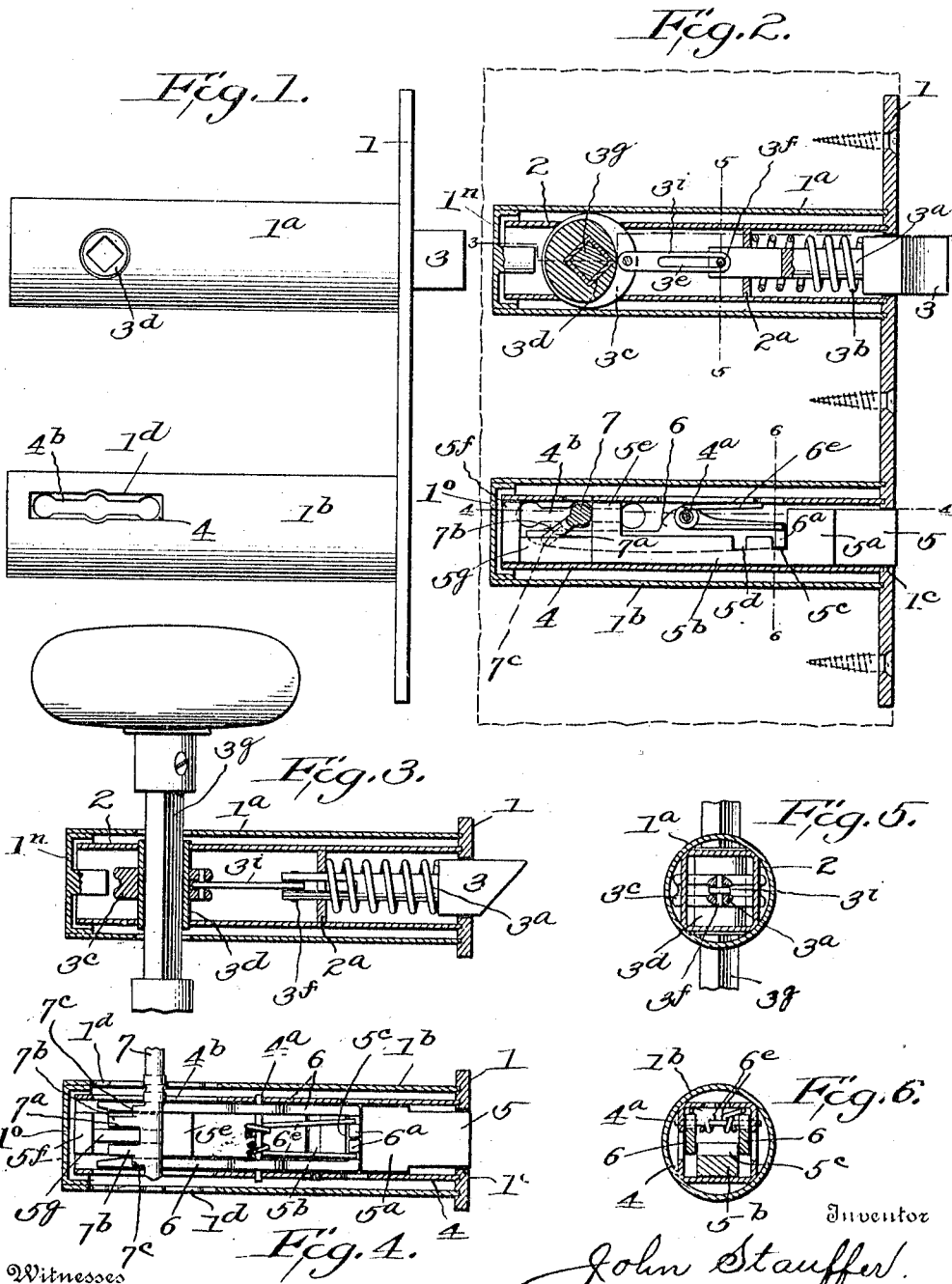


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TUBULAR MORTISE LOCK.
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Patented Mar. 11, 1913.



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UNITED STATES PATENT OFFICE.

JOHN STAUFFER, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

TUBULAR MORTISE-LOCK.

1,055,364.

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To all whom it may concern:

Be it known that I, JOHN STAUFFER, of Vancouver, Province of British Columbia, Canada, have invented certain new and useful Improvements in Tubular Mortise-Locks; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in so-called tubular locks for doors and the like, such locks being usually provided with cylindrical tubes which can be inserted in auger holes in the door; one tube containing the latch devices, and the other containing the bolt devices.

The present invention has particular reference to the bolt portion of such lock, and its object is to provide a very simple but efficient construction of such lock, and to make operative parts readily accessible and replaceable in the tubes, thereby facilitating the assembling and adjusting of the working parts of the lock, and enabling such lock to be readily adjusted for right or left hand doors.

The invention consists in the novel construction of the parts of the lock, as hereinafter summarized in the claims, and as illustrated in the accompanying drawings, and I will describe the invention in detail with reference to said drawings.

In said drawings: Figure 1 represents a side elevation of the complete lock. Fig. 2 a longitudinal vertical section therethrough. Fig. 3 a longitudinal section through the latch tube on line 3-3, Fig. 2. Fig. 4 a longitudinal section on line 4-4, Fig. 2. Fig. 5 a transverse section on line 5-5, Fig. 2. Fig. 6 is an enlarged transverse section on line 6-6, Fig. 2.

In said drawings 1 designates the lock facing plate, to which are attached two tubes 1^a, 1^b, one of which contains the latch devices and the other the bolt devices. The inner ends of these casings 1^a, 1^b may be closed by removable caps 1^a, 1^b which may have a tight sliding fit to the casing, or be otherwise detachably fastened thereto. Within the latch tube 1^a is removably secured a metallic casing 2 preferably angu-

lar in cross-section, and in this casing is mounted a sliding latch piece having a beveled head 3 and a cylindric shank 3^a; the shank extends through a transverse partition 2^a in the casing 2, and a spring 3^b is interposed between the said partition and the head 3 so as to normally project the latch outwardly.

The inner end of the shank 3^a is connected to a link 3ⁱ which has a slot 3^e by which it is pivotally and slidably connected to a pin 3^f on a disk 3^g mounted on a sleeve 3^d that is journaled in, and transversely of, the casing 2, and is provided with an axial opening for the passage of the shank 3^a of a suitable door handle, which may be of usual construction. By turning such handle or knob the latch piece can be retracted, but it is normally projected by the action of the spring 3^b. By reason of the end slot 3^e in link 3ⁱ the latch, when operated, can travel fully in or fully out independently of the door handle.

The tube 1^b contains the bolt devices, which are preferably placed in a removable casing 4, similar to casing 2, and preferably angular in cross section. This casing 4 is removably secured in tube 1^b and in said casing is slidably mounted a bolt having a head 5, which is adapted to project through an opening 1^c in the facing plate 1, and an enlargement 5^a in rear of the head by which the bolt is guided in the casing. The bolt also has a reduced shank 5^b, in rear of enlargement 5^a, and is provided with transverse notches 5^c, 5^d, adjacent said enlargement. The rear end of the shank is provided with enlargements or projections 5^e and 5^f which are connected by a reduced portion 5^g of the shank.

Within the casing 4, at opposite sides of the shank 5^b, are two locking levers 6, which are pivoted upon a pin 4^a, transfixing casing 4 intermediate the projection 5^e and enlargement 5^a. Each locking lever 6 is provided on its forward end with an inwardly projecting tooth 6^a which is adapted to engage either with notch 5^c to lock the bolt 5 in retracted position, or with notch 5^d to lock the bolt in projected position. The levers 6 are pressed into position to engage their teeth with said notches by suit-

able springs; which may be bent wire springs as 6^e supported at their bends on a pin 4^a transfixing casing 4, and having their forward ends confined between the teeth 6^a and the upper side of the casing 4 as shown in Figs. 3 and 4. The locking levers 6 are kept in position by and between the projections 5^e, 5^f, and the side walls of the casing 4, and the rear ends of the locking levers extend beyond the shank projection 5^e and beside the reduced portion 5^g of the bolt shank.

In the side walls of the casing 4, adjacent the projections 5^e, 5^f, are key openings 4^b, which come opposite key openings 1^d in the tube 1^b; so that a suitable key may be inserted through such openings between the projections 5^e, 5^f. Said key is shown as provided with a head 7 having a central slot 7^a adapted to straddle or accommodate the contracted portion 5^g of the bolt shank; and at each side of the slot 7^a said head has fingers 7^b which are adapted to engage one of the opposed faces of the projection 5^e or 5^f to move the bolt in or out. Before the bolt can be moved however it is necessary to release the locking levers 6; and this is accomplished by shoulders 7^c on the key head; which shoulders will engage the rear ends of the levers 6 and depress the latter, thereby lifting the forward ends thereof and disengaging their teeth 6^a from the notch 5^e, or 5^f, with which they may be engaged before the fingers 7^b engage the projections 5^e or 5^f.

When the bolt is retracted the teeth 6^a engage notch 5^e; then when the key is inserted and turned its shoulders 7^c first cause the locking levers to disengage the notch 5^e, and then its fingers 7^b engage the projections 5^e and slide the bolt forward; and as the key continues to turn levers 6 are released and springs 6^e cause the teeth 6^a of said levers to engage notch 5^a and lock the bolt in projected position, see Figs. 2 and 4.

The bolt can be unlocked, or retracted, by inserting the key and turning it in the reverse direction. Then shoulders 7^c will first cause the levers 6 to disengage notch 5^a; then fingers 7^a will engage projection 5^f and retract the bolt; and then the springs cause levers 6 to reengage notch 5^e and lock the bolt in retracted position, see Fig. 2.

By varying the width or the cross sectional shape of the shank portion 5^g, the locks can be made so that special keys will be required for the different locks. By the employment of inner removable casings such as 2 and 4, the operative parts of the lock can be operatively assembled conveniently and accurately before entering them into the tubes, and can also be readily removed from the tubes for repairs. The casings 2 and 4 are inserted in casings 1^a, 1^b before the caps 1^a, 1^b are attached thereto; and said caps

may be removed when it is desired to remove the casings 2 and 4. The casing can also be readily removed from the tube and turned half over to make the latch and bolt suit right or left hand doors. The lock is also difficult to pick for if one locking lever is tampered with and released the other will still hold.

What I claim is:

1. In a tubular lock, the combination of a face plate, a tube attached thereto, a removable casing in said tube, a locking bolt slidably mounted in said casing having a notched shank, a pair of toothed locking levers mounted in the casing at opposite sides of the shank, and adapted to engage one of the notches in the shank, springs for normally holding the teeth of the locking levers in engagement with one of the notches in the shank, and a key adapted to first cause the locking levers to release the bolt and then to move the bolt, substantially as described.

2. In a tubular lock, the combination of a face plate, a tube attached thereto, a removable casing in said tube, a locking bolt slidably mounted in said casing having a notched shank provided with adjacent enlargements near its rear end, a pair of toothed locking levers mounted in the casing at opposite sides of the shank adapted to engage one of the notches in the shank, springs for normally holding the teeth of the locking levers in engagement with one of the notches in the shank, and a key adapted to cause the locking levers to release the bolt, and then to engage one of the enlargements on the shank to move the bolt, substantially as described.

3. In a tubular lock, the combination of a face plate, a casing connected therewith, a partition inside the casing, a slidable latch adapted to project through the face plate and having a shank guided in the partition in the casing, a spring interposed between the partition and the head of the latch, a rotatable sleeve journaled transversely of the casing in rear of the shank, a disk mounted on said sleeve, a slotted link pivotally connected to the disk and to the bolt shank, and adapted to retract the bolt when the sleeve is turned in either direction; and a handle engaging said sleeve.

4. In a tubular lock, the combination of a casing, a locking bolt slidably mounted in said casing and having a shank provided with a pair of transverse abutments near its rear end, and with a pair of notches near its head; parallel locking levers mounted in the casing beside but on opposite sides of the bolt shank and having teeth adapted to engage either of the notches in the shank, springs for normally holding the locking levers in engagement with a notch in the shank, and a key adapted to be inserted in

the casing and first engage the locking levers and cause them to release the bolt and then to engage an abutment and move the bolt when released until the levers engage the other notch in the shank, substantially as described.

In testimony that I claim the foregoing as

my own, I affix my signature in presence of two witnesses.

JOHN STAUFFER.

Witnesses:

HENRY T. THOMPSON,
W. K. NOBLE.