Aug. 4, 1953 H. G. KNUTH 2,647,780

LATCH MECHANISM

Filed Dec. 15, 1944 2 Sheets-Sheet 1

Fig. 1.

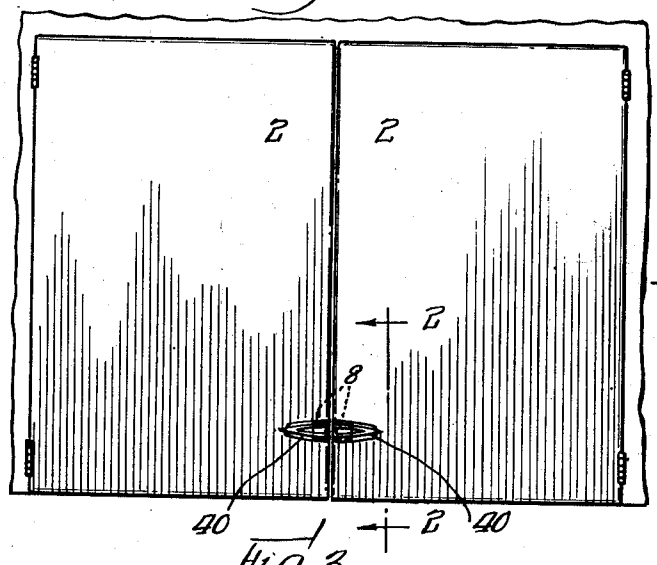


Fig. 3.

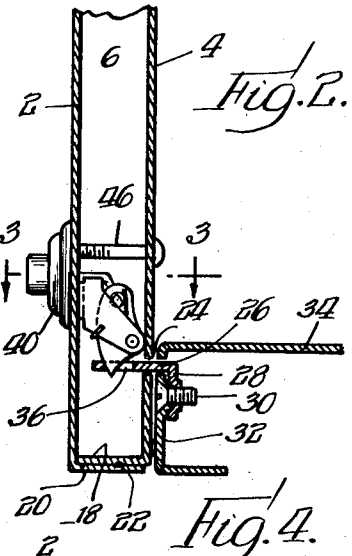
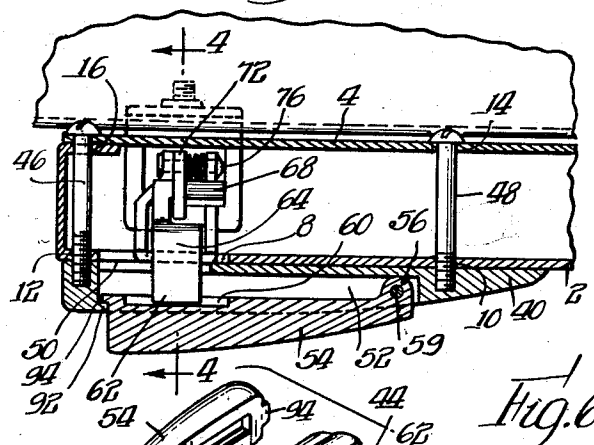


Fig. 2.

Fig. 4.



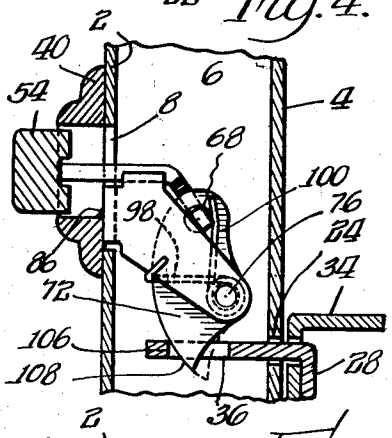


Fig. 6.

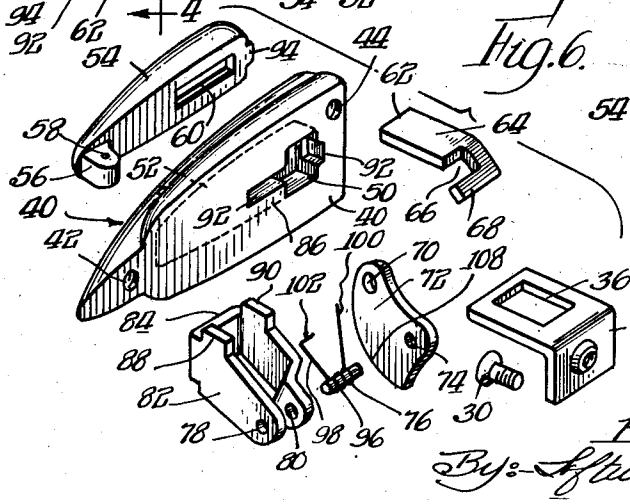
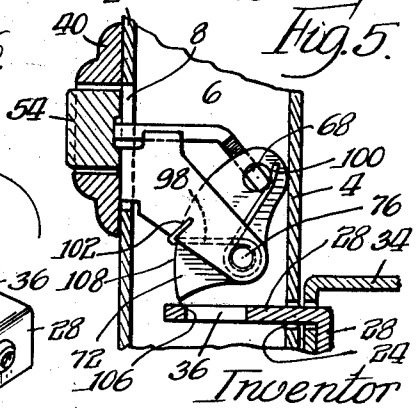


Fig. 5.



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LATCH MECHANISM

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Fig. 7.

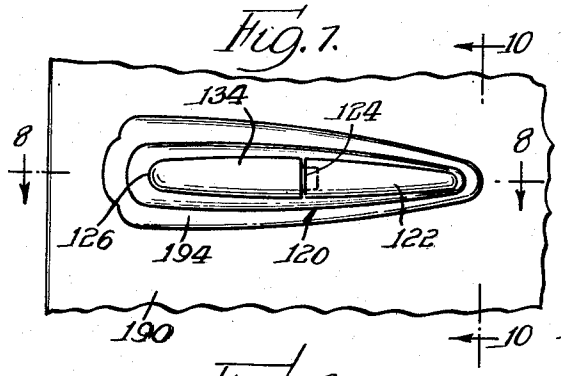


Fig. 8.

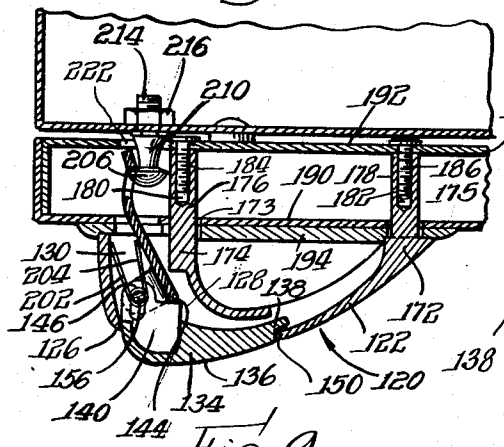


Fig. 9.

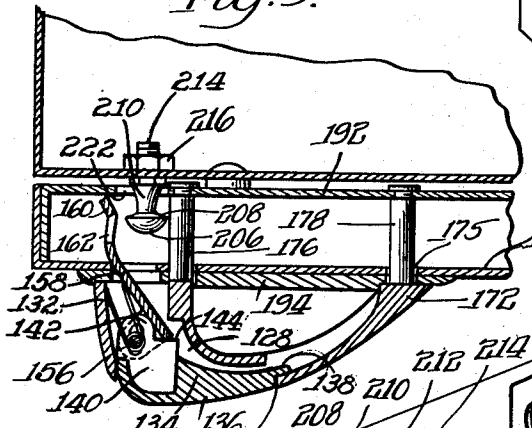
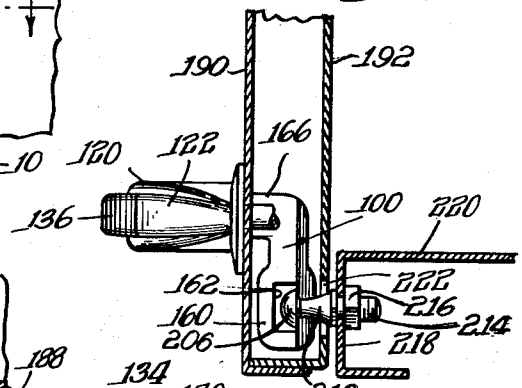


Fig. 10.



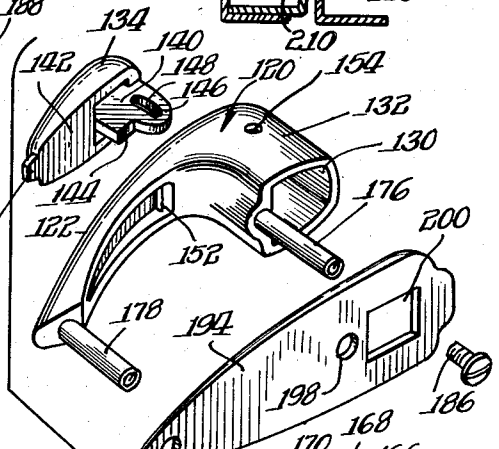


Fig. 11.

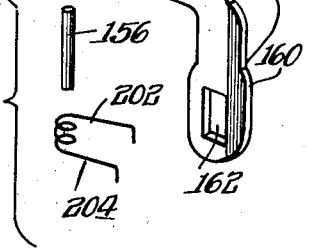
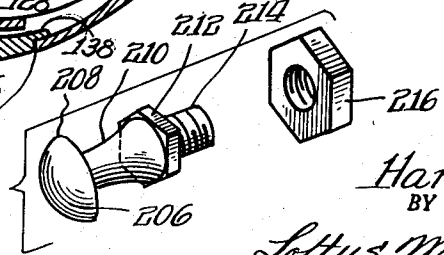


Fig. 12.



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LATCH MECHANISM

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Application December 15, 1944, Serial No. 568,263

10 Claims. (Cl. 292—224)

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This invention relates to door latch mechanisms of the push type.

Among the objects of the present invention is to provide a door latch fabricated and applied as a unit, separately and independently of its keeper, to the door jamb or door wall, without the usual lining up of parts with the door wall.

Another object of the invention is to provide a door having spaced front and rear walls, the front wall being provided with an opening and the rear wall being provided with an opening. In addition there is an ornamental support, together with means for mounting the same at the front wall and preferably by means passing through the rear wall for engaging the rear face of said support whereby so to mount it, the ornamental support having an opening in its front face in which is mounted a shiftable latch actuator, preferably a push plate, which in the more specific aspects of the invention forms a substantially continuous front wall for the ornamental support while at the same time being shiftable relatively thereto by a push inwardly on the front wall of this support; mounted upon and carried by this ornamental support and extending inwardly into the space between the front and rear walls is a shiftable latch member, the inner portion of which lies adjacent the opening in the rear wall of the door whereby to normally engage a keeper which is adapted to project preferably normally to the plane of the door into said opening when the door is closed to be engaged by the latch, and in addition the latch is positioned on the ornamental plate in such a manner that upon inward pushing movement on the latch actuator or push plate the latch is actuated to be released from the keeper whereby the door will be opened.

Another object of the invention is to provide a latch mechanism for a door wherein the mechanism includes a latch plate adapted to be fastened to the front wall of the door, the plate including a bracket rigidly mounted thereon and a shiftable cam-shaped latch shiftably and preferably pivotally mounted on the bracket, the latch plate including a shiftably mounted actuator connected by means of a link to the cam latch so that upon operative movement of the actuator relative to the latch plate, the cam latch is positively shifted to actuate the latch relatively to its keeper which is independently mounted upon the stationary door jamb or door frame, the cam being formed whereby progressively and wedgingly to engage with the keeper to cause the door to close upon the frame or jamb so that irrespective of wear

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upon the keeper or any other contacting part, the door will always be closed to a tight position without need of any adjustment of take-up.

Still another object is to provide a latch for a door comprising a plate attached to the front of the door which plate is recessed to receive a hinged push plate projecting outwardly from the front of the latch plate on the door and to the rear of which push plate is fastened a link or connector, the inner end of which lies housed within the recessed plate and the outer end of which is adapted to engage a shiftable cam latch which is shiftably mounted on a bracket rigidly mounted on the inner face of the latch plate, there being resilient means associated between the cam latch and the link actuator or connector whereby the cam latch is normally moved into keeper projecting position, and whereby conversely the push plate is moved to outward position where it can be pushed by the operator for releasing the latch, the cam of the cam latch being designed so that it engages the keeper with a progressively wedging action so that irrespective of the wear on the latch or the keeper or any other part of the mechanism, the latch will always tightly engage the keeper thereby eliminating the necessity of take-up adjustments.

Another object of the invention is to provide, in combination with a latch of the foregoing characteristics, a door having an opening sufficiently large to receive the bracket and cam latch members thereof and provided with additional spaced openings to receive fastening means passing through said spaced openings into the latch to assemble it as a unit to the door with the actuating mechanism disposed within the plane of the inner wall of the door, the latch having an actuator disposed wholly without the outer wall of the door, plus an actuating mechanism interconnecting the actuator and the latch to cause its operation.

Still another object of the invention is to provide a latch and keeper mechanism for a cabinet or shelving construction and its door wherein the door is provided with spaced registering openings through the front and rear walls thereof, one of which registering openings is of sufficient size so that a keeper may be mounted upon the stationary part of the cabinet or shelving in such position substantially to line up with said opening in the door when the door is in closed position and wherein the latch mechanism itself includes a support adapted to be fastened upon the front wall of the door by fastening means which pass through other spaced

openings of the door and its rear wall member and wherein the latch itself carries a shiftable latch mechanism which shiftably passes through the relatively larger opening in the front wall of the door in position to engage with and shiftably to disengage from the keeper, the mechanism being constructed and arranged so that exact lining up of the keeper and the latch mechanism on the door are not essential, and whereby the latch as a unit may be mounted from the door and repaired, or a substitute latch mechanism again mounted on the door as a unit to cooperate with the keeper.

Another object of the invention is to provide a combined handle and latch mechanism for a door wherein the handle includes a push type operator detachably, pivotally mounted to the handle and operable to shift an elongated latch or keeper engaging member to latch disengaging position, a spring being operable normally to maintain the latch in keeper engaging position, the latch mechanism being mountable directly on the front wall of the door through pre-spaced openings formed on the front and rear walls of the door so that the mechanism may be fastened to the door through the rear wall thereof and wherein the keeper engaging latch mechanism is adapted to pass through a sufficiently large opening in the front wall of the door to engage with and disengage from a keeper which projects through a sufficiently large registering opening in the rear panel of the door by means of which construction the combined latch and handle mechanism may be directly mounted upon the front wall of the door by predeterminedly spaced openings formed in the door and its door panel without the necessity of exact lining up operations and whereby the handle and latch mechanism may be removed from the door as a unit.

Another object of the invention is to provide an improved handle and latch mechanism including a push type of latch operator forming a part of the handle and preferably having its outer wall flush and substantially streamlined with respect to the outer wall of the handle but capable of operation for actuating the latch while at the same time not interfering with the proper use of the handle for fully opening the door.

Another object is to provide a novel type of handle recessed to receive a pivoted latch operating plate, which when assembled to the handle forms a portion thereof but which may be operated independently of the handle to shift the latch and which handle likewise houses the shiftable keeper engaging member or latch and spring means for normally maintaining the latch in desired keeper engaging position.

Another object is to provide proper mounting means for the combined handle and latch which will prevent the collapsing of the rear wall or panel of the door when the handle and latch are mounted upon the front face of the door whereby to preclude the proper engagement of the latch with the keeper and whereby to preclude the misalignment of the latch and keeper on the door and the stationary part upon which the keeper is mounted, and which stationary part is to be closed by the door.

Other and further objects of the invention will be apparent from a perusal of the following specification, when taken in connection with the accompanying drawings, wherein:

Figure 1 is a front view of any type of cabinet provided with a pair of the latch mechanisms of the present invention;

Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 3;

Figure 5 is a view similar to Figure 4, taken in a different position;

Figure 6 is an exploded perspective view of the various parts comprising the latch;

Figure 7 is a front view of the preferred form of my invention illustrating the latch formed as a part of the door handle;

Figure 8 is a sectional view taken on the line 8—8 of Figure 7;

Figure 9 is a view corresponding to Figure 8, but showing the unlatching position thereof;

Figure 10 is a view taken on the line 10—10 of Figure 7;

Figure 11 is a perspective view showing the various parts of the latch mechanism; and

Figure 12 is a perspective view showing the parts of the keeper.

Referring now to the drawings in detail, and particularly to the construction shown in Figures 1 to 6 inclusive, this form of the invention is applicable to any type of cabinet. I have shown it applied to the door of a cabinet comprising an outer door wall 2 having an inner door liner or housing member 4 forming a space 6 for receiving the operating mechanism of the latch. The outer wall 2 of the door is provided with any type of opening shown at 8 in Figure 4. In addition, the door is provided with one or more additional openings 10 and 12 and the liner 4 is provided with corresponding registering openings 14 and 16. The liner 4 is provided with a flange 18 which underlies and engages a corresponding flange 20 on the door wall 2. These flanges are preferably welded together as shown at 22 in Figure 2. The liner 4 is likewise provided with another opening 24 to receive a keeper 26 having a flange 28 provided with an opening adapted to receive a fastening screw 30 which passes through a registering opening in a wall 32 of the stationary door jamb 34. The keeper 26 is provided with a keeper opening 36 which is adapted to engage the latch hereinafter described.

The latch itself comprises an ornamental stamp or die cast support 40 having fastener openings 42 and 44 adapted to receive the bolts or screws 46 and 48 which are passed through the aligned openings 12 and 16 and 10 and 14, as shown in Figure 3, whereby the ornamental support 40 is held in precise position on the front wall of the door by means of the fastening members 46 and 48 which are passed into position through these openings from the rear wall 4 of the door and threadedly engage the openings 42 and 44 in the plate. The hole or opening 8 formed in the door is shown clearly in Figure 3. It is of sufficient size so that the operating mechanism of the latch which is mounted upon the inner or rear face of the support 40 will be passed through this opening 8 and housed within the space 6 located between the front and rear walls 2 and 4 of the door respectively. Thus by the simple operation of passing the operating mechanism, hereinafter described, of the support 40 through the opening and then lining up the openings 10, 14, 12 and 16 in the front and rear walls 2 and 4 of the door, passing the screws 46 and 48

from the rear of the door through first the wall 4, thence through the wall 8 and into the openings 42 and 44 of the ornamental support 40 and turning the screws into position, the latch is assembled or mounted upon the front wall of the door without any further lining up operations and without removing the rear wall 4 or cutting any relatively large hole in the door.

The ornamental support plate 40 is provided with a fairly good-sized recess 50 therein and which recess in front merges into a relatively elongated countersunk portion 52 in which is mounted the elongated push plate 54. The push plate has a rearwardly extending lug 56 providing openings 58 to a pivoted pin 59 received in the opposed wall portions of the ornamental support 40 so that the push plate is pivotally hinged to the ornamental support 40 and rests in the countersunk seat 52 with the outer streamlined or smooth-walled portion of the push plate 54 projecting outwardly of the recessed portion 52.

The inner face of the push plate is provided with an elongated recess 60 in which is supported or retained the inner end 62 of a link or arm 64. The outer end of this arm is provided with a notch 66 and a projecting tongue 68 which tongue is adapted to engage in an aperture 70 formed in a cam latch plate 72 provided with an opening 74 in which is rigidly mounted a pin 76 the ends of which are pivotally mounted in bearings 78 and 80 of a bracket 82. This bracket 82 has a bridge base 84 which is welded at 86 to the inner wall of the inner face of the ornamental support 40. The bracket 82 is provided with the laterally extending lugs 88 and 90 forming guideways in which the link 64 is adapted to move. The link 64 passes through and shifts in a slot 92 formed in the inner wall of the ornamental support 40. This slot 92 merges into and forms a part of the recess 50.

In addition, the outer wall of the slot 50 and the outer wall of the ornamental support 40 are provided with an overhanging portion 92'; see Figures 3 and 6, which is adapted to engage with a projecting lug or toe 94 on the push plate 54 to limit the outermost position of the push plate.

Around the pin 76 is coiled as at 96 a spring having two legs 98 and 100, the leg 98 having an angularly disposed toe 102 which engages behind the stationary bracket 82 and the opposite leg 100 of the spring engaging to the rear of the lug 68 of the latch actuating link or connector 64, whereby the spring serves not only to urge the push plate 54 normally to outward position as shown in Figure 3, but likewise urges the latch member 72 to the position shown in Figure 4. The cam latch 72 is withdrawn to the position shown in Figure 5 by pushing inwardly on the push plate 54 against the tension of the spring 76 so that the push plate 54 will be moved inwardly of its socket or seat 52 with respect to the ornamental support 40. Hence the cam latch 72 will be withdrawn to the position shown in Figure 5 and will disengage from the latch-engaging locking wall 106 of the keeper opening 36.

Particular attention is drawn to the cam surface 108 of the cam latch 72. This cam surface is designed so that, as shown in Figure 5, as the cam moves downwardly into the keeper opening 36 it will wedgingly move the door tighter and tighter into engagement with the door jamb or shelf portion 34 of the cabinet. This shelf portion 34 carries the keeper 28, as hereinafter explained. Hence it will be seen that independently of whether this cam face 108 becomes worn or the latch wall 106 becomes worn, or whether any other of the stationary parts of the cabinet against which the door is adapted to abut becomes worn, the latch will always engage the keeper wall in a tight manner without the need of take-up adjustments.

Thus it will be seen that the spring pressure operating upon the cam latch 72 tends to draw the door 4 to a tighter closed position relatively to the keeper wall 106. The shelf 34 or the keeper is generally provided with a rubber bumper perhaps one sixteenth of an inch in thickness, but frequently this bumper wears or becomes inaccurate from other causes. However, irrespective of the wear or inaccuracies, in any position the latch, when latched, tends to force the door properly closed.

A spring, not shown, serves to push the door to open position when unlatched. It is also apparent that the ornamental support 40, instead of being configured as shown in the drawing, may be formed as a handle properly recessed to receive the hinged or shiftably mounted latch operating member 54.

In the form of the invention shown in Figures 7 to 12 inclusive, the ornamental support on which the push plate for actuating the latch is mounted is formed as a handle which houses a latch mechanism. More specifically, the ornamental support is formed as a handle body 120 which as shown is preferably of streamlined formation having a longitudinally curved outer wall 122 which outer wall is provided with a front slot slightly narrower than the width of the outer wall and as shown in Figure 7 starts at the line 124 and extends to the other end of the slot in the handle at 126. This slot communicates by means of an opening 128 with a housing 130 formed in the hollow leg 132 of the handle body. Fitting into this recess formed in the handle is a latch actuator or push plate or outer handle portion 134 which in its outer surface, as shown at 136 in Figures 7 and 8, forms a continuation of the outer streamlined wall 122 of the handle when the depressible handle portion 134 is in outermost position, which is its normal position. It thus may be said that the depressible actuator or push plate 134 is to all appearances a part of the handle member.

The underside of this shiftable latch actuator 134 is provided with a laterally projecting toe 138 which is narrower than the remainder of this portion and is also provided with a plate-like projection 140 that extends in a plane transversely to the plane of the bottom plate-like portion 142 of this part of the latch actuator. This plate-like projection 140 is formed with a shoulder 144 and is also provided with an arcuate extension 146 having an elongated slot 148. In the assembly of the latch actuator 134 it is placed as shown in Figures 8 and 9 so that the toe 138 engages under a ledge 150 formed in the end of the wall portion 122 of the handle. In fact the handle portion of this part is provided with a slot 152, as shown in Figure 11, into which this toe 138 projects so that the slot and toe form a fulcrum about which the member 134 may shift with respect to the handle 120. In this assembled position the plate-like member 140 will project into the chamber 130 of the hollow leg member 132 of the handle. This part of the handle is provided with registering openings 154 through which a pin 156 is adapted to pass, the pin being riveted on its ends whereby permanently to pass the pin through the slotted opening 148 of the

projection 146. In addition there is a keeper engaging latch of the latch mechanism which is constructed preferably as shown in Figure 11, and comprises a substantially L-shaped, preferably sheet metal latch 158 the longer leg 160 of which is provided with a slot 162 and with a longitudinally extending, laterally bent cam surface 164. The cam surface 164 is adapted to contact the curved dome-shaped outer surface 206 of the keeper and deflect the latch 162 laterally into the position shown in Figure 8 as the door approaches closing position. In addition the opposite or shorter leg 166 is provided on its end with laterally disposed spaced ears 168 perforated as at 170 to receive the pin 156 hereinbefore described so that the pin 156 passing through the two sides of the hollow leg 132 of the handle pivotally mounts the L-shaped latch member within the hollow handle, the short leg 166, as shown in Figure 10, passing outwardly through the rear opening 130 in the leg 132 and the longer leg 160 thereof lying at right angles thereto in position to engage the keeper hereinafter set forth, as shown in Figure 10.

In addition, the front wall of the handle or ornamental support as at 172 and an intermediate portion 174 of the handle are provided with means whereby the handle may be secured to the door. In the form illustrated I have shown the handle provided with integrally projecting, elongated studs 176 and 178 which are of exact length to project through the registering openings 173 and 175 in the front and rear walls of the door 190 and 192 respectively. These studs 176 and 178 are preferably bored and threaded as at 180 and 182 to receive elongated screws 184 and 186 which pass through registering openings in the rear panel 192 of the door.

A plate 194 provided with openings 196 and 198 and a larger opening 200 is adapted to fit over the studs 176 and 178 to close the hollow leg 130 of the handle, the opening 200 registering with this hollow chamber in the leg through which the latch member 166 passes. This plate 194, when the handle mechanism is mounted on the door, is confined between the handle and the front wall 190 of the door.

A coil spring having the free legs 202 and 204 has its coiled portion placed around the pin 156 so that the leg 202 engages the inner wall of the leg portion 130 while the opposite leg 204 engages the side 166 of the keeper engaging latch whereby normally to force the keeper engaging latch to the right as shown in Figure 8, so that when the door is closed upon the keeper hereinafter described, the latch will automatically engage the keeper.

The keeper is preferably of the construction shown in Figure 12. It comprises preferably a one-piece member including a rounded, substantially mushroom-shaped head 206 having on its underside a face which is inclined from the outer rim 208 of the head toward a central circular pedestal 210. This pedestal extends generally at right angles to the head and terminates in a hexagonal or angularly disposed wall portion 212 used for turning the keeper and a threaded end 214 of preferably smaller diameter. A nut 216 is threaded to engage the thread 214 whereby to clamp the keeper on the vertical front wall flange 218 of a shelf 220 or other stationary part of the cabinet, shelving, or other member to be closed by the door. The keeper is adapted to project through an opening 222 in the rear panel 192 of the door, said opening 222 registering with the opening 200 formed in the plate 194 of the handle mounting. These openings 222 and 200 are of sufficient size to give the necessary lateral play to the leg 166 of the keeper engaging latch when the depressible member 136 of the handle portion is pushed inwardly. By forming the undersurface of the mushroom-shaped head 206 with an inclined wall the edge of the slot 162 in the keeper engaging latch may have considerable latitude in engaging the undersurface of the latch in a locking position and furthermore by reason of the size of these openings 222 and 200 it will be understood that it is a simple matter to assemble the combined handle and latch on the front wall of the door since all that is necessary is to preform the openings 173 and 175 in the front and rear walls of the door. The keeper engaging latch will then pass through the corresponding opening 200 in the latch plate into the opening between the front and rear walls 190 and 192 of the door, and since the opening 222 is sufficiently large, considerable latitude is provided for placing the keeper upon the stationary wall of the shelving while not interfering with the correct engagement of the latch in its keeper, and thus an exact lining up of the latch mechanism on the door is eliminated. It will also be recognized that by means of this construction the combined handle and latch mechanism may be installed as a unit on the door and quickly lined up with the keeper on the stationary part of the shelving, for immediate operation. It will be noted from Figure 8 that the line of action between the latch engaging surface of the keeper is substantially perpendicular to the surface of the ring 208 of head 206 which is engaged by the latch. More specifically, the line interconnecting the point of pivot of the latch and the point of contact between the latch and the keeper is substantially perpendicular to the latch engaging surface 208 of the keeper. This structure necessitates a positive actuation of push plate 138 before the door can be opened.

By forming the shiftable operating mechanism for the operating latch as a part of the ornamental support or handle I am enabled to provide a very conveniently operable device which permits a person to both open the door and pull the door to complete open position by one position of the handle and by a squeezing and pulling operation, and I am also enabled to properly streamline the handle in this manner by forming the push part of the latch as a part of the handle, the actuating mechanism of which passes through a hollow portion of the handle rearwardly into the wall of the door to engage the keeper likewise projecting through a spacious opening in the rear wall of the door.

Obviously the invention is not limited to the specific details of construction disclosed herein but is capable of other modifications and changes without departing from the spirit and scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A combined handle and latch comprising an elongated arched handle portion, one end of the arched portion forming a leg with a chamber, the front wall of the arched portion being recessed and communicating with the chamber of the leg, said arched handle having a relatively shiftable latch actuator fitting into said recess, the outer wall of said relatively shiftable actuator forming

a continuation of the outer wall of the arched portion of the handle, said relatively shiftable actuator having a lateral extension passing into the chamber in the leg of the handle, and means on said handle and on said relatively shiftable actuator forming a fulcrum about which the relatively shiftable actuator may pivot, a keeper-engaging latch shiftably mounted in said chamber of said leg and projecting rearwardly outwardly from said leg chamber and having a keeper-engaging member thereon, said latch having a part engageable by said relatively shiftable latch actuator, means normally tending to urge the latch into engagement with the keeper, spring means in the chamber of the leg for normally urging said relatively shiftable actuator outwardly so that the outer wall is substantially flush with the outer wall of the handle whereby said depressible portion and handle form substantially continuous outer surfaces for the handle, said handle having spaced means whereby it may be attached to a door.

2. In combination with a cabinet door having spaced front and rear walls, said front wall having an opening, said rear wall having an opening to permit entry of a keeper therein, a handle comprising a chambered body portion having an arched streamlined extension, said body portion and extension each having a rearwardly extending post, said posts being spaced apart and adapted to pass through holes in the front wall of the door, the front face of said chambered body and said arched extension having a recess communicating with the chamber of said body, a latch actuator shiftably mounted in said recess, a latch, mounted in said chambered body portion and operatively connected to the latch actuator, said latch projecting rearwardly from said chambered body portion, said door having its front wall opening sufficiently large so that the latch may be passed through said opening in the front wall of the door leaving the outer portion of the handle and its streamlined extension on the exterior face of the front wall of the door, and fastening means passing through openings in the rear wall of the door and engaging said posts whereby rigidly to mount said handle on the rear wall of the door with the latch projecting rearwardly through said opening in the front wall of the door in position to engage the keeper when projecting through the opening in the rear wall of the door whereby said latch is operable by the actuator mounted on the handle located at the front face of the door.

3. In combination with a door comprising spaced front and rear walls having therethrough spaced registering, relatively small, openings and relatively larger substantially registering openings, a combined handle and latch mechanism comprising an elongated handle, fastening means registering with said smaller openings and passing therethrough from the rear wall of the door to secure said handle on the front wall of the door, said elongated handle having an internal chamber and having an opening in its outer wall a relatively shiftable portion disposed with its front face forming a substantial continuation of the outer front wall of the handle, said shiftable portion having a rear extension projecting into said handle chamber, a latch shiftably mounted in said chamber and shiftable by movement of said shiftable handle portion, said latch projecting rearwardly from said handle chamber through the relatively larger opening in the front wall of the door and into the space between said front and rear walls of said door, said latch having within said space a keeper-engaging portion to engage a keeper projecting into said space through said substantially registering relatively larger opening in the rear wall of the door, and means in said chamber for urging said latch to keeper-engaging position.

4. In combination, a door having front and rear spaced walls, said rear wall having an opening to permit a keeper to project substantially at right angles to the closed door and into the space between the front and rear walls of the door when the door is closed, said front and rear walls of said door having additional registering openings, and an elongated arch-shaped handle having spaced portions terminating rearwardly in a substantially common plane, said handle being mounted on the door with said spaced portions abutting the front wall of said door, fastening means insertable from the rear wall of said door through certain of the registering openings and engaging said handle whereby to mount said handle on said door, the front wall of said arch-shaped handle having an elongated recess, one of said spaced portions of the handle being hollow and opening rearwardly, said recess communicating with said hollow portion, an arch-shaped latch actuator lying in said recess and pivotally engaging with said arch-shaped handle, said actuator having an extension projecting into the hollow portion of said handle, a latch disposed in the hollow portion of said handle, means for pivotally mounting said latch on said handle, spring means in said hollow portion of the handle for urging said arch-shaped actuator outwardly so that its outer wall forms a substantially smooth continuation of the outer wall of said arch-shaped handle, the inner portion of said latch projecting rearwardly out of the hollow portion of the handle and through a relatively larger opening in the front wall of the door into the space between said front and rear walls of the door and having a keeper-engaging portion therein normally disposed to engage the keeper projecting into the space between the walls of the door when the door is closed.

5. In combination with a door having spaced front and rear walls, said front wall having an opening and said rear wall having an opening to permit entry of a keeper thereinto when the door moves to closed position, an ornamental support and means for mounting the support at the front wall of the door, said ornamental support having an opening in its front face, a latch actuator shiftably mounted in the opening of said support, a latch, means carried by the support for operatively positioning the latch adjacent the latch actuator and for positioning the inner end of the latch adjacent the opening in the rear wall of the door through which the keeper projects when the door is moved to closed position, said opening in the front wall of the door being sufficiently large so that when the ornamental support is removed from the door the latch mounted thereon may pass through the opening in the front wall of said door, fastener means passing through openings in the rear wall of the door and engaging the rear wall of said ornamental support to mount said ornamental support rigidly on the front of the door with the latch carried by said ornamental support projecting through the opening in the front wall of the door into the space between said front and rear walls of the door.

6. In combination with a door having a front wall and a spaced rear wall providing an enclos-

ing housing, an ornamental latch actuator support having an opening in its front face and having an interior recess registering with said front opening, the recess of said support registering with an opening in the rear wall of said support, a latch actuator push plate shiftably mounted in the recess in the front wall of said support, said front and rear walls of the door having aligned fastener openings and the rear wall of the ornamental latch actuator supporting plate having cooperative fastening means aligning with said fastener openings in the walls of the door, and complemental fastening means passing through the rear wall of the door and thence through the front wall of the door and engaging the cooperative fastening means of the latch actuator support whereby to hold the latch actuator support rigidly in position on the front wall of said door with the rear opening of said latch actuator support registering with the opening in the front wall of the door, and means for operatively mounting the latch on said latch actuator support with a portion of the latch positioned adjacent the latch actuator on said support and with another portion of the latch positioned adjacent the opening in the rear wall of the door to be engaged by a keeper when the door is moved to closed position.

7. In combination with a door having spaced front and rear walls, an ornamental support, means for mounting said support at the front wall of said door, said support having on its front wall an opening, a push plate shiftably mounted in said opening, said ornamental support having an interior recess communicating with the rear wall of said support, the front wall of said door having a relatively large opening communicating with said recess and the opening in the rear wall of said support, means for operatively supporting a latch on said ornamental support with one portion of said latch positioned adjacent the shiftable push plate and another portion of said latch positioned adjacent an opening in the rear wall of said door and adjacent a keeper adapted to project through the rear wall of said door when said door is moved to closed position, means for normally urging said push plate outwardly, and means for normally urging said latch toward the opening in the rear wall of said door.

8. A combined handle and latch comprising an elongated arched handle portion, one end of the arched portion forming a leg with a chamber, the front wall of the arched portion being recessed and communicating with the chamber of the leg, said arched handle having a relatively shiftable latch actuator fitting into said recess, the outer wall of said relatively shiftable actuator forming a continuation of the outer wall of the arched portion of the handle, said relatively shiftable actuator having a lateral extension passing into the chamber in the leg of the handle, and means on said handle and on said relatively shiftable actuator forming a fulcrum about which the relatively shiftable actuator may pivot, a keeper engaging latch shiftably mounted in said chamber of said leg and projecting rearwardly outwardly from said leg chamber and having a keeper-engaging member thereon, said latch having a part engaged by said relatively shiftable latch actuator, means normally tending to urge the latch into engagement with the keeper, spring means in the chamber of the leg for normally urging said relatively shiftable actuator outwardly so that the outer wall is substantially flush with the outer wall of the handle whereby said depressible portion and handle form substantially continuous outer surfaces for the handle.

9. In combination with a cabinet door having spaced front and rear walls, said front wall having an opening, said rear wall having an opening to permit entry of a keeper therein, a handle comprising a chambered body portion having an arched streamlined extension, the front face of said chambered body and said arched extension having a recess communicating with the chamber of said body, a latch actuator shiftably mounted in said recess, a latch mounted in said chambered body portion and operatively connected to the latch actuator, said latch projecting rearwardly from said chambered body portion, said door having its front wall opening sufficiently large so that the latch may be passed through said opening in the front wall of the door leaving the outer portion of the handle and its streamlined extension on the exterior face of the front wall of the door, and fastening means to mount said handle on the door with the latch projecting rearwardly through said opening in the front wall of the door in position to engage the keeper when projecting through the opening in the rear wall of the door whereby said latch is operable by the actuator mounted on the handle located at the front face of the door.

10. An elongated, arch shaped handle having opposite ends providing two spaced legs, one of said legs providing a chamber, the intermediate portion of said handle having a recess therein, an actuator positioned in said recess and having a portion extending into one end of said chamber, said portion having a slot therein, a shaft passing through said slot and attached to said handle to shiftably mount said actuator on said handle, a latch member positioned in said chamber and pivoted on said shaft, a keeper engaging portion formed on said latch member and extending from the other end of said chamber and away from said actuator, and means urging said latch member against said actuator and into keeper engaging position.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
349,671	Swartzwelder	Sept. 21, 1886
767,567	Keil	Aug. 16, 1904
1,059,952	Spooner	Apr. 22, 1913
1,563,489	Hooppaw et al.	Dec. 1, 1925
1,789,083	Reed	Jan. 13, 1931
1,925,308	De Voe	Sept. 5, 1933
1,929,775	De Voe	Oct. 10, 1933
1,954,500	Sparks	Apr. 10, 1934
2,010,492	Karre	Aug. 6, 1935
2,188,139	Raymond	Jan. 23, 1940
2,265,691	Hogg	Dec. 9, 1941
2,304,145	Borchers	Dec. 8, 1942
2,309,507	Hogg	Jan. 26, 1943
2,342,831	Borchers	Feb. 29, 1944