

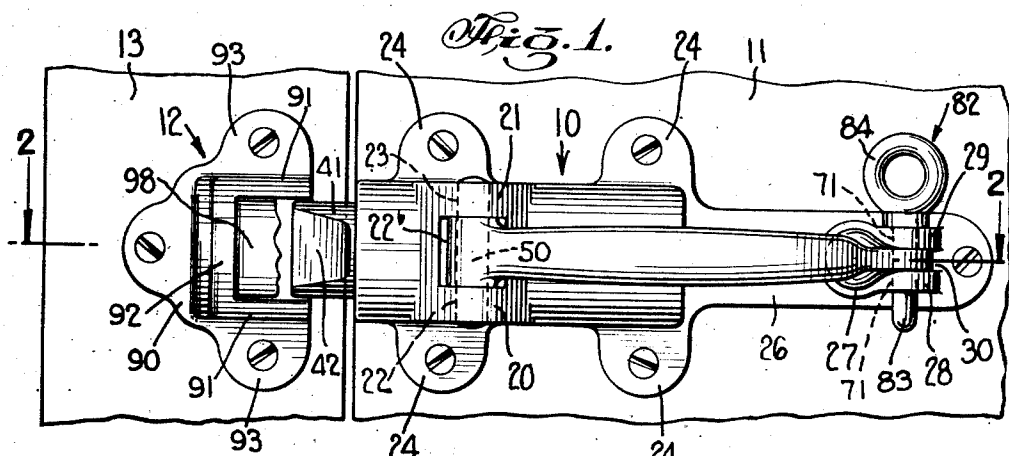
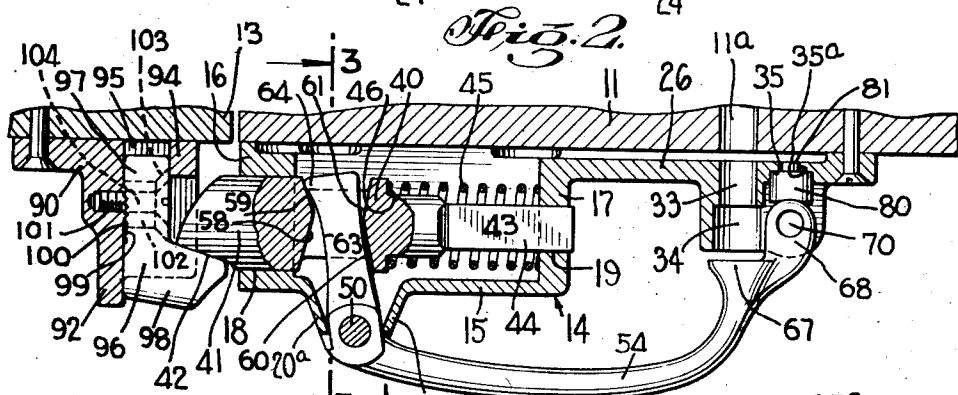
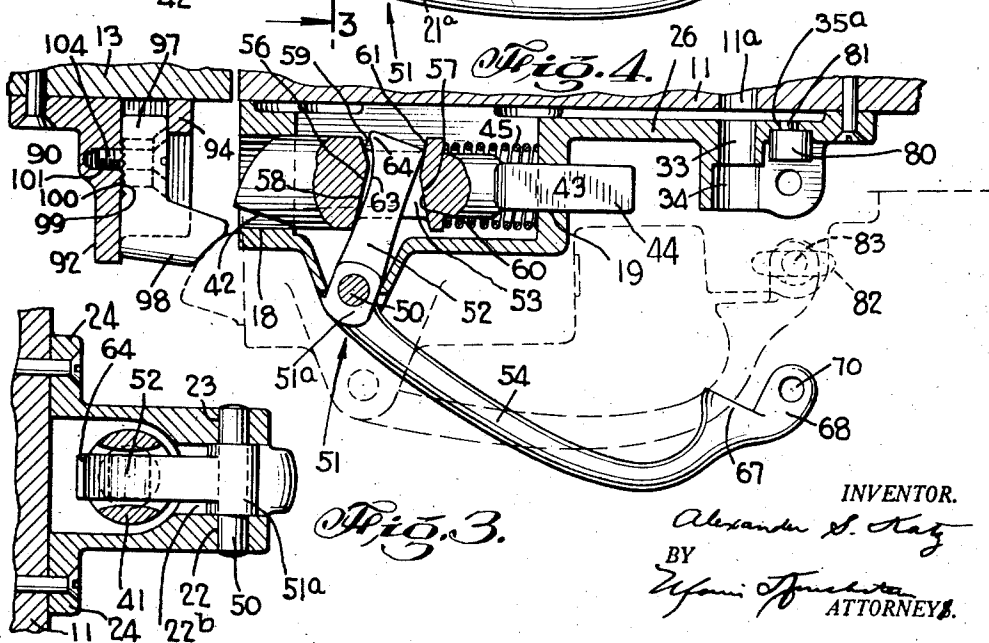
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LOCK

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UNITED STATES PATENT OFFICE

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LOCK

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This invention relates to locks. It is particularly directed to a latch lock for a refrigerator door or like purposes.

An object of this invention is to provide a lock of the character described having latch bolt retracting means provided with a handle, and highly improved means for preventing excessive impacts on the handle upon releasing the latter after retracting the bolt.

A further object of this invention is to provide improved, readily releasable means for preventing the door on which the lock is mounted from being slammed shut; as, for example, when a person is within the refrigerator.

A still further object of this invention is to provide a compact, strong, neat and rugged lock of the character described having highly improved means for limiting the reciprocation of the latch bolt in opposite directions, without causing strain on the lock casing, which shall be comparatively cheap to manufacture, comprise few and simple parts, positive and smooth in use, and yet practical, durable and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a front elevational view of a lock embodying the invention mounted on a door, with part of the keeper broken away;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 2; and

Fig. 4 is a view similar to Fig. 2 but showing the latch bolt retracted and the bolt actuating means locked against movement, in dash-dot lines.

Referring now in detail to the drawing, 10

designates a lock embodying the invention, here shown in the form of a latch lock mounted on a door 11, for example, a refrigerator door, for cooperation with a suitable keeper 12 mounted on the door jamb 13. The lock 10 comprises a casing 14 formed with a substantially semi-cylindrical wall 15, a front wall 16, and a rear wall 17. The front wall 16 is provided with a cylindrical opening 18, and the rear wall 17 is formed with a preferably square opening 19 aligned with said cylindrical opening. Extending forwardly from said wall 15 are a pair of integral parallel ears 20 and 21 interconnected by inclined wall portions 20a and 21a and forming an opening 21b. The ears 20 and 21 are formed with aligned openings 22 and 23.

The casing 14 is formed with a plurality of outwardly extending ears 24 having openings for receiving screws whereby the lock casing may be attached to the refrigerator door or like support. Extending rearwardly from said casing 14, is an integral extension 26 substantially contacting the door or support 11. Integrally formed with said extension 26 adjacent the rear thereof, is a forwardly extending substantially cylindrical wall 27 from which there extends parallel ears 28 and 29 forming a slot 30 therebetween. The extension 26 is further provided with an opening 33 coaxial with the cylindrical opening 34 formed by said cylindrical wall 27. In said extension 26 is further formed a recess 35 disposed between the ears 28 and 29, and a through opening 35a communicating with said recess 34.

Slidably mounted within the casing 14 is a latch bolt 40 having a cylindrical head 41, slidably received within the opening 18 and formed with a beveled surface 42 for engaging the keeper 12, as will hereinafter more fully appear. The bolt 40 is further formed with a rearwardly extending reduced portion 43 and with a preferably square shank 44 extending through the opening 19.

A coil compression spring 45, mounted on the reduced portion 43, extends between the rear wall 17 of the casing 14 and the shoulder 46, formed at said reduced portion. The

spring thus normally retains the latch bolt 40 in projected position, as shown in Fig. 2.

For retracting the latch bolt, there extends through the aligned openings 22, 23 of the ears 20 and 21 a cross pin 50, and pivotally mounted on said pin is an actuating member 51 having portion 51a formed with an opening receiving said pin and with a bolt engaging portion or arm 52 extending through a transverse opening 53 formed in the bolt 40. Extending from portion 51a of member 51 is a handle portion 54 disposed exteriorly and projecting rearwardly of the casing. As shown on the drawing, the transverse opening 53 of the latch bolt 40 is so shaped as to form a pair of oppositely disposed surfaces 56 and 57. For cooperation with portion 52 of member 51 in the manner hereinafter stated, the surface 56 is formed with diverging portions 58 and 59, whereas the surface 57 is formed with diverging portions 60 and 61. It will be noted that the surface 58 is substantially parallel to the surface 61, whereas the surface 59 is substantially parallel to the surface 60. The portion 52 of the actuating member 51 preferably has a somewhat curved front surface 63 forming a tip extension 64, and a substantially flat rear surface 65.

As the handle 54 is pulled away from the door the arm 52 will retract the latch bolt. Upon release of the handle after retraction, the spring 45 will project the bolt and bring the handle back to its normal position, as shown in Figs. 1 and 2. The handle 54 preferably extends rearwardly and has a portion 67 overlying the edge of cylindrical portion 27 and the opening 34, and extension 68 projecting within the groove 30 and between the ears 28 and 29. The portion 68 may be formed with an opening 70 and the ears 28 and 29 formed with openings 71 aligned with said opening 70, for the purpose hereinafter appearing.

To prevent the rear portion 67 or ear 68 of the handle from striking either the cylindrical portion 27 or the ears 28 or 29 upon release of the handle after retracting the bolt, the arm portion 52 of member 51 is so dimensioned with respect to the opening 53 and the surfaces 56 and 57 that in the projected position of the bolt, the tip 64 of said arm 52 will contact the surface 59 of the bolt opening 53 and the rear surface 65 of the bolt will contact the surface 60 of said opening. Due to this further projection of the bolt 40 cannot take place, and the rear portion of the handle 54 is preferably somewhat spaced from the cylindrical portion 27 and the ears 28 and 29 when the contact between the arm 52 and the surfaces 59 and 60 takes place. Thus, should the handle be pulled for retracting the bolt and then released, the spring will project the bolt, rotate the handle back to its normal position, and the contact between the arm 52 and the bolt at the opposite surfaces of the open-

ing 53 will limit projecting movement of the bolt and pivotal movement of the handle, and prevent the rear end of the handle from striking any portion of the lock casing or extension 26, thus obviating danger of breakage of the handle which may be therefore made thin compared to the heavy arm 52.

The retracting movement of the bolt 40 may be limited by contact of the arm 52 with the surfaces 58 and 61 of opening 53, in the fully retracted position of the bolt. The portion 51a of member 51 may be formed with a ledge 55 engaging the edge of wall 20a in fully retracted position of the bolt to limit the retracting movement of said bolt. Thus the limit of the projecting movement of the bolt is effected directly between the actuating arm 52 and the bolt itself and no contact with any part of the casing takes place, thereby relieving strain from the lock casing or the mounting means for said casing.

A rubber block 80 may be inserted within the recess 34 for contacting the rear of the extension 68 to further soften any impact on the handle. Said block 80 may be formed with a stem 81 received in opening 35 of extension 26 for effectively retaining the block in position. A padlock may be passed through the aligned openings 70 and 71 for locking the lock against opening movement. Furthermore, the pin 82 having a shank 83 and a handle 84 may be utilized for preventing retraction of the bolt, as for example, should the refrigerator door be opened and it be desired that the door should not be slammed shut. In such case the door is first opened and then the handle 53 permitted to move back to its normal position, as shown in the dot-dash lines of Fig. 4. The shank 83 of the pin is then passed through the aligned openings 70 or 71. Thus, should some one enter the refrigerator, the door could not be slammed shut and the bolt head 41 will merely strike the keeper 12 without being retracted, or snapping into engagement with the keeper for locking the door. The pin 82 may obviously be easily removed by merely grasping the thumb piece 84 and pulling the pin out.

With the pin 82 removed the bolt may be retracted by means of a rod pushed through an opening 11a formed in the door 11 and registering with openings 33 and 34. The rod (not shown) may be pressed against portion 67 of the handle for pivoting the actuating member 51.

The keeper 12 may comprise a casting 90 formed with parallel side walls 91 and a rear wall 92. Projecting outwardly from and integrally formed with said side and end walls are flanges 93 provided with suitable openings for receiving screws or the like fastening means, whereby the casting 90 may be attached to the door jamb or like support. Interconnecting the side walls 91 is a short

wall portion 94 forming with said side and rear walls, a slot 95 and slidably mounted within said slot 95 is a strike member 96 having a shank portion 97 and a head 98 adapted to engage the beveled portion 42 of the latch bolt. Said shank portion 97 is preferably formed on the rear surface thereof with parallel teeth 99 cooperating with complementary teeth 100 formed on the inner surface of said rear wall 92. Thus the member 90 may be attached to the casting 90 in a number of adjusted positions. For attaching the strike member 96 to said casting in the various adjusted positions thereof, the rear wall 92 is provided with a screw threaded opening 101 and the shank portion 97 of said member 96 with an elongated slot 102 having a tapered edge portion 103 on the front surface of said shank. A screw member 104 extending through the slot 102 and engaging the threads of the opening 101, serves to tighten the strike member 96 against movement.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A lock comprising a casing, a spring projected bolt slidably mounted within said casing, said bolt having a transverse opening and spaced surfaces on said bolt at said opening inwardly thereof, and a bolt retracting lever pivotally mounted in said casing having a bolt retracting arm positioned within said opening, said arm having individual contact with each of said spaced surfaces in the projected position of said bolt, said arm and said surfaces being so related in said projected position of the bolt as to create a locking engagement relatively to each other whereby to prevent further movement of said handle and bolt in the direction of projection of the latter.

2. A lock comprising a casing, a spring projected bolt slidably mounted within said casing, said bolt having a transverse opening and spaced surfaces on said bolt at said opening inwardly thereof, and a bolt retracting lever pivotally mounted in said casing having a bolt retracting arm positioned within said opening, the free end of said arm being wider than its intermediate portion thereof whereby opposite sides of said arm are engaged at the same time by said spaced

surfaces at opposite ends of said opening when the bolt is in projected position, said arm and said surfaces being so related in said projected position of the bolt as to create a locking engagement relatively to each other whereby to prevent further movement of said handle and bolt in the direction of projection of the latter.

3. A lock comprising a casing, a spring projected bolt slidably mounted within said casing, said bolt having a transverse opening and spaced surfaces on said bolt at said opening inwardly thereof, said spaced surfaces diverging from points inwardly of said opening to points at opposite ends of said opening, and a bolt retracting lever pivotally mounted in said casing having a bolt retracting arm positioned within said opening, said arm having a curved front surface and a flat rear surface, said curved surface having contact with one of said spaced surfaces near one end of the opening when the bolt is in projected position and near the other end of the opening when the bolt is in retracted position, and said flat surface having contact with the other spaced surface near the second mentioned end of the opening when the bolt is in projected position and near the first mentioned end of the opening when the bolt is in retracted position, said arm and said surfaces being so related in said projected position of the bolt as to create a locking engagement relatively to each other whereby to prevent further movement of said handle and bolt in the direction of projection of the latter.

In testimony whereof I affix my signature.
 ALEXANDER S. KATZ.