

Aug. 16, 1949.

A. F. LICKTEIG

2,479,174

LATCH

Filed March 18, 1946

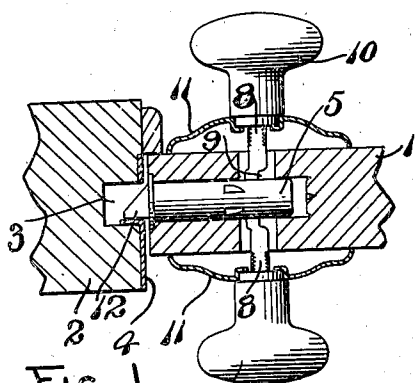


FIG. 1.

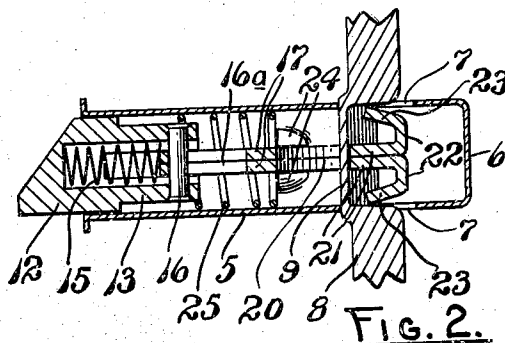


FIG. 2.

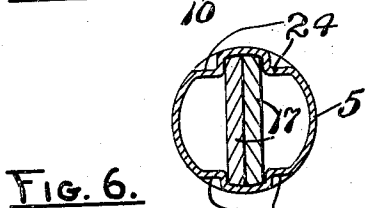


FIG. 6.

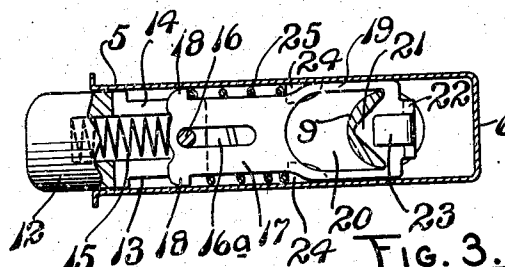


FIG. 3.

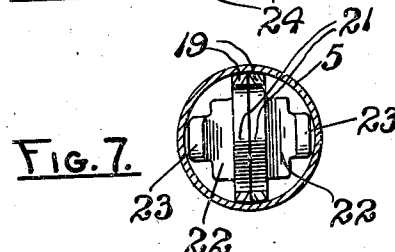


FIG. 7.

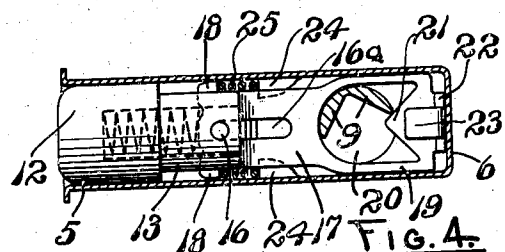


FIG. 4.

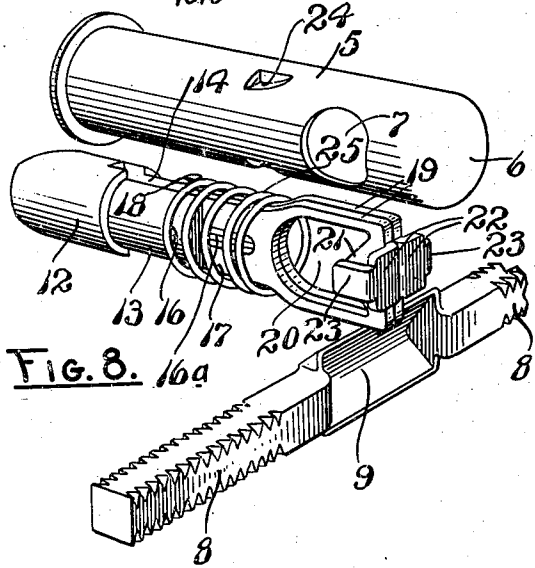


FIG. 8.

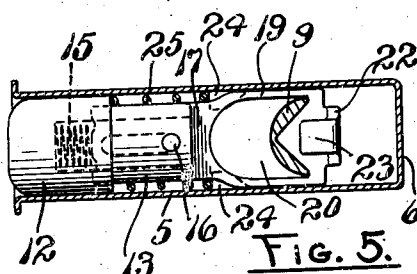


FIG. 5.

INVENTOR
ALBERT F. LICKTEIG
BY *Liverance and*
Van Antwerp
ATTORNEYS

UNITED STATES PATENT OFFICE

2,479,174

LATCH

Albert F. Lickteig, Grand Rapids, Mich., assignor
to National Brass Company, Grand Rapids,
Mich., a corporation of Michigan

Application March 18, 1946, Serial No. 655,140

2 Claims. (Cl. 292-169)

1

This invention is concerned with latches and more particularly with latches to be applied to light weight doors, for example, screen doors or the like.

It is a primary object of the present invention to produce an improved latch of this character, reducing cost of manufacture, ease and readiness of assembly, and enhance operating efficiency, the latch which has been developed being readily retracted automatically upon closing the door with the overcoming of the strength of a light spring, and being manually operated for withdrawing the latch bolt to open the door, against a spring of greater strength.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a fragmentary horizontal section through a door and its cooperating keeper carrying door casing or jamb, the latch being shown in plan.

Fig. 2 is a horizontal longitudinal section through the latch.

Fig. 3 is a longitudinal vertical section there-through.

Fig. 4 is a longitudinal vertical section through the latch housing, the inner latch bolt assembly within the housing being shown in elevation and the bolt retracted through manual operation.

Fig. 5 is a like view with the keeper engaging bolt retracted by engaging with the keeper when the door is closed.

Figs. 6 and 7 are transverse vertical sections through the latch, the section of Fig. 6 being substantially midway between the ends of the latch housing or casing, and in Fig. 7 at the rear portion of the latch mechanism within said housing, and

Fig. 8 shows in perspective the latch housing, the latch bolt assembly, and the transverse operating spindle in disassembled relation.

Like reference characters refer to like parts in the different figures of the drawing.

The door hinged for swinging movement between open and closed positions, has the latch mounted at its free vertical edge which, when the door is closed, comes into close proximity with the adjacent vertical edge of the door casing or jamb 2. An opening 3 is mortised in the vertical edge of the door casing and a metal keeper plate 4 is secured in place in the usual manner at the edge of the door casing, having an opening therethrough in conjunction with the opening 3.

The latch includes an outer housing or casing

2

5 which, preferably, is of a cylindrical cartridge form, open at its outer end and having a closed end 6. A short distance from its closed end, diametrically opposite circular openings 7 are cut in the sides of the housing 5 for the passage therethrough of the latch operating spindle. Such spindle is made from a bar, preferably square in cross section including two end sections 8 and an intermediate trough-like section 9 of substantial semi-cylindrical outline at its outer side, and having a triangular shaped elongated recess at its opposite side, the radius of curvature of the outer side of the part 9 being the same as the radius of curvature of the openings 7. The sections 8 are threaded at their corners, and door knobs 10 screwed thereon which, at their inner ends, engage with escutcheons 11 at opposite sides of the door when the latch is mounted thereon as shown in Fig. 1.

The latch assembly, which is inserted within the housing or casing 5 at its open end, includes a latch bolt 12, the outer end bevelled in the usual manner, and having a transverse diameter slightly less than the interior diameter of the casing 5. At its inner portion the bolt is reduced in diameter, as indicated at 13, and from its inner end partly into the bolt head 12 a central vertical slot 14 is cut. The bolt is axially bored from its inner end nearly to its outer end for the reception of a coiled spring 15 of relatively light strength. A horizontal pin 16 passes through the inner end portion of the bolt as shown.

A retractor element, preferably, made of two identical plates 17 of flat metal is provided, the plates lying side by side and being permanently connected together by welding, brazing or in an equivalent manner. It is inserted in the slot 14 at its front end and is provided with a horizontal slot 16a through which the pin 16 passes. At the front ends of said plates 17 upper and lower shoulders 18 are made, the outer ends of which come substantially to the inner sides of the housing or casing 5 (Fig. 3). At their inner end positions the plates 17 are widened, as indicated at 19, so that their edges likewise come substantially to the opposite inner sides of the housing 5, and through such widened portions, openings as shown at 20 are cut, are shaped at their front ends, and at their rear ends having triangular projections 21 extending thereinto. Said plates 17 at their inner ends are reduced in width and bent in opposite directions as shown in 22 for a short distance, terminating in outwardly bent tongues 23 which lie closely adjacent opposite ends of the trough section 9 and hold the spindle

3

8 against longitudinal movement. A coiled spring 25 of greater strength than the spring 15 is located around the latch bolt assembly bearing at its front end against the shoulders 18. At its rear end in the assembled structure, it bears against two pairs of shoulders 24, pressed inwardly in the upper and lower sides of the housing 5, which serve not only for the end of the spring 25 to bear against, but also as guides for the retractor element made of the plates 17.

In the assembly on the door, said door is bored with a horizontal opening for the latch housing, as shown in Fig. 1 and it, with the latch bolt assembly therewithin, is inserted therein. The door is also transversely bored at the openings 7 in the latch housing 5. The operating spindle 8 is passed through the openings 7 and through the openings 20 in front of the triangular projections 21, one of the knobs being removed during such assembly and later replaced. Such assembly is very quickly performed. It is evident that on turning either knob in either direction, the entire latch bolt assembly may be retracted, as shown in Fig. 4, by the action of the intermediate section 9 of the spindle against the edges of the projections 21. The outer end of the latch bolt 12, when the door is closed as in Fig. 1, enters the keeper 4 as shown, and on turning a door knob as described, such projecting head is withdrawn, freeing the door for opening. Spring 25 is compressed, the pin 16 at the outer end of the slot 16a serving to withdraw the bolt 12 when the retractor element is thus operated.

In closing the door, the bevelled edge of the bolt 12 striking against the keeper plate 4 is pushed in against the lighter resistance of the spring 15 until the keeper opening is reached, whereupon the bolt is forced outwardly by said spring 15 into the keeper opening as shown in

4

Fig. 1. In Fig. 5, the bolt is shown retracted in the position it occupies while riding over the keeper plate to its bolt receiving opening.

The construction described is of practical, simple economical form. It is readily manufactured and assembled and is easily installed on a door.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A latch comprising a housing having an open outer end, a retractable latch bolt located in the housing and projecting through said open end, a retractor connected to said latch bolt and slidably mounted in said housing, said retractor having an opening with a cam surface on an edge thereof, spring means acting to project said latch bolt, a rotatable spindle having a trough shaped cam portion extending through said opening in the retractor and engageable with said cam surface thereon and tongues extending laterally from said retractor and engageable with the ends of said trough section.

2. The elements of claim 1 in which said retractor is made of two flat plates, the inner end of each of which is bent laterally to form said tongues.

ALBERT F. LICKTEIG.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,779,410	Dexter	Oct. 28, 1930
1,871,633	Ter Meer	Aug. 16, 1932
2,369,874	Voigt	Feb. 20, 1945
2,382,663	Quigley et al.	Aug. 14, 1945