable dog having a cam-like engagement with said bolt and adapted to force the same longitudinally, said bolt and the dog having pairs of coengaging wiping-surfaces of which one in one pair is arranged substantially parallel to the direction of movement of said bolt while one in the other pair is arranged substantially parallel with the direction of movement of said dog, a spindle arranged to turn in said case and having operative connection with said bolt, the points of cam-like engagement of said members with each other being equidistant from their respective wiping-surfaces, a projection on said spindle, and a tapering detent on the dog adapted to be engaged by said projection, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of February, 1901.

IRAD L. GARSIDE.

Witnesses:
ALFRED GARTNER,
ROBERT J. POLLITT.