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TUBULAR NIGHT LATCH

Filed May 14, 1927

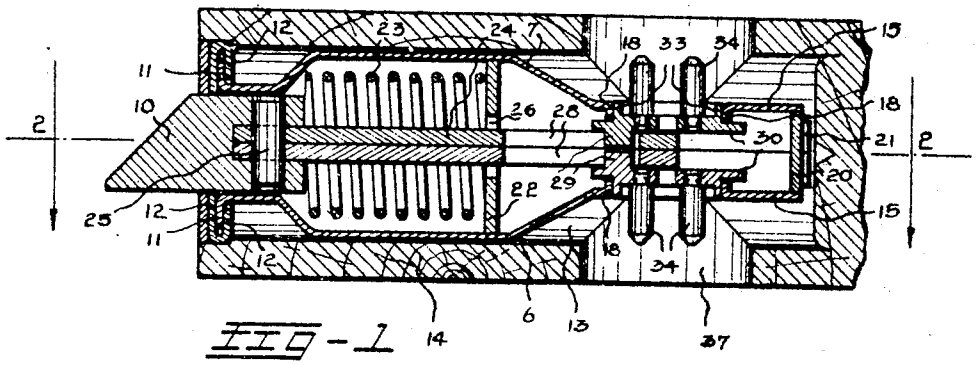


FIG-1

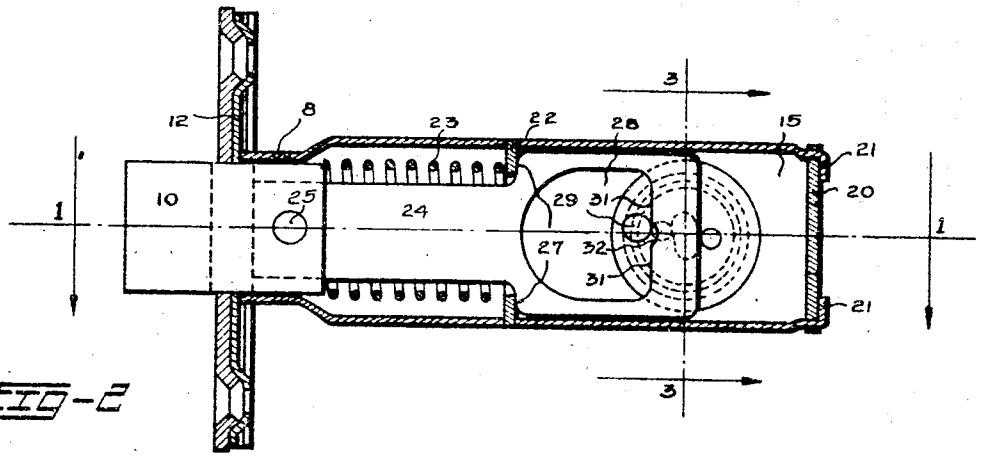


FIG-2

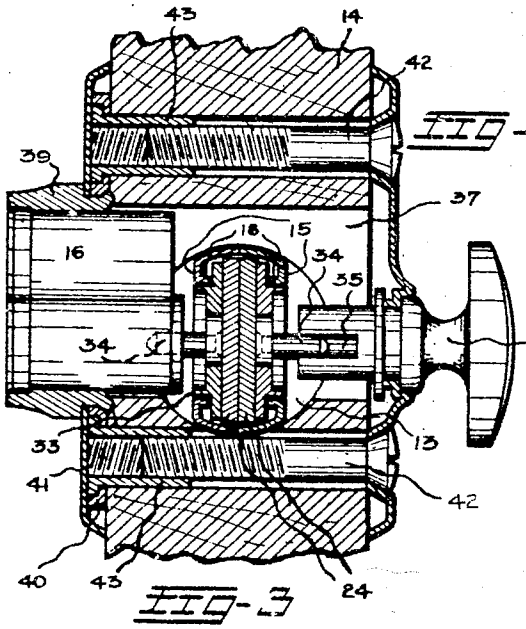


FIG-3

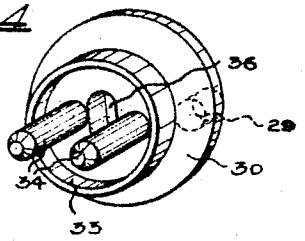


FIG-4

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UNITED STATES PATENT OFFICE

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TUBULAR NIGHT LATCH

Application filed May 14, 1927. Serial No. 191,411.

Our invention relates to improvements in locks of the night latch type and the object of our invention is to provide a night latch that may be retracted from either side of the door and that may be locked in a retracted position by the same device by which it is retracted.

A further object of the invention is to provide a night latch having novel throw means for operating the latch bolt and for holding the latch bolt in retracted position.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings Figure 1 is a sectional view on broken line 1—1 of Fig. 2 showing the lock installed in a door.

Fig. 2 is a longitudinal sectional view substantially on broken line 2—2 of Fig. 1 the door being omitted.

Fig. 3 is a sectional view on line 3—3 of Fig. 2 showing the night latch lock installed in a door and connected on one side with a thumb turn throw device and on the other side with a pin tumbler lock.

Fig. 4 is a detached isometric view of one of the throw discs by which the night latch bolt is operated.

Like reference numerals designate like parts throughout the several views.

Referring to the drawings we show a two part housing formed of two half shells 6 and 7 of duplicate construction each open on one side, said two half shells being adapted to be placed with their open sides together so that they cooperate with each other in forming a housing in which one of the half shells is positioned on each side of the medial vertical plane that extends lengthwise of the housing. At the front end, the half shells are narrowed as at 8 and are rectangularly shaped to form a guide for a latch bolt 10 and said half shells are provided at their forward ends with flanges 11 that are crimped beneath the inwardly bent outer edges of a front plate 12 and serve to hold the front ends of said two half shells in assembled relation. Immediately back of the squared portion 8 the half shells are of cylindrical shape to afford room for mechanism that is disposed therein and to adapt them to fit snugly within a cylindrical bore 13 in a door 14 and at the rear end said half shells are flattened on the sides as at 15 to afford ample room in thin doors for means, as a primary lock mechanism 16 or a thumb turn 17 by which the latch bolt 10 may be operated. The flattened sides 15 have round holes provided therein and the metal around the edges of said round holes is bent inwardly to form bearing hubs 18. The two half shells are secured together at the rear end by an end plate 20 that cooperates with lugs 21 on the half shells. A partition plate 22 is secured within the cylindrical portions of the half shells for the rear end of a compression spring 23 to abut against. The front end of the spring 23 abuts against the latch bolt 10 and urges the same outwardly.

In accordance with this invention we provide a tongue 24 connected by a pin 25 with the latch bolt 10 and extending rearwardly through the spring 23 and through a slot 26 in the partition plate 22. At its rear end the tongue 24 is widened to afford shoulders 27 that abut against the partition plate 22 and serve to limit the outward movement of the bolt 10. The widened rear end of the tongue 24 is cut away as at 28 to afford working clearance for throw pins 29 on discs 30. The opening 28 is formed so as to leave a straight edge 31 at the rear side thereof and said straight edge 31 has a notch 32 midway between its two ends. The throw pins 29 work against the straight edge portions 31 to retract the bolt and drop into the notch 32 to hold the bolt retracted.

It will be noted that the throw pins 29, are in effect, crank pins that move in the arc of a circle and are on center when they are in the notch 32 and the bolt 10 is retracted. When the bolt 10 is not retracted said bolt is stopped by shoulders 27 so as to afford preferably enough clearance for pins 29 to allow at least fifteen degrees free arcuate movement of said pins.

The discs 30 each have cylindrical flanges 33 that are rotatably supported within the bearing hubs 18. Two spaced apart pins 34

are rigid with each disc 30 and project outwardly therefrom. The pins 34 constitute means by which the discs 30 may be turned and said pins may project into holes, not shown, in the end of the key plug of the pin tumbler lock 16 or may project into grooves 35, or otherwise engage with, a thumb turn member 17. Ordinarily a primary lock mechanism 16 will be provided on the outside of the door and a thumb turn 17 will be provided on the inside of the door, as is common practice in night latches, for retracting the bolt 10. If desired the order of the lock and thumb turn may be reversed or locks may be provided on both sides or thumb turns may be provided on both sides. A key clearance slot 36, Fig. 4, is provided in each disc 30 between the two pins 34.

In installing this lock in a door 14 the hole 13 is bored from the front edge of the door inwardly for the reception of the housing formed of the half shells 6 and 7 and another hole 37 is bored crosswise of the door 14 intersecting the hole 13 for the reception of the lock 16 and thumb turn 17. The last mentioned hole 37 may be larger than the hole 13 and its center may be above the center of the hole 13 as shown in Fig. 3.

The thumb turn 17 may be rotatably mounted in an escutcheon plate 38 and the lock 16 may be secured within a receptacle 39 that is permanently secured to a supporting plate 40 and to an escutcheon plate 41. Screws 42 extend through the escutcheon plate 38 and are threaded into sockets 43 on the supporting plate 40; completing the assembly of the several parts, the screws being accessible for removal only from the inside of the door.

The outer ends of the pins 34 terminate within the limits of the circumference of the latch housing so that said pins will clear any hole 13 into which the latch housing can be inserted.

The tongue 24 is preferably made of two pieces that are punched or stamped out and are placed together to afford the desired thickness for engagement by the throw pins 29.

The two discs 30 are independent of each other in their operation. When said discs are both in the position shown in Figs. 1 and 2, the latch bolt will ordinarily be in the locked position but is free to be pushed inwardly by engagement with the usual striker plate so as to snap locked when a door is closed. When either plate 30 is turned through an angle of substantially one hundred eighty degrees the bolt 10 will be retracted and the pin 29 may be stopped within the notch 32 so as to retain said bolt in the retracted position. The notch 32 and pins 29 thus cooperate to hold the bolt 10 in the retracted position without the use of any additional catch mechanism thereby differentiating from the usual night latch in which the bolt may ordinarily be retracted by a lock or a thumb turn but is held in the retracted position by separately operated catch mechanism, the usual night latch requiring both hands to retract the bolt and fasten the same in a retracted position while this night latch requires only one hand to accomplish this purpose. The notch 32 is deep enough so that the pins 29 will not be jarred out of said notch or accidentally displaced therefrom but may readily be moved out of said notch by the lock or thumb turn.

The lock 16 is a pin tumbler lock having the usual characteristic that the key can be removed therefrom only when the key plug is in one position and this one position corresponds to the locked position of the bolt 10, this makes it possible to hold the bolt 10 in the retracted position by means of the lock 16 when the key is left in the lock but makes it impossible to inadvertently remove the key while the bolt 10 is held retracted by the disc 30 that is operated by the lock thus reducing the possibility of leaving a door unlocked by mistake.

The lock is simple in construction, not expensive to manufacture, easy to install and efficient in operation. It is easily operated by one hand saving the time of setting and releasing additional or auxiliary catches.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of our invention but it will be understood that this disclosure is merely illustrative and that such changes in the device may be made as are fairly within the scope and spirit of the following claims.

We claim:

1. In a lock a bolt, a spring urging said bolt outwardly, a tongue connected with said bolt and extending rearwardly therefrom, said tongue having an opening cut in its rear end the rear edge of said opening affording a straight edge having a shallow notch therein and a throw pin movable in the arc of a circle to engage said straight edge and retract said bolt and to enter said notch and hold said bolt in maximum retracted position, said opening clearing said throw pin to allow said bolt to be pushed rearward.

2. In a lock, a bolt, a spring urging said bolt outwardly, a relatively thin tongue extending rearwardly from said bolt, means forming an edge at the rear end of said tongue with which a throw member may engage, said tongue affording clearance space for the throw member and said edge having a shallow notch formed therein, a disc rotatably supported at the side of said tongue and a throw pin on said disc movable therewith in the arc of a circle for engag-

ing said edge to retract said bolt and for entering said shallow notch to hold said bolt retracted.

3. In a lock, a bolt, a spring urging said bolt outwardly, a relatively thin tongue extending rearwardly from said bolt, two independent discs rotatably supported on opposite sides of the rear end of said tongue respectively, a throw pin on each of said discs, means forming a surface near the rear end of said tongue for engagement with said throw pins said surface having a medially arranged shallow notch and the rear end of said tongue being shaped to afford clearance space for said throw pins, said throw pins engaging said surface and retracting said bolt when said discs are rotated in either direction and being arranged to enter said notch at the point of maximum retraction of said bolt to hold said bolt retracted.

4. In a lock, a tubular housing arranged to be inserted into a cylindrical opening the rear ends of said housing being flattened on two opposite sides, a bolt in said housing, a spring urging said bolt outwardly, a relatively thin flat tongue secured to said bolt and extending rearwardly therefrom in the medial plane of the housing, the rear end of said bolt being wide and having an opening formed therein, the rear edge of said opening being straight and having a shallow notch formed mid way between its two sides, two discs rotatably mounted in the flattened sides of said housing on opposite sides of said tongue and a throw pin on each disc for engaging with said straight rear edge to retract said bolt and for engaging within said shallow notch to hold said bolt retracted.

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