Aug. 2, 1938. F. W. McCORMICK 2,125,515

LATCH CONSTRUCTION

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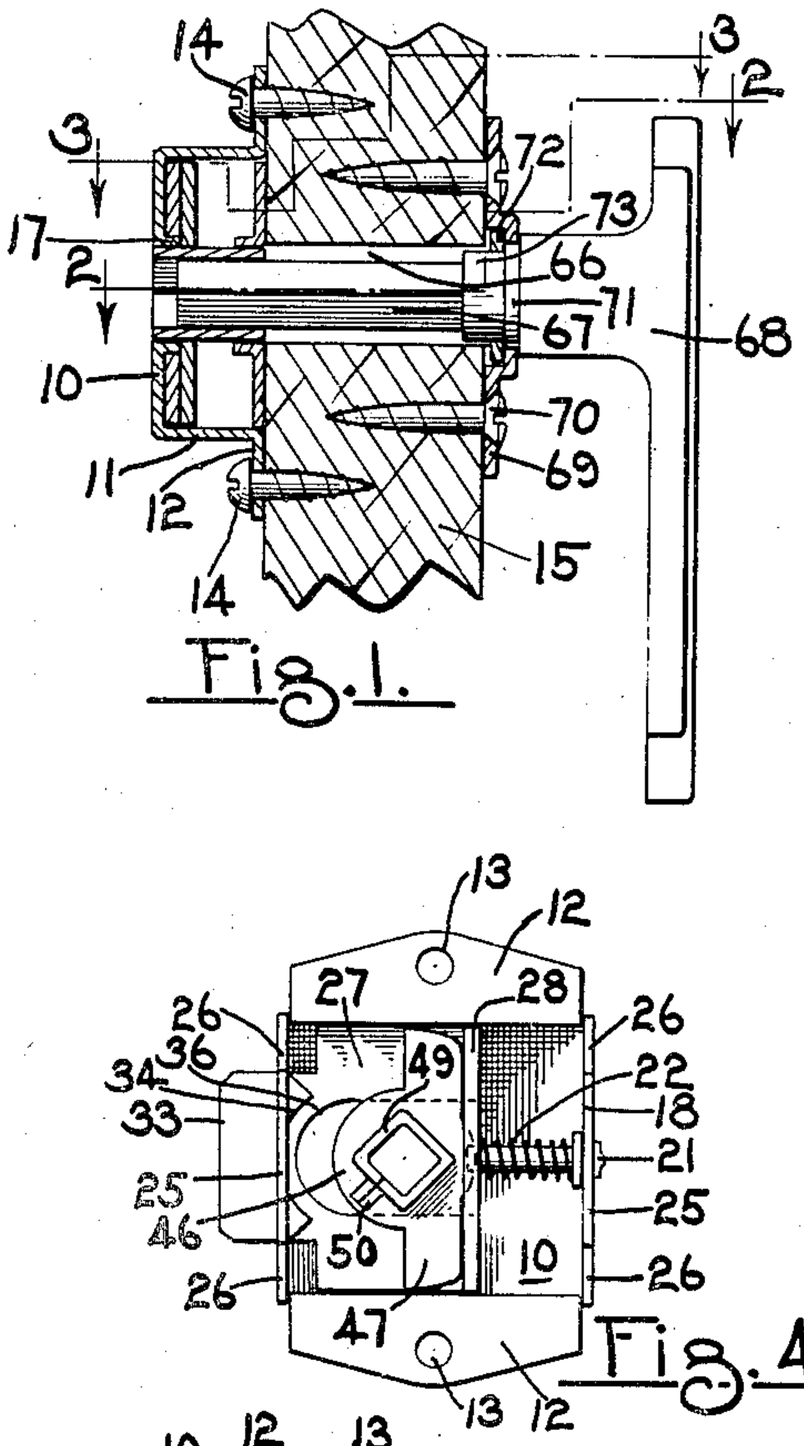

Fig. 1.

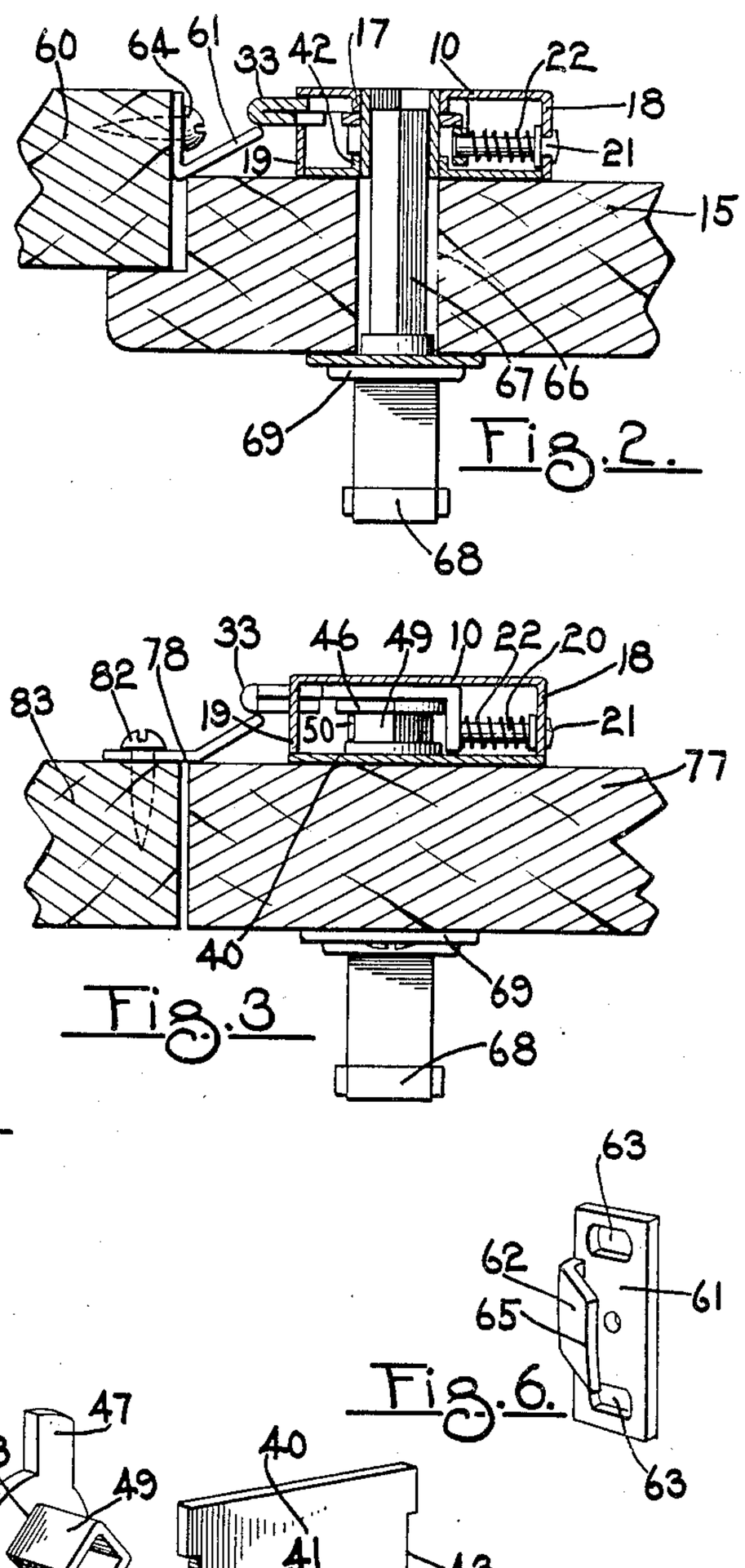

Fig. 2.

Fig. 4.

Fig. 3

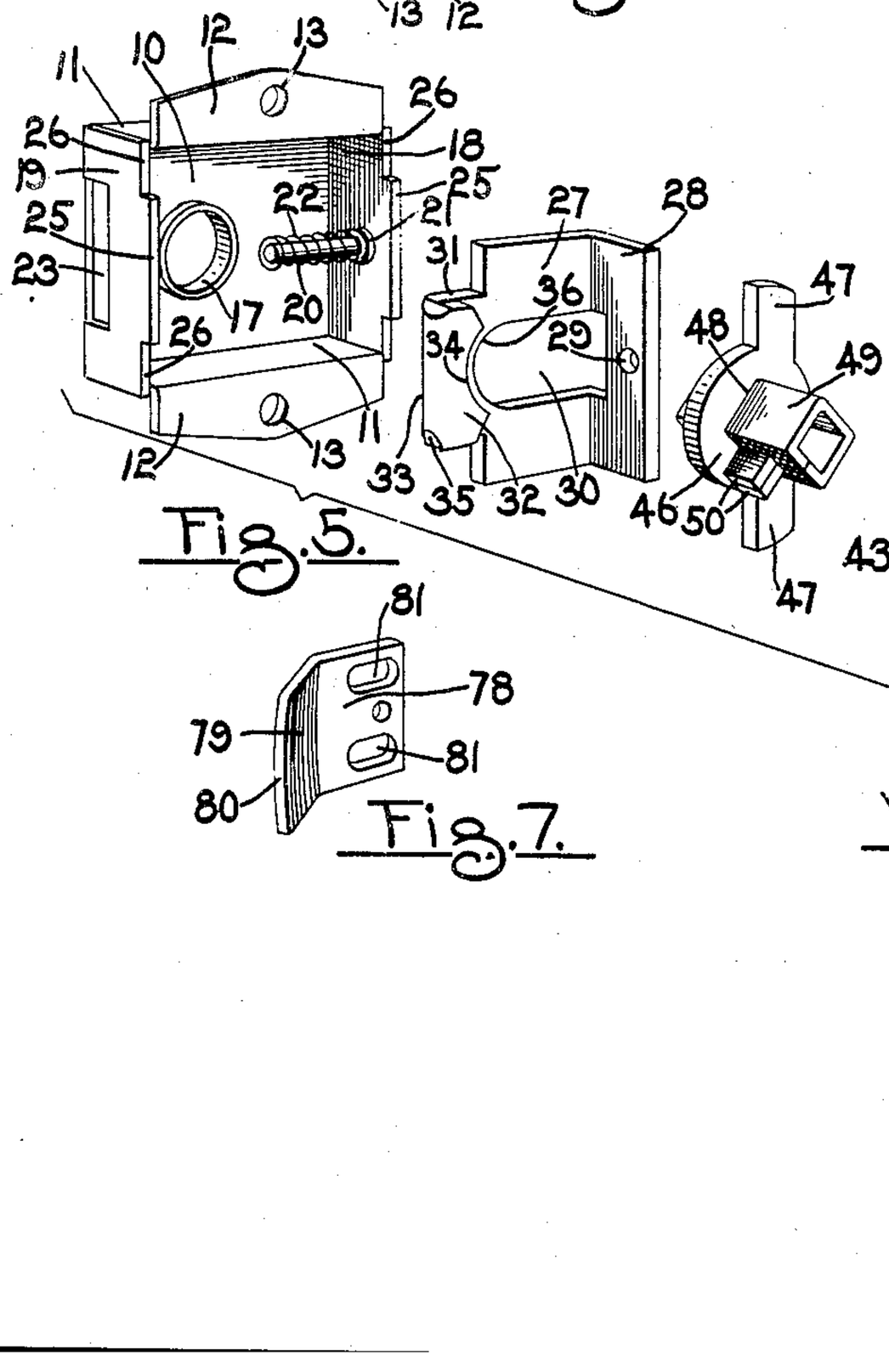

Fig. 5.

Fig. 6.

Fig. 7.

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LATCH CONSTRUCTION

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2 Claims. (Cl. 292—169)

This invention relates generally to a latching mechanism and more particularly to a latch which is capable of being used on either right hand or left hand doors. Also, the construction permits attachment of my invention to either the offset type or the flush type of doors or the like.

One of the main features of my invention resides in the specific construction of the individual parts plus their arrangement whereby the several parts coact together to produce the necessary and desirable functions of a durable and long-lived latch. That is, although there are only six parts in the latch proper, nevertheless it performs its latching functions efficiently.

Another very important feature lies in the construction of the latch bolt per se, this latch bolt or plate having a return bent portion thereon whereby its camming nose is curved to the proper degree during its manufacture. Also, this novel latch bolt is desirable inasmuch as the larger sized slot required therefor is easier to stamp through the housing.

Another feature lies in the individual construction of the camming lever, this having a square opening therein to receive a sleeve, the outward pressure of this sleeve aiding in holding these two members tightly together. Also, the sleeve carries integrally formed spacing means thereon.

Another feature lies in the lateral extension of the latch bolt. The edge of this extension rides against the underside of the cover plate and thus any strains against the outer end of the latch, acting in the nature of a lever of the first class, are taken care of by contact between the rear of the latch bolt and the bottom of the housing or between the extension and the cover plate. Thus the operating mechanism of the latch is not called upon to transmit any excessive forces.

Another advantage in my construction is that the bottom member and the cover of the housing have inwardly extending bosses. The first mentioned boss incidentally serves as a stop against excessive inward movement of the latch bolt whereby excessive compression of the spring means is prevented. Also, this boss serves as a bearing against which the camming lever engages, thus preventing frictional engagement between the camming lever and the latch bolt. The other boss is struck inwardly from the cover, rides against the spacing member on the square sleeve and aids in maintaining this sleeve and the camming lever against axial movement.

Other advantages will become apparent as the description proceeds.

In the drawing:

Fig. 1 is a sectional view through a door and a latch construction embodying my invention attached thereto.

Fig. 2 is a sectional view taken along the plane of line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is a plan view of my latch construction, the cover plate being removed.

Fig. 5 is a perspective view showing the several parts of my latch in disassembled relationship.

Fig. 6 is a perspective view of one type of my strike or keeper.

Fig. 7 is a perspective view of a second form of my strike or keeper.

Similar numerals refer to similar parts throughout the several views.

As clearly shown in Fig. 5, the housing has a bottom member 10 and side walls 11 bent at right angles thereto, these side walls being continued in flanges 12 having screw holes 13 whereby screws 14, see Fig. 1, may be passed therethrough into the door 15 to maintain the housing in position.

The bottom member 10 has an opening 16 therethrough which is inwardly flanged thereat around at 17. The bottom member 10 has end walls 18 and 19, the former carrying a pin 20 headed therein at 21. A coiled spring 22 encircles the rigid pin 20. The other end wall 19 is slotted at 23, this slot receiving the latch bolt therethrough.

The upper edges of the end walls 18 and 19 have raised portions 25 at their central portions and lower portions 26 adjacent thereto. It will be noted that the portions 26 are in a plane only slightly below the plane of the underside of the flanges 12 for a purpose to be described.

The latch bolt is formed of a body portion 27 of flat construction from which an abutment or lateral extension 28, having an opening 29, is integrally formed. A slot 30 is formed through the body 27 and extends upwardly into the extension 28. The latch bolt proper is formed by continuing the body portion 27, narrowed as shown at 31, and then return bending the same as shown at 32, this forming a rounded nose 33. See Figs. 3 and 5. The return bent portion 32 terminates in a concave shape as shown at 34. The blank of metal from which the narrow tongue of metal 31 is struck has two small holes pierced therethrough and about one-half of each of these holes remains in the finished latch bolt as indicated at 35 Thus, the formation of extensions or burrs is eliminated at these points.

From the description above described it will be seen that the latch proper is adapted to be inserted outwardly through the slot 23 whereupon the body portion 27 is slidably positioned against the bottom member 10, the opening 30 extending around the flange 17. The pin 20 extends through the hole 29 and serves to guide the inner part of the latch bolt. The curved end of the opening 30, indicated by the reference numeral 36, limits the inward movement of the latch bolt and thus prevents excessive compression of the spring 22. The abutment or extension 28 extends upwardly and terminates in a plane only slightly below the plane of the surfaces 26.

A cover member 40 has an opening 41 around which an inwardly extended flange or boss 42 extends. The ends of the cover 40 are cut away at 43 to receive the raised portions 25 previously referred to. The thickness of the cover plate is greater than the height of the raised portions 25 and the distance between the surfaces of portions 26 and the underside of flanges 12 is less than the thickness of the said cover plate. Thus, when the cover member 40 is placed in its closed position the outer surface thereof is slightly raised above the plane of the underside of the flanges 12 and thus the insertion of the screws 14, see Fig. 1, causes the cover plate to be forced to a tightly closed position. When in this position to the underside of the cover, see Fig. 3, and thus any pressure on the latch proper, which tends to turn the latch bolt about any intermediate axis, is taken care of by contact between this extension 28 and the cover or else between the bottom of the housing and the latch bolt body. Such a condition might arise from pulling upon the handle member without withdrawing the latch bolt.

As shown in Fig. 5, numeral 46 indicates a circular body having arms 47. The body 46 has a square opening 48 through which the sleeve 49 passes. This sleeve member 49 is bent to shape as shown whereby it is somewhat resilient and tends to enlarge from its formed shape. The sleeve 49 carries short extensions 50 near its juncture and these extensions 50 serve to limit the insertion of the sleeve 49 into the camming lever construction. The sleeve 49 is forcibly driven into the square hole of the camming lever construction, this camming member being comprised of the body member 46 and the arms 47.

The camming lever construction is inserted alongside of the body 27 of the latch bolt with the short end of the square sleeve 49 extending into the opening 16 of the bottom member 10. The body 46 bears against the top edge of the flange 17 and the rear curved portion of the body 46 extends into the part of the openings 30 which is in the extension 28. This interlocking is indicated by the dotted lines in Fig. 4. This construction securely holds the parts together whenever the latch bolt is in its extended position. The cover member 40, when placed in its operative position, has the flange 42 riding against one end of the integrally formed stops 50 and thus axial movement of the sleeve is prevented.

As shown in Fig. 2 the door 15 is offset with respect to the frame 60. In this case a strike or keeper member 61, having a tongue 62 and slots 63, see Fig. 2. The tongue 62 is bulged outwardly at 65 thus restricting the contact area between the tongue 62 and the curved edge 33 of the latch bolt.

The door 15 has an opening 66 extending therethrough and the squared shank 67 of a handle 68 extends therethrough and slidably but non-revolubly extends into the inner squared portion of the sleeve 49. An escutcheon plate 69 is held upon the door 15 by the screws 70, see Fig. 1, and receives the shouldered cylindrical portion 71 of the handle 68. A locking washer 72 is riveted upon a smaller cylindrical portion 73 of the handle and thus the handle member is a complete assembled unit. (See Fig. 1.) Turning of the handle member in either direction causes contact of one or the other of the camming arms 47 against the member 28, see Fig. 4, and causes retraction of the latch bolt against the action of the spring 22. As shown in Fig. 3, my latch mechanism may be applied to a door 77 of flush construction. In this case the strike or keeper member 78 has an obtuse member 79 bulged at 80, and having slots 81 through which screws 82 pass to hold the same against the casing 83. See Figs. 3 and 7. The door may be swung to closed position, as shown in Fig. 3, contacting against the strike member prior to which the latch bolt has cammed against the tongue 79 until it snapped to locked position therebehind.

From the above description it will be realized that I have invented a latch which is simple and economical to manufacture but yet one which is sturdy in character and positive in action. It is adaptable for either right or left hand doors simply by changing the same and is also capable of use on either the flush type or offset type of doors. Due to the sliding handle construction, fitting in the sleeve 49, it will be understood that my construction is applicable to doors of different thicknesses. This is very desirable as no cutting of the door or adjusting of the latch construction is necessary.

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 combined sleeve and cam member comprising a flat metal plate having an enlarged central part with cam arms extending therefrom, said enlarged part having an opening of irregular shape therethrough, a sleeve having a cross sectional shape similar to but slightly larger than the size of said opening, said sleeve being slightly yieldable radially and located in said opening, and means for preventing the movement of said sleeve in one direction.

2. A combined sleeve and cam member comprising a flat metal plate having an enlarged central part with cam arms extending therefrom, said enlarged part having a square opening therethrough, and a sleeve having a square cross sectional shape, said sleeve being formed of sheet metal and having integral outwardly extending ears engaging said plate to prevent movement thereof in one direction.

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