H. G. VOIGHT.

LOCK.

APPLICATION FILED APR. 9, 1919.

1,390,403.

Patented Sept. 13, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

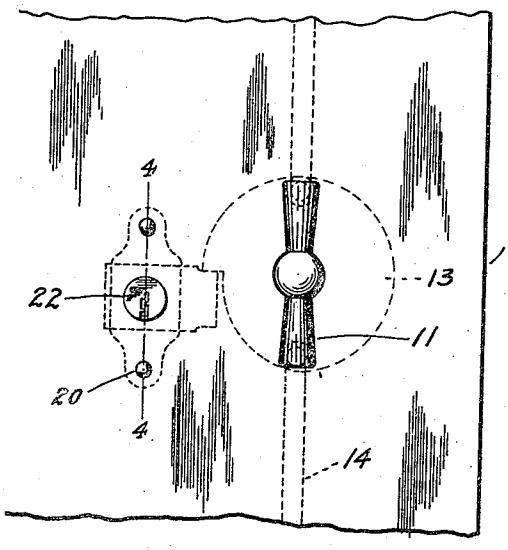


Fig. 2.

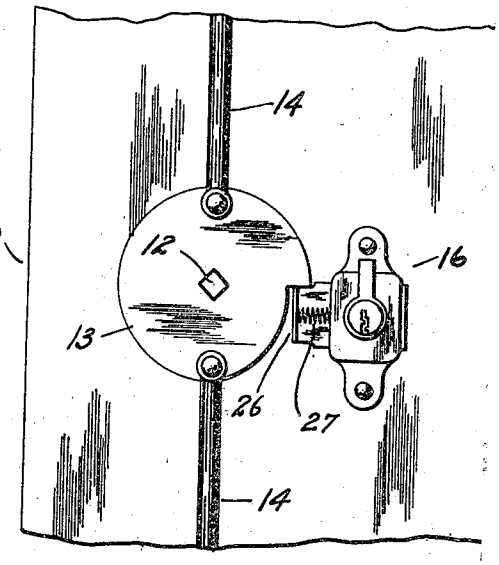


Fig. 3.

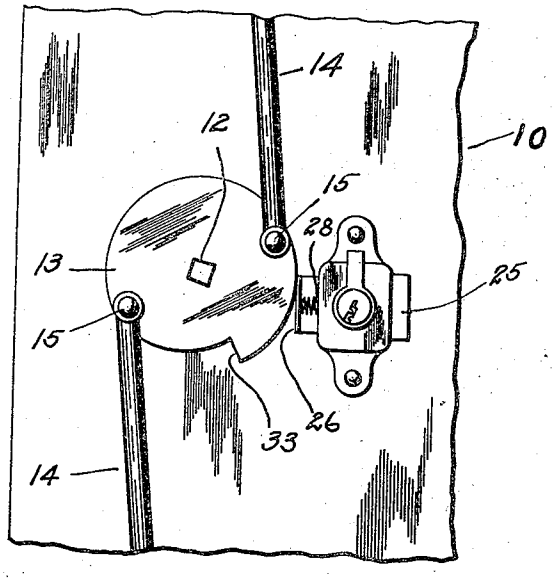
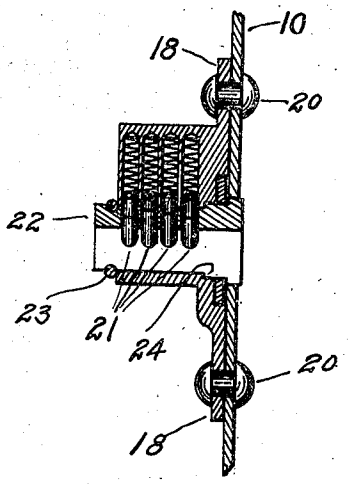


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

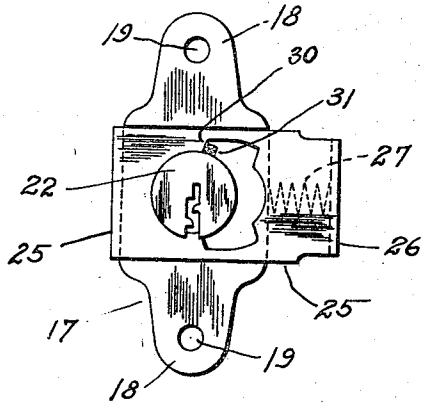


Fig. 6.

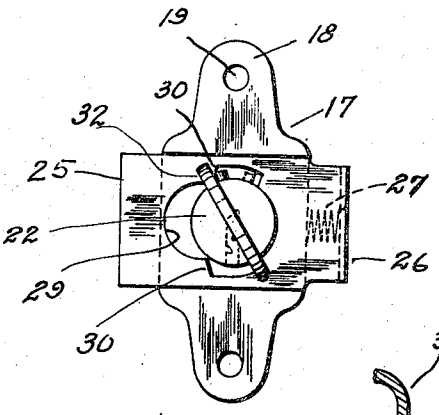


Fig. 7.

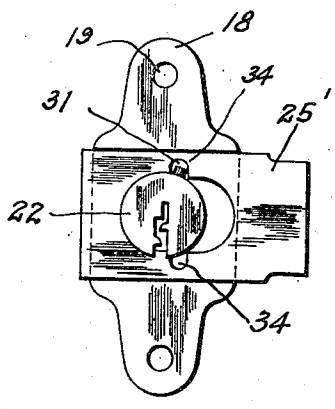


Fig. 8.

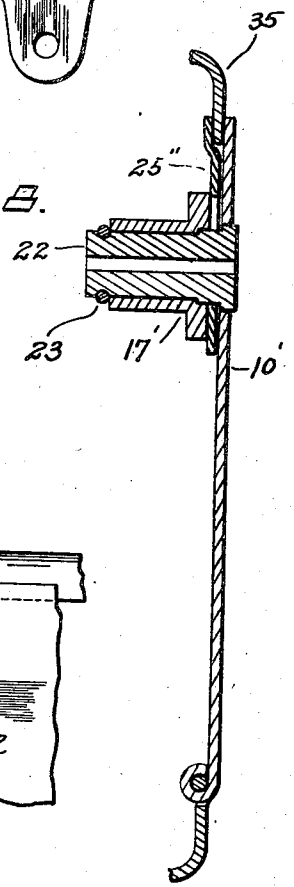
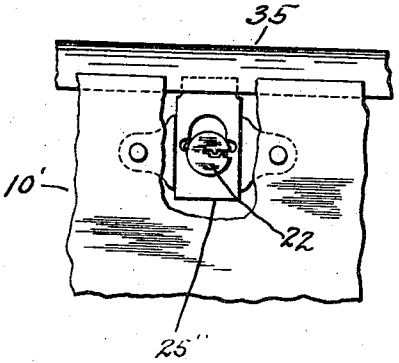


Fig. 9.



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UNITED STATES PATENT OFFICE.

HENRY G. VOIGHT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK.

1,390,403. Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed April 9, 1919. Serial No. 288,667.

To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing in New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

This invention relates to locks, and it has particular reference to a pin tumbler lock provided with a sliding bolt operatively mounted upon the same.

One object of my invention is to provide novel key-controlled means for locking the knob-operated mechanism upon sheet metal locker doors and the like so that the knob cannot be rotated to unlock the door without the use of the proper key.

Another object of my invention is to provide an extremely simple and satisfactory means for operatively mounting a sliding bolt directly upon a pin tumbler lock casing and thereby avoid the necessity of providing a separate casing in which the sliding bolt is operatively mounted.

Another object of my invention is to provide simple but satisfactory means for operatively mounting a spring-operated latch bolt upon a pin tumbler lock casing.

Another object is to provide a pin tumbler lock casing having a sliding bolt operatively mounted thereupon, with means for operating said bolt by said lock, which means is constructed to permit the key to be removed from its key plug when the sliding bolt is in either its locked or its unlocked position.

Still another object of my invention is to provide a sheet metal box or the like with pin tumbler lock constructed to operatively secure a sliding bolt to the inner face of said box, and to operate said bolt by said lock.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings,

Figure 1 is a fragmentary front view of a sheet metal door, showing my locking mechanism in dotted lines upon the inner face of the door, the parts being shown in their locked position;

Fig. 2 is a view of the inner face of the door shown in Fig. 1;

Fig. 3 is a view similar to Fig. 2, but showing the parts in their unlocked position;

Fig. 4 is an enlarged sectional view, taken on the line 4—4 of Fig. 1;

Fig. 5 is a front view of my pin tumbler lock, with its sliding bolt applied thereto, the parts being removed from the door;

Fig. 6 is a view similar to Fig. 5, but showing the sliding bolt held in its retracted position by a key, the normal locked position of the key plug being indicated in dotted lines;

Fig. 7 is a view similar to Fig. 5, showing a modification of my invention;

Fig. 8 is a transverse sectional view through a door and a portion of a sheet metal box, showing a modification of my invention applied thereto; and

Fig. 9 is a fragmentary front view of the sheet metal box and locking mechanism shown in Fig. 8.

In Figs. 1, 2 and 3 of the drawings, I have shown my novel locking means as applied to a sheet metal door 10, such as is commonly provided for sheet metal lockers and the like, the door being provided with a knob 11, which is rotatably mounted within the door, and is constructed with a portion 12 projecting through the door, and has rigidly secured thereto upon the inner face of the door a knob-operated member 13. The knob-operated member may have any desired type of operating bolts or the like secured thereto, and operated thereby, to retain the locker door in its closed position. In the embodiment illustrated, I have shown a pair of sliding bolts 14 having their inner ends pivotally secured to the member 13 by pivot pins 15. The free ends of these bolts are preferably moved into and out of locking engagement with the door frame when the knob 13 is operated.

In order to prevent an unauthorized person from rotating the knob 11 to unlock the door after the same has been secured in its closed position, I provide the locking mechanism designated in its entirety by the numeral 16, which is mounted upon the inner face of the sheet metal door 10 adjacent the knob-operated member. This locking member consists of a pin tumbler lock casing or cylinder 17 having a flat front face with ears 18 projecting laterally from the opposite sides thereof, and drill holes 19 formed through these ears, the construction being such that the casing 17 is adapted to be secured against the inner face of the door 10 by rivets or the like 20 passing through the

door and through the drill holes in the ears just mentioned. The casing 17 is provided with the well-known pin tumblers 21, which coöperate with the key plug 22 in the usual manner. The key plug is preferably prevented from moving longitudinally in one direction by a resilient ring 23, which is seated in a circumferential groove adjacent the rear end of the key plug, and the usual shoulder 24, formed upon the forward end of the key plug, prevents the same from moving longitudinally in a rearward direction. In order that a key may conveniently be inserted in the key plug to operate the same, the forward end of this key plug preferably projects through an opening formed in the door 10, as shown in Fig. 4. In order to provide my pin tumbler lock with a sliding bolt which is mounted upon the same and is operated by the key plug, I form a relatively wide groove or slot across the front face of the pin tumbler lock casing, in which groove is slidably mounted the relatively flat bolt 25, the bolt having a large opening formed therethrough in order to form a clearance space for the key plug, which projects through this bolt, as will be apparent from the drawings. The sliding bolt 25 preferably has a turned-up lip 26 formed upon its forward end, as will be apparent from Figs. 2 and 3, and between this lip and one side of the lock casing 17 is preferably mounted a coiled spring 27, which may be retained in place by short pins 28 projecting outwardly from the edge of the lock casing and from one face of the lip. The spring tends to protract the sliding bolt and to retain the same in its protracted position.

The means which I have provided for operatively connecting the key plug 22 to the sliding bolt will now be described, reference being had particularly to Figs. 5 and 6. The bolt 25 has an opening formed therethrough, as shown more particularly in Fig. 6, the portion of this opening adjacent the rear end of the sliding bolt being cut-away in a semi-circle, as indicated by 29, to clear the key plug when the bolt is moved to its protracted position, as shown in Fig. 5, the extent to which the bolt may be protracted being limited by the edge of the cut-away portion 29 abutting against the key plug. The interior of the sliding bolt is further cut-away to form the opposite sloping shoulders 30, which are positioned to be engaged by a short pin 31 projecting outward in a radial direction from the key plug in which it is rigidly mounted, the arrangement being such that when the key plug is rotated by its key 32, the pin 31 abuts against one of shoulders 30 of the sliding bolt and retracts the same. The clearance space formed within the bolt 25 is relatively large in order that when this bolt is held in its retracted position, as shown in Fig. 3, the key plug may be rotated from the position shown in full lines of Fig. 6 to the position indicated in dotted lines, in order that the key may be removed from the key plug.

The operation of the pin tumbler lock, shown in Figs. 1–6, inclusive, will now be described as used to prevent the door knob 11 and mechanism operated thereby from being rotated from its locked to its unlocked position.

The knob operating member 13 is preferably provided with a shoulder or notch 33, and the pin tumbler lock casing is secured upon the inner face of the door so that the sliding bolt, when protracted by its spring 27, will engage this shoulder 33, as shown in Figs. 1 and 2, the shoulder 33 preferably abutting against a lateral edge of the bolt and upturned lip 26 to thereby prevent the door knob from being rotated in a direction to retract the sliding bolts 14. When it is desired to open the door 10, a key is inserted in the key plug, and the same is turned to retract the sliding bolt sufficiently to permit the door knob to be rotated, as shown in Fig. 3. This having been done, the sliding bolt will be retained in its retracted position by the engagement between the outer end of the same and the curved face of the member 13, as will be apparent from Fig. 3. The key plug may then be rotated back to its normal position and the key removed from the same, so that when it is desired to again lock the door 10, all that is necessary is to close the door and rotate the door knob to its locked position, whereupon the bolt will snap into abutting engagement with the shoulder 33 in an obvious manner.

It is sometimes desirable to so construct the locking means for a locker door or the like that the key cannot be removed from its lock after the door has been closed until the parts have been moved to their locked position. I have therefore shown in Fig. 7 a slight modification of my invention in which the coiled spring 27 has been omitted and relatively narrow notches 34 are formed in the opposite sides of the sliding bolt 25′, one of which receives the operating pin 31, the arrangement being such that the key plug cannot be rotated from its unlocked to its locked position without operating the sliding bolt. It will therefore be impossible to remove the key from its key plug except when the bolt 25′ is protracted. The object in providing the sliding bolts 25 and 25′ with symmetrically cut-away parts on opposite sides of the longitudinal axis of these bolts is to make the bolts interchangeable so that they may be used either as a right or left hand bolt; for example, if it should be desired to have the bolt shown in Fig. 5 protracted toward the left hand instead of the right hand,

all that is necessary is to turn the bolt end for end so that its forward end will point in the opposite direction. The pin 31, however, would have to be changed so that it would incline slightly to the left instead of slightly to the right, as shown.

In Figs. 8 and 9 of the drawing, I have shown an application of my invention in which the sliding bolt retains the door on which it is mounted in its locked position by directly engaging the door frame instead of preventing the rotation of a bolt-operated knob, as in Figs. 1, 2 and 3. In Figs. 8 and 9, the bolt of the key-controlled lock mechanism is operated the same as in Fig. 7. In these two figures, I have shown my pin tumbler lock casing 17′ secured to the inner face of a sheet metal door 10′ adjacent the forward edge of the same, in order that when the sliding bolt 25″ is protracted it may be moved into locking engagement with the inner face of the sheet metal box 35, upon which the door 10′ is mounted. The bolt 25″ has its outer end offset sufficiently to permit the same to be moved into locking engagement with the inner face of the box, as shown. Since the bolt 25″ must remain in its retracted position while the door 10′ is being moved to its closed position, it is not desirable to provide a spring, such as shown in Figs. 2 and 3, to protract this bolt, the bolt being both protracted and retracted by the key plug similarly to the operation of the bolt in Fig. 7.

In the several modifications illustrated in the drawings, the notch formed in the pin tumbler casing, in which the bolt is slidably mounted should not be materially deeper than the width of the bolt, in order that the outer face of the bolt will engage the inner face of the door against which the lock is mounted, so that the bolt will in this manner be retained in the notch in which it operates.

It will be apparent that the locking means herein disclosed, having a bolt slidably mounted upon one face of a pin tumbler lock casing and operated by the key plug therein, may be used for various purposes other than herein disclosed, and I therefore desire to have it understood that I do not regard my invention as limited in its application to the uses herein pointed out.

What I claim is:—

1. In combination with a sheet metal door, a pin tumbler lock casing having an end thereof secured against the inner face of said door, said casing having a notch formed in the door engaging face thereof, a bolt slidably mounted within said notch and retained therein by the inner face of said door, and a key plug rotatable within said casing and having its forward end accessible through an opening in said door, said plug provided with means adjacent its forward end for imparting a sliding movement to said bolt.

2. In combination with a sheet metal door, a cylinder lock casing having its forward end secured against the inner face of said door, said casing and door having a bolt slidably mounted therebetween, said bolt having a clearance opening formed therethrough, a key plug rotatable within said casing and having its forward end extending through said opening, and means upon said plug for imparting a sliding movement to said bolt.

3. In combination with a sheet metal plate, a cylinder lock casing having its forward end secured against a face of said plate, said casing having a notch formed in the plate engaging face thereof, a bolt having a clearance opening therein slidably mounted within said notch, and a key plug rotatable within said casing and having its forward end projecting through said opening, said plug provided with means adjacent its forward end for imparting a sliding movement to said bolt.

4. In combination with a door or the like, a pin tumbler lock casing having its forward end secured against the inner face of said door, a bolt slidably mounted upon the forward face of said casing, a key plug rotatable within said casing, said plug having its forward end extending through said bolt into said door, spring means for normally holding said bolt in its protracted position, and means for operatively connecting said plug to said bolt.

5. In a lock for metal doors and the like, a pin tumbler lock casing, said casing having a bolt receiving notch formed across its forward end, a bolt having a clearance opening therein slidably mounted within said notch, a key plug rotatable within said casing and having its forward end extending through said opening, and means upon the forward end of said plug for operating said bolt.

6. In a lock for metal doors and the like, a pin tumbler lock casing, said casing having a bolt receiving notch formed across its forward end, a bolt having a clearance opening therein slidably mounted within said notch, a key plug rotatable within said casing and having its forward end extending through said opening, spring means for projecting said bolt, and a laterally projecting pin upon said plug for retracting said bolt.

7. In combination with a sheet metal locker door or the like, a rotatable knob, bolt actuating means mounted upon the inner face of said door and operable by said knob, said actuating means provided with a shoulder, and key controlled locking means for said actuating means, comprising a cylinder lock casing secured to the

inner face of said door, a bolt slidably supported upon the inner face of said door by said casing, said bolt positioned to be moved into locking engagement with said shoulder, and a key plug within said casing operatively connected to said bolt.

8. A lock for metal doors and the like, comprising a cylinder lock casing having a bolt receiving notch formed entirely across its forward face, a bolt slidably mounted within said notch, a key plug for operating said bolt mounted within said casing and constructed to extend through said bolt, said bolt constructed to have its front end project from either side of said casing.

9. A lock for metal doors and the like, comprising a cylinder lock casing having a bolt receiving notch formed entirely across its forward face, a bolt slidably mounted within said notch, a key plug within said casing and operatively connected to said bolt, and spring operating means for said bolt mounted between a lateral outer wall of said casing and the adjacent end of said bolt.

10. A lock for metal doors and the like, comprising a cylinder lock casing having a bolt receiving notch formed entirely across an end face thereof, a bolt slidably mounted within said notch, said bolt reversible end for end within said notch, and a key plug within said casing for operating said bolt.

In witness whereof, I have hereunto set my hand on the 4th day of April, 1919.

HENRY G. VOIGHT.