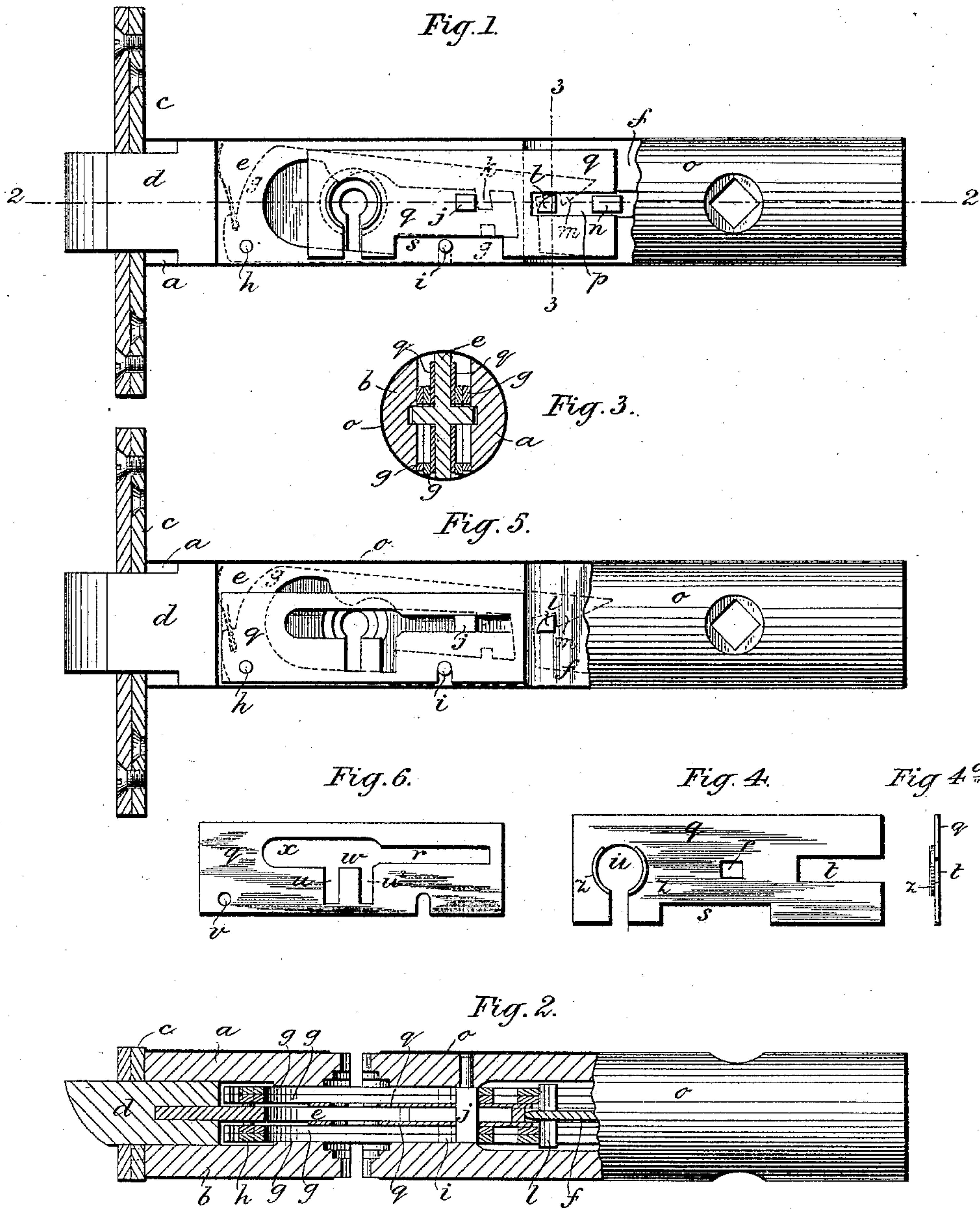


(Model.)

F. J. BIGGS.
LOCK.

No. 452,893.

Patented May 26, 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. 452,893, dated May 26, 1891.

Application filed June 17, 1890. Serial No. 355,759. (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
5 Tubular Locks, of which the following is a specification.

In tubular locks of the class having a longitudinally-movable bolt-plate carrying the bolt and pivoted tumblers for controlling its
10 movement the space between the two side walls or "half-rounds," which constitute the lock-frame within the inclosing tube, is so limited that it is difficult to provide for a large number of variations of keys.

15 The object of the present invention is to overcome this difficulty in locks of the said class; and it consists in inserting one or more removable vertical sheets or plates of steel or other metal within the lock in any position
20 between the half-rounds or side walls, the said sheets or plates having key-holes or openings to admit of the passage of the key through them from one side of the lock to the other side, the working parts of the lock be-
25 ing thus divided into as many additional separate and distinct compartments as there are sheets inserted. The bit of the key must be slotted to correspond with the number of sheets inserted, so as to enable it to turn, the
30 portions of the bit between the slots entering the separate compartments created by the sheets. The key can thus escape the sheets in turning. According to the size of the openings which allow of the passage of the key
35 through the sheet, so will the slot in the bit of the key be made more or less deep to correspond. Thus, if the opening is so small as just to allow the pin and bit of the key to pass, the bit should be slotted right up to the
40 pin. If, on the other hand, the opening is larger, the bit should be slotted to a less depth. The said sheets or plates can be placed between the half-rounds or walls of the lock and the levers, or between the tum-
45 blers themselves, (when more than one,) or between the tumblers and the bolt-plate, or in more than one of these positions. It will be readily understood that by using a greater or less number of these sheets or plates by
50 placing them in different positions and by

having sheets or plates of different thickness a great variety of keys can be provided for. The interlocated sheets are loose or detach-
able pieces—that is to say, they are not per-
manently fixed to the lock, but are simply 55 placed, or, as it were, dropped into the desired positions. It is thus easy for a builder or carpenter before fixing locks in place to vary them as he may desire by varying the po-
sitions or number of the sheets and by slotting 60 the keys to correspond. Thus, for example, a lock with five tumblers can be readily converted into a lock with four tumblers and one interlocated sheet, or into one with three tum-
blers and two interlocated sheets, or into one 65 with two tumblers and three interlocated sheets, or into one with one tumbler and four interlocated sheets. By the changes effected by these substitutions, and taking into account
70 the varying thicknesses of the tumblers, the possible key variations are exceedingly numerous. The said sheets may be arranged either to remain stationary in the lock while the bolt-
plate and its attached tumbler or tumblers 75 are being moved backward or forward longitudinally during the latching or locking and during the unlatching or unlocking, or to move horizontally with the bolt-plate and
tumbler or tumblers during these operations. In the first case the sheets or plates are 80
formed with a hole to drop or fit onto a fixed stump or stumps on one of the side walls of the lock; also with horizontal slots for stumps
on the bolt-plate and follow-plate to move in and with a key-hole. In the second case they 85
are formed with holes to drop or fit, respectively, onto stumps on the bolt-plate, and they are also slotted so as to escape or slide on
the stump or stumps on the side walls, and they have two key-holes corresponding with 90
the position of the sheets in the unlocked and locked positions, respectively. These two key-holes are connected by a slot, and this slot is continued forward beyond the front
key-hole for a sufficient distance to clear the 95
pin of the key when the lock is unlatched or drawn entirely within the lock while the key is in it.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of a lock of the class having a longitudinally-movable bolt-plate carrying the bolt and pivoted tumblers for controlling its movement, with the tubular case partly in section and the fore plate in section, illustrating that modification of the invention in which the interlocated sheets or plates are stationary—that is to say, do not move with the bolt-plate and its attached tumblers. The lock is shown in the unlocked position and one of the half-rounds or walls and the tumblers on the same side of the bolt-plate are removed. Fig. 2 is a horizontal section of the lock on line 2 2 of Fig. 1; Fig. 3, a transverse section of the lock on the line 3 3 of Fig. 1. Fig. 4 is a face view of one of the interlocated sheets or plates of the lock shown in Figs. 1, 2, and 3, but with the addition of an embossment, hereinafter described; and Fig. 4^a, an edge view of this sheet. Fig. 5 is a view corresponding with Fig. 1, but showing that modification of the invention in which the interlocated sheets or plates move horizontally with the bolt-plate and tumbler or tumblers during the latching or locking and unlatching or unlocking operations. Fig. 6 is a view of one of the interlocated sheets or plates of the lock shown in Fig. 5.

a b are the two half-rounds or side walls, of which *a* is, as usual, permanently fixed to the back of the fore plate *c*, while *b* is a detached piece, with tenons at its front end to fit into corresponding holes in the back of the fore plate, as is usual in locks of this description.

d is the latching-bolt; *e*, the bolt-plate carrying the latter; *f*, the follow-plate; *g g*, the tumblers, of which two are shown on each side of the bolt-plate *e*. These tumblers, the number of which is optional, fit on stumps or pins *h* and *i* on the bolt-plate.

j is a stump on the side wall or half-round *a*, the respective sides of said stump forming stops to the projection *k* of the tumblers in the unlocked and locked positions.

l is a stump on the follow-plate, normally engaging with the catch *m* on the tumblers.

n is a stump on the side wall *a*, forming a guide to the follow-plate, which is slotted at *p* to fit said stump.

o is the tubular case fitting the half-rounds *a b*.

The various parts above referred to present no special feature of novelty.

q q are the interlocated sheets or plates. They are shown as placed between the bolt-plate *e* and the tumblers on each side of said bolt-plate; but their position can be varied, as desired.

In the modification shown in Figs. 1 to 4, each of the sheets *q* is formed with a hole *r* to fit or drop onto the stump *j*; also with a slot *s* for the stump *i* on the bolt-plate to move in, with a slot *t* for the stump *l* on the follow-plate to move in, and with a key-hole *u*. In locks in which the stump *l* on the follow-plate does not exist the slot *t* in the sheet

q is unnecessary. In Figs. 4 and 4^a, which represent one of the sheets *q* separate from the other parts of the lock, an embossment *z* is shown around part of the key-hole *u*. This embossment, the position, width, and depth of which can be different in different sheets, or omitted from some of them, provides further scope for key variations, because the bits have to be shaped to allow them to free these embossments in turning.

In the modification shown in Figs. 5 and 6, the interlocated sheets have each a hole *v*, Fig. 6, to fit or drop onto the stump *h* on the bolt-plate, and a hole *s* to fit onto the stump *i* on the bolt-plate; also a slot *r* to move or slide on the stump *j*, with two key-holes *u u*² corresponding with the position of the sheets *q q* in the unlocked and locked positions, respectively, with a slot or way *w* between said key-holes to enable the sheet to slide past the pin of the key during the locking and unlocking, and with a continuation *x* of said slot or way *w* to clear the pin of the key when the lock is unlatched or drawn entirely within the lock when the key is in it.

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

1. A tubular lock having a longitudinally-movable bolt-plate, a bolt carried thereby, and a tumbler for controlling its movement, in combination with detachable sheets or plates of steel or other metal having a hole for the passage of the key and constructed to permit complete rotation of the latter therein, said sheets or plates being inserted between said bolt-plate and the side walls of the lock within its case, and constructed when in the lock to extend parallel with said bolt, substantially as and for the purpose set forth.

2. A tubular lock having a longitudinally-movable bolt-plate, a bolt carried thereby, and a tumbler for controlling its movement, in combination with detachable sheets or plates of steel or other metal inserted between parts of the lock within and parallel with the side walls or half-rounds, having a hole for the passage of the key and constructed to permit complete rotation of the latter therein, and also a hole to fit a stump fixed to one of said side walls, whereby said sheets remain stationary while the bolt-plate and tumbler or tumblers are moved forward or backward, substantially as and for the purpose set forth.

3. In a tubular lock, the side walls, the bolt-plate, the tumblers, a lateral stump fixed to one of said side walls, the follow-plate, and a lateral stump fixed thereto, in combination with a detachable sheet or plate inserted between parts of the lock within said side walls and constructed with a hole *r* for the stump on said side wall, a slot *t* for the stump on said follow-plate to move in, and a key-hole *u*, substantially as and for the purpose set forth.

4. A tubular lock having a longitudinally-movable bolt-plate, a bolt carried thereby,

and a tumbler for controlling its movement, in combination with a detachable metallic sheet or plate having a hole for the passage of the key and adapted to be fitted within 5 the lock between said bolt-plate and tumbler and constructed when in the lock to extend parallel with said bolt, substantially as and for the purpose set forth.

10 5. In a tubular lock, a detachable metallic sheet or plate having a hole for the passage of the key and a laterally-extending embossment to be cleared by part of said key in

turning and constructed to permit the complete rotation of the key therein, said sheet or plate being adapted to be fitted between 15 parts of the lock within the case, substantially as and for the purpose set forth.

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

FREDERICK JAMES BIGGS.

Witnesses:

WALTER TILLEY BROWNE,
GEORGE C. BACON.