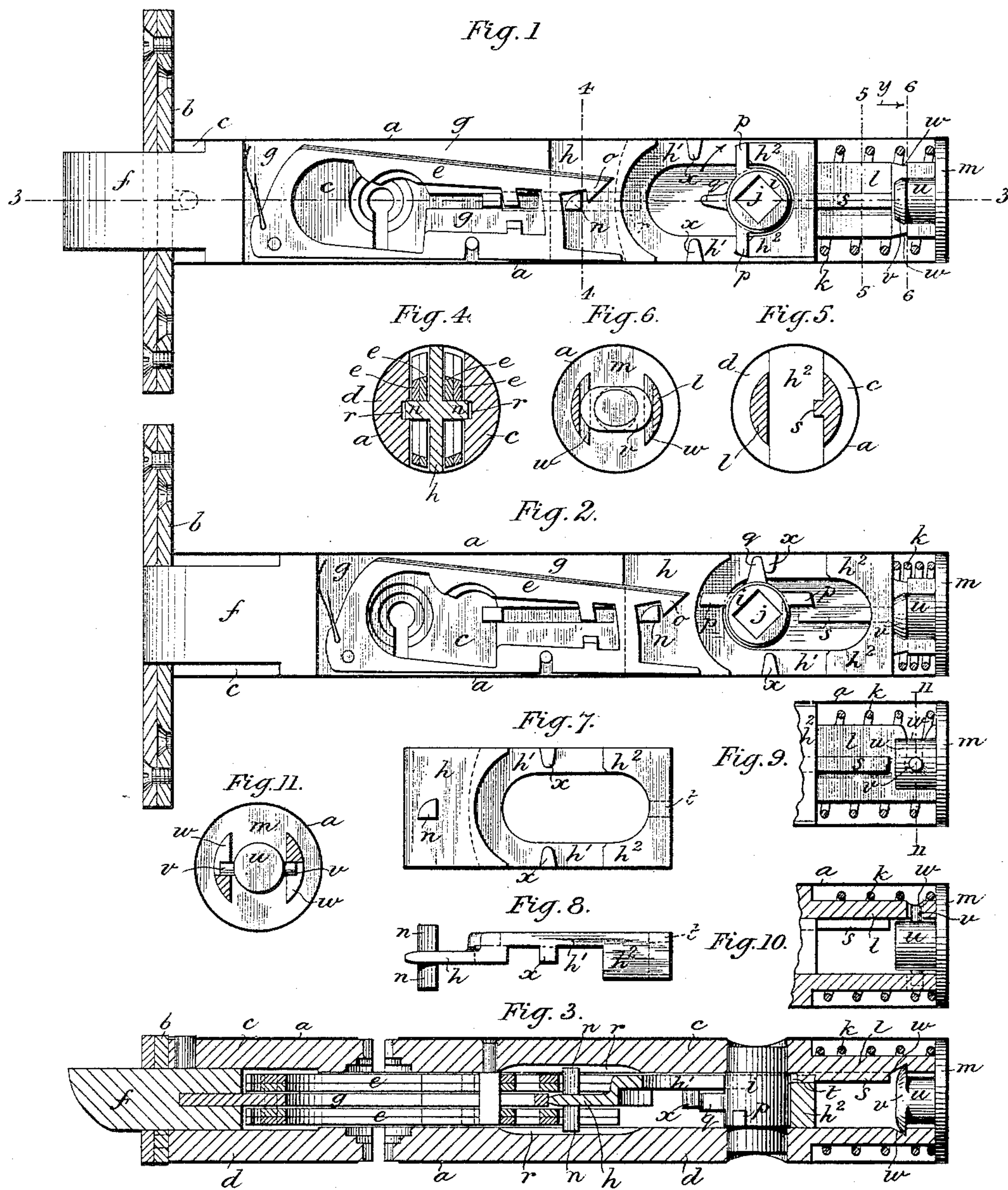


(No Model.)

F. J. BIGGS.  
LOCK.

No. 450,765.

Patented Apr. 21, 1891.



WITNESSES

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# UNITED STATES PATENT OFFICE.

FREDERICK JAMES BIGGS, OF LONDON, ENGLAND, ASSIGNOR TO THE TUBULAR LOCK SYNDICATE, LIMITED, OF SAME PLACE.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 450,765, dated April 21, 1891.

Application filed June 17, 1890. Serial No. 355,760. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK JAMES BIGGS, of London, England, have invented certain new and useful Improvements in Tubular Locks, of which the following is a specification.

In the construction of tubular locks one great difficulty met with is the very limited space in which the mechanism has to be contained. It is very desirable, for obvious reasons, that when these locks are used as door-locks the spindle-holes of the "follows" of the locks should be adapted to receive that sized spindle which is in common use throughout the world. The size—that is to say, the sectional area—of this spindle is, however, so large in proportion to, say, a three-quarter-inch tubular lock that the space left above and below the spindle-hole is very small. The wings of the follow, upon which the whole working of the lock depends, have thus a very restricted bearing upon the follow-plate during the turning movement.

The object of this invention is to give the follow a greater bearing than heretofore upon the follow-plate. With this object the bolt-plate is not, as heretofore, extended between the follow-plate and one of the side walls of the lock. The follow is not made to ride, as heretofore, upon the bolt-plate and the follow-plate, but upon the follow-plate alone, and the follow-plate is made as thin as is consistent with the necessary strength at that part in which the follow turns, while the rear part of the follow-plate is of the whole thickness or width of the space between the two walls. The follow in turning has thus a bearing equal to this thickness less the thickness of the follow-plate at that part in which the follow turns.

Another difficulty met with in tubular locks is that the distance that the follow-plate is moved back in the turning movement of the follow by the action of the follow-wing against the follow-plate is so short that the corresponding distance through which the latch moves is insufficient to insure that the latch will engage properly with its striking-plate. Consequently, when the lock is fitted to a door which from shrinkage or other

causes stands somewhat apart from the jamb the latch is practically useless. It is a further object of the invention to overcome this defect, and for this purpose the follow is formed with three wings or projections—viz., with two wings at the top and bottom, respectively, and with a middle or central wing at the front—and the follow-plate has two additional projections with which the one or the other side of the middle wing (according to the direction in which the spindle is turned) comes in contact or engages when the follow has been turned a certain distance—that is to say, that just prior to the follow in its turning movement reaching the point at which the top or bottom wing, (as the case may be,) escapes the corresponding projection on the follow-plate against which it bears, the central wing engages with the additional projection, and during the further or continued turning movement acts against this projection so as to continue the backward movement of the follow-plate after the top or bottom wing has ceased to act thereon.

Another object of the invention is to prevent any wavering or unsteady motion of the follow-plate while sliding forward or backward, and for this purpose a longitudinal groove is formed in one or both of the side walls of the lock, and one or both of the stumps on the follow-plate are elongated, so as to slide in the said groove or grooves. Further, a longitudinal rib is formed at the rear part of one of the side walls and a groove is made in the follow-plate to slide on said rib.

Another object of this invention is to overcome the difficulty hitherto experienced in getting into position the back spiral spring that acts on the follow-plate and through the intermediation of this upon the bolt-plate. This spring in the ordinary construction fits around a neck formed on the side walls of the lock and bears at its inner end against the rear end of the follow-plate. According to this invention a circular disk is employed having an internal catch-piece formed integrally therewith. This catch-piece enters between the side walls of the lock and by a partial turn engages with corresponding catches in said walls, while the circular disk



comes flush with the periphery of the tubular case of the lock. The spiral spring is first placed with its first two or three turns upon the neck of the side walls, which are not  
 5 formed with the usual flange at the rear for the spring to bear against. The tubular case is next put in position, and then the disk is applied and forced inward, so as to compress the spring until the internal catch-piece on  
 10 said disk comes opposite the corresponding catches in or on the side walls. The disk is then given a partial turn, so as to engage the catch-piece in said corresponding catches. The disk and spring are thus secured in po-  
 15 sition, the disk being flush with the periphery of the tubular case and closing the end.

The accompanying drawings represent a lock constructed in accordance with this invention.

20 Figure 1 is a side view of the lock, with the tubular case, fore plate, and spiral spring in section and with one side wall removed, the parts being seen in the normal position—that is to say, with the latching-bolt projecting from the lock, but not shot forward  
 25 by the key. Fig. 2 is a similar view, but showing the parts in the positions they occupy when the latch is drawn back by means of the spindle. Fig. 3 is a longitudinal section of the lock on line 3 3 of Fig. 1, the follow being in elevation. Figs. 4 and 5 are  
 30 transverse sections of the lock on line 4 4 and 5 5, respectively, of Fig. 1. Fig. 6 is a transverse section on line 6 6 of Fig. 1, looking in the direction of the arrow *y*, but with the catch-piece *v* in elevation. Figs. 7 and 8 are views of the follow-plate detached. Figs. 9,  
 35 10, and 11 represent a modification of the internal catch-piece on the circular disk which compresses the spiral spring and closes the end of the tubular case and of the corresponding catches in or on the side walls, Fig.  
 40 9 being a fragmentary side elevation with one of the side walls removed and the spring *k* in section; Fig. 10, a fragmentary plan, partly in section; and Fig. 11, a transverse section on line 11 11 of Fig. 9.

*a* is the tubular case; *b*, the fore plate; *c d*, the two side walls or "half-rounds," *c* being  
 50 permanently attached to the fore plate *b*, while *d* is detachable, having projections or tenons at its front end to enter holes in the fore plate, as usual.

*e e* are the levers, *f* the latching-bolt, and  
 55 *g* the bolt-plate. This plate does not extend rearward beyond the front edge of the follow-plate.

*h* is the follow-plate; *i*, the follow; *j*, the spindle-hole in the follow; *k*, the spiral spring fitting round a neck *l* on the side walls and bearing at its front end against the rear of the follow-plate and at its rear end against the disk *m*.

*n n* are stumps on the follow-plate, which  
 65 normally hold the catches *o* of the levers, but are free from these catches when the bolt is

shot forward by the key. It will be seen that the part *h'* of the follow-plate in which the follow *i* turns is made thin, while the part *h<sup>2</sup>* to the rear of the part *h'*—that is to say, to  
 70 the rear of the follow—extends over the whole space or thickness between the two side walls *c d*. Thus the follow *i* in turning has a bearing equal to the thickness or width of the part *h<sup>2</sup>* less the thickness of the part *h'*. The front  
 75 edge of the follow-plate is beveled, as shown, so as to prevent any liability of its fouling the rear ends of the levers. The follow is formed with three wings—viz., two wings *p p* at top and bottom, respectively, and a middle  
 80 or central wing *q* at front—and the follow-plate has two projections *x x* at top and bottom, respectively. When the follow is turned in the ordinary manner by means of the spindle, the one or the other of the wings *p p* (ac-  
 85 cording to the direction in which the spindle is turned) by pushing against the part *h<sup>2</sup>* of the follow-plate moves back the follow-plate, and then just prior to the follow reaching the point where the projection *p* escapes the part  
 90 *h<sup>2</sup>* the wing *q* engages with one of the projections *x*, so that during the further or continued turning movement of the follow the wing  
 95 *q* acts against this projection *x*, and thereby causes a continued backward movement of the follow-plate after the wing *p* has ceased to act thereon. (See Fig. 2.)

*r r* are longitudinal grooves in the walls *c d*, in which the stumps *n n* on the follow-plate slide during the forward and backward move-  
 100 ment of this plate, the stumps *n n* being elongated for the purpose.

*s* is a longitudinal rib on the side wall *c*, and *t* a groove in the follow-plate to slide on the said rib. The grooves *r r*, in combina-  
 105 tion with the stumps *n n*, and the rib *s*, in combination with the groove *t*, insure a steady motion of the follow-plate.

*u* is a central stud on the inner face of the disk *m*, and *v* is a catch-piece on the inner  
 110 end of said stud *u*.

*w w* are notches on the inner faces of the side walls *c d*, forming corresponding catches to diametrically-opposite portions of the  
 115 catch-piece *v*. When the spiral spring *k* has been placed with its first two or three turns upon the neck *l* of the side walls *c d* and the tubular case *a* has been put in position, the disk *m* is applied against the rear of the  
 120 spring *k* and forced inward, so as to compress the spring until the catch-piece *v* comes opposite the notches *w w*. The disk *m* is then given a partial turn, so that the catch-piece  
 125 *v* engages with the notches *w w*, as seen in the figures. The disk *m* and spring *k* are thus secured in position, the disk being flush with the periphery of the tubular case *a* and closing the end.

In the modification shown in Figs. 9, 10, and 11 the catch-piece is in the form of a pin  
 130 *v*, passed transversely through the stud *u*, so as to project from each side of same, while



the corresponding catches *w w* consist of notches cut in the edges of the neck of the side walls *c d*.

5 What I claim, and desire to secure by Letters Patent, is—

10 1. In a tubular lock, a follow having two wings at top and bottom, respectively, and a middle or central wing or projection at front, in combination with a follow-plate having a part against which the top or bottom wing acts during the first portion of the turning movement of the follow, and two projections, against one of which the said middle wing acts during the latter portion of said turning movement, substantially as and for the purpose set forth.

20 2. In a tubular lock, a longitudinal guide-groove in one of the side walls, in combination with a stump on the follow-plate to move in said groove, substantially as and for the purpose set forth.

3. In a tubular lock, a longitudinal guide-rib at the rear part of one of the side walls,

in combination with a groove in the follow-plate to slide on said rib, substantially as and 25 for the purpose set forth.

4. In a tubular lock, the tubular case, separate side walls for the lock within said case, having catches near their rear ends, a follow-plate between said side walls, and a spiral 30 spring bearing against the end of said follow-plate, in combination with a separate disk for closing the end of said case and confining said spring, having an internal catch-piece constructed to enter between and engage with 35 said catches on the side walls, and thereby to lock the parts in position, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing 40 witnesses.

FREDERICK JAMES BIGGS.

Witnesses:

WALTER LIKEY BROWNE,  
GEORGE C. BACON.