Mar. 6, 1923. 1,447,754

W. H. BRABANT.

NIGHT LATCH.

FILED DEC. 1, 1921.

Fig. 1.

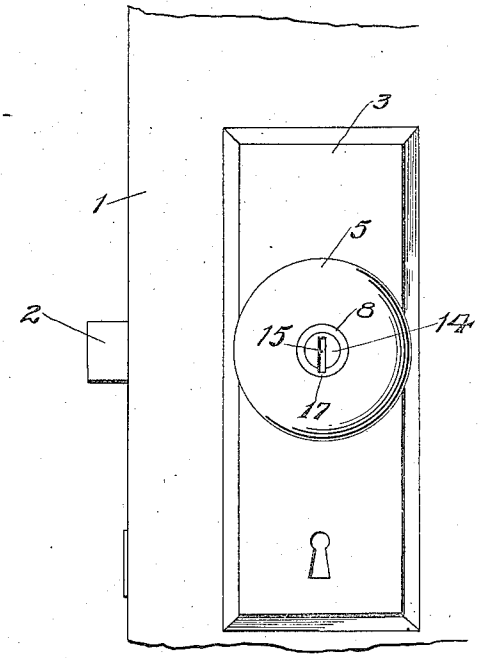


Fig. 6.

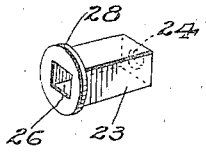


Fig. 2.

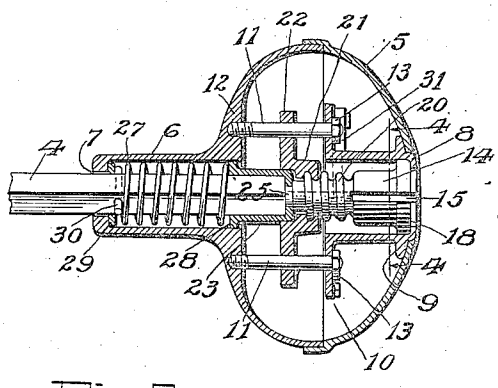


Fig. 3.

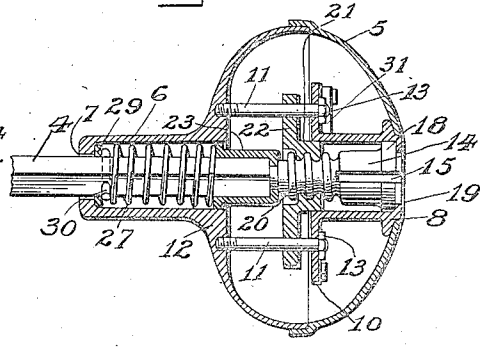


Fig. 4.

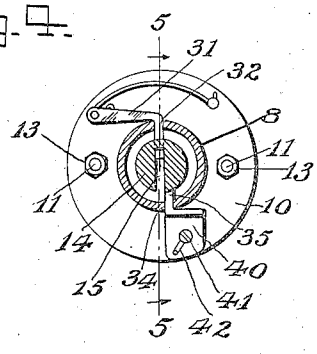
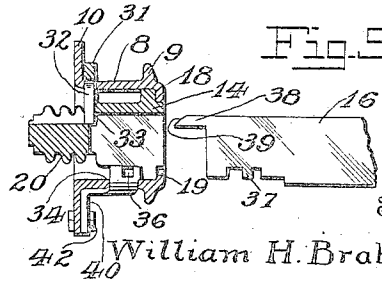


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. BRABANT, OF SHEBOYGAN, WISCONSIN.

NIGHT LATCH.

Application filed December 1, 1921. Serial No. 519,178.

To all whom it may concern:

Be it known that I, WILLIAM H. BRABANT, a citizen of the United States, residing at Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Night Latches, of which the following is a specification.

The object of this invention is to provide simple and inexpensive means which may be readily applied to any lock and by which the lock may be rendered incapable of operation from the outside of the door to which it is applied. The invention provides mechanism which may be housed within a door knob and by which the knob may be set to rotate freely upon the spindle or to actuate the spindle as may be desired by the owner or authorized person. The invention is illustrated in the accompanying drawings and will be hereinafter fully set forth, the novel features being particularly pointed out in claims following the detailed description.

In the drawings—

Figure 1 is a side elevation of a portion of the door showing my improved lock applied thereto;

Fig. 2 is a view, partly in plan and partly in horizontal section, through the knob and the mechanism constituting the present invention;

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

Fig. 4 is a detail section on the line 4—4 of Fig. 2;

Fig. 5 is an enlarged detail section upon the line 5—5 of Fig. 4;

Fig. 6 is a detail perspective view of a cap employed in the invention.

The door 1 may be of any desired size or form and is equipped with a latch 2 in the usual manner, a lock plate 3 being secured upon the side of the door and furnishing one of the bearings for the knob spindle. The knob spindle 4 is of the usual type and upon the inner side of the door is provided with the usual fixed knob while at the outer side of the door the knob 5 is provided and is adapted to rotate freely about the spindle or be operatively connected therewith according to the adjustment of the present invention. The knob 5 may be given any desired configuration and may conveniently be constructed of two shells joined together at their meeting edges by welding or otherwise. The inner shell is constructed with an elongated hub or sleeve 6 which fits around the knob spindle 4, as clearly shown in Figs. 2 and 3, and has a bore of greater diameter than the knob spindle, the opening 7 at the inner end of said sleeve or hub being circular whereby the knob may easily rotate about the spindle when properly set. The outer shell or member of the knob is provided with a central circular opening which receives the outer end of a lock barrel 8 which is constructed adjacent its outer end with an annular flange 9 adapted to bear against the inner surface of the knob and thereby maintain the proper relation between the barrel and the knob. At its inner end, the barrel is provided with an annular flange or rim 10 through which bolts or pins 11 are inserted to engage sockets in the base 12 of the inner member of the knob whereby relative rotation between the knob and the lock barrel will be prevented, nuts or similar fastenings 13 being mounted upon the outer ends of the bolts or pins 11 so that, if necessary, the barrel and the knob may be separated to make repairs or renewals. The barrel 8 is cylindrical in form and within the barrel is rotatably fitted a key spindle or tumbler 14, the said key spindle being provided with a longitudinal slot 15 to receive the key 16 and normally registering with a notch 17 in the outer end of the barrel 8. A flange 18 on the key spindle near the outer end thereof engages against the front wall portion 19 of the barrel and thereby prevents the key spindle moving outwardly through the barrel. The key spindle 14 projects inwardly beyond the end of the barrel 8 and its inner end portion is formed into a worm 20 which passes through the central hub portion 21 of a lock plate 22 which has its ends slidably fitted upon the bolts or pins 11, the bore of the hub member 21 having an internal spiral groove formed therein to operatively engage the worm 20 so that, when the key spindle is rotated, the said hub and lock plate will be caused to move longitudinally of the said spindle in an obvious manner. The inner extremity of the bore of the hub 21 is of angular outline and is adapted to receive and engage the outer end of a cap 23 which is mounted upon the outer end of

the knob spindle and has an external angular cross section whereby it may enter the angular end of the bore of the hub 21 and thereby effect operative engagement between the cap and the hub. This cap 23 has a circular opening 24 in its outer end to receive the circular lug 25 on the inner extremity of the key spindle so that the cap furnishes a bearing for the key spindle and permits rotation of the same. The interior of the cap 23 is preferably rectangular, as indicated at 26, so that it will fit closely upon the end of the knob spindle 4, and a spring 27 is coiled around the knob spindle between the flange 28 at the inner end of the cap 23 and a washer or abutment 29 held to the knob spindle by a pin 30, as shown in Figs. 2 and 3. Mounted upon the disc or flange 10 of the lock barrel is a spring-pressed dog 31 which passes through an opening 32 in the barrel 8 and is adapted to engage a socket 33 in the key spindle so that normally relative rotation of the key spindle and the lock barrel will be prevented. Diametrically opposite the socket 33 and opening 32, the lock barrel is provided with a slot or opening 34 through which projects a key guard or ward 35, the edge of which is properly shaped to prevent operation of the key spindle and the lock barrel by a key not having the proper form. This key guard 35 is constructed with one or more notches 36 in its inner upper edge, as shown most clearly in Fig. 5, and the notches, of course, may be of various sizes and shapes, the key 16 being constructed with lugs or teeth 37 which will be of the proper size, shape and arrangement to pass through the notches of the guard and the inner end of the key is constructed with a tooth 38 having a beveled end 39 adapted to ride under the end of the dog 31 and thereby lift the same out of engagement with the notch or socket 33. The key guard 35 is provided with a foot 40 which is secured to the flange or disc 10 by a screw or similar device 41 inserted through a slot 42 in the foot to be secured in the disc or flange. This arrangement permits the key guard to be adjusted so as to attain the proper co-operation between the key, the guard and the lock.

When the spindle and the barrel are in the relative positions shown in Fig. 1, the key may be inserted in the barrel, but if the slot 16 of the key spindle is out of alinement with the notch 17 in the barrel, the key cannot be inserted. When the parts are set as shown in Fig. 2, the angular inner end of the hub member 21 will be engaged around the outer end of the cap 23 and as the hub is held to the knob by the members 11, rotation of the knob will be transmitted to the knob spindle and the latch 2 released. If it be desired to set the device so that the door cannot be opened from the outside, the key 16 is inserted in the barrel 14 and the barrel then rotated about its own longitudinal axis, the insertion of the key releasing the dog 31, as previously stated. As the key spindle is rotated, the worm 20 on the inner end portion thereof will act upon the internally threaded wall of the hub 21 so that the said hub will be caused to ride outwardly to the position shown in Fig. 3. This position of the parts will be attained by one complete rotation of the key spindle and it will be readily noted that the inner angular end of the bore of the hub 21 has been brought beyond the inner end of the cap 23 so that these members are no longer engaged. Consequently, if the knob be rotated, it will simply rotate freely about the knob spindle 4 and the latch 22 will not be withdrawn. The pins or bolts 11 prevent relative rotation between the knob, the lock barrel and the lock plate 22 at all times so that the knob may be rotated at any time but whether or not such rotation will effect rotation of the knob spindle 4 and thereby withdraw the latch 2 will depend on whether or not the lock plate 22 is in engagement with the cap 23. The lug 25 at the inner extremity of the key spindle provides a support for the cap 23 and it will be readily noted that the worm portion of the key spindle co-operating with the end of the lock spindle prevents relative longitudinal movement of the cap but as the knob spindle may sometimes be accidentally shifted through manipulation of the knob at the inner side of the door I provide the spring 27 which holds the cap constantly to the key spindle and, therefore, in proper position to be engaged by the lock plate 22.

My improved mechanism is very simple in its construction and arrangement of its parts and may be readily applied to any door knob and knob spindle so that in order to apply my invention to locks and doors now in use, it is necessary merely to substitute my improved mechanism for one knob and it is not necessary to supply an entire new lock or latch. My improved device is efficient without detracting from the sightly appearance of the door and will readily convert a poor lock into an efficient lock. Setting of the device by any but the proper key is prevented by the provision of the key guard and an infinite number of locks may be produced, no two of which may be actuated by the same key by merely minutely varying the outline or dimensions of the key guards and the corresponding portions of the keys.

Having thus described the invention, what is claimed as new is:

1. The combination with a knob spindle, and a knob rotatably mounted on the spindle, of a lock plate housed within the knob and

constantly concentric to the spindle and adapted to be locked to the knob spindle, means for permitting sliding movement of the lock plate within the knob and preventing rotation thereof relative to the knob, and key-controlled means carried by the knob for effecting the sliding movement of the lock plate.

2. The combination of a knob spindle, a knob rotatably mounted upon the spindle, a lock plate mounted within the knob and constructed to engage the end of the spindle whereby relative rotation of the plate and the spindle will be prevented, said plate having an internally threaded hub, means for permitting the said lock plate to move longitudinally relative to the knob spindle and prevent rotation of said plate relative to the knob, a worm fitted in and engaging the internally threaded hub of said lock plate, and a key-controlled spindle rigid with said worm and housed within the knob.

3. The combination of a knob spindle, a knob loosely mounted on the spindle, a cap carried by the end of the spindle and having an angular cross section, a spring coiled around the spindle within the knob and bearing on said cap to hold it normally outward, a worm arranged in axial alinement with the knob spindle and within the knob, a lock plate operatively fitted upon said worm and having an angular bore adapted to engage the said cap whereby to be locked to the cap and the knob spindle, the said worm having a circular lug at its end furnishing a bearing for said cap, and key-controlled means within the knob for operating said worm.

4. The combination of a knob spindle, a knob loosely fitted upon the spindle, a lock barrel mounted within the knob, a lock plate disposed between the said lock barrel and the knob spindle, means for securing the lock barrel to the knob, said means also preventing relative rotation between the knob and the lock plate while permitting sliding movement of the lock plate, key-controlled means within the lock barrel for actuating said lock plate whereby to move the same into or out of operative relation to the knob spindle, and means for preventing relative movement between the lock barrel and the said key-controlled means.

5. The combination of a knob spindle, a knob loosely mounted thereon, a lock barrel within the knob, a key spindle rotatable within said lock barrel and constructed to receive an operating key, means controlled by the key spindle for locking the knob to the key spindle or releasing it therefrom, a dog carried by the lock barrel and engaging the key spindle to normally prevent rotation of the key spindle, said dog being releasable by the insertion of a key into the key spindle, and a key guard carried by the lock barrel and extending to the key spindle whereby the key spindle may be rotated only by a predetermined key.

In testimony whereof I affix my signature.

WILLIAM H. BRABANT. [L. S.]