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LOCKER HANDLE CONSTRUCTION

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3 Sheets-Sheet 3

Fig. 6

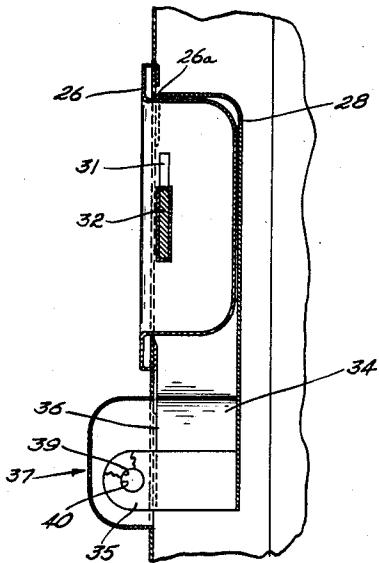


Fig. 8

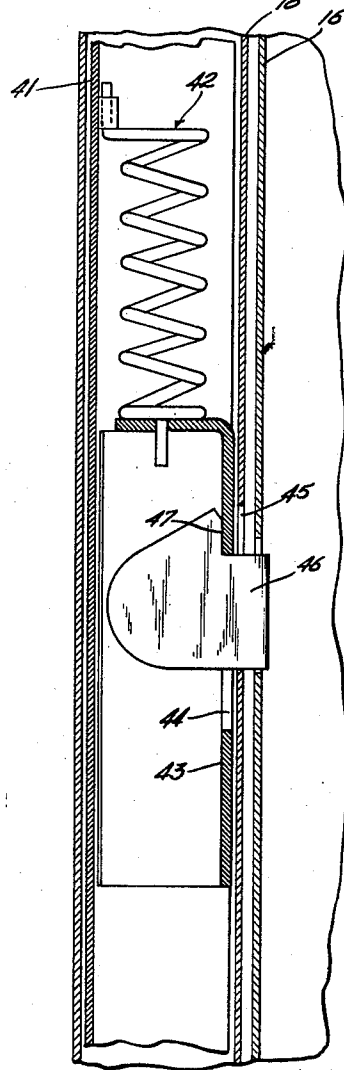
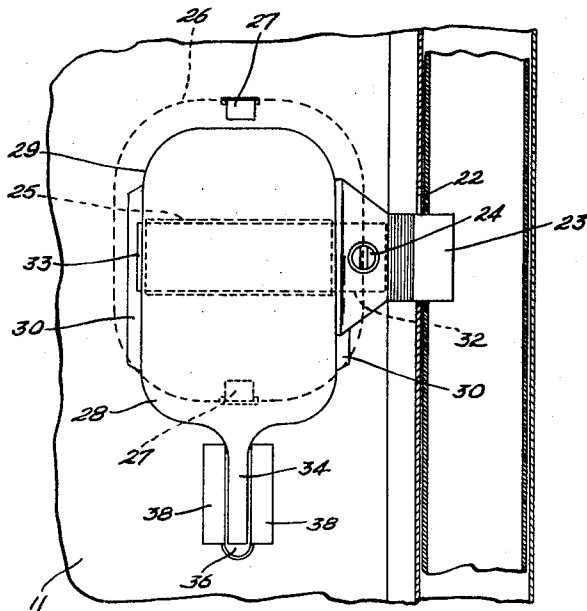


Fig. 7



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LOCKER HANDLE CONSTRUCTION

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9 Claims. (Cl. 312—320)

This invention relates to a novel door construction and, more particularly, to a door adapted for use with a locker or cabinet.

An object of this invention is to provide a locker or cabinet with a novel locker door of a type which lies wholly without the vertical plane of the front edge of the locker.

Another object of this invention is to provide a locker door with peripheral box-like flanges for housing latching means and including a cupped insert inset and supported on said door and having a manually movable handle in said insert to actuate said latching means.

Still another object of this invention is to provide a stepped-like series of flanges which extend continuously around the peripheral area of the door serving as a seat for snug cooperation with a cabinet.

In accordance with the general features of this invention, there is provided in a door for use with a main cabinet body having a door opening defined by an outer edge on the body, including, a main door panel, hollow post-like members integrally positioned on opposite sides of the panel, one of the members housing latching means, while the other of the members having hinged means attachable thereto, and the door panel having a manually operable handle insert inset within the door adjacent the latching means for actuating the latching means.

Another feature of the invention relates to the locker door having a dished insert inset in the main rearwardly projecting portion of the door with a side wall of the insert apertured adjacent latching means and a manually movable handle in the insert having one end extended laterally through the aperture for actuating the latching means.

The present application is a continuation-in-part of my copending application entitled "Locker Latching Door Construction," Serial No. 418,941, which is being abandoned.

Other objects and features of the invention may more fully appear from the following detailed description taken in connection with the accompanying drawings which illustrate an embodiment thereof and in which:

Figure 1 is a front view of the locker assembly partly broken away and illustrating my novel locker door overlying the opening defined by the cabinet body;

Figure 2 is a plan view of my door prior to the deformation of the stepped peripheral margin, the dotted lines indicating the manner in which the margin is to be folded;

Figure 3 is a longitudinal cross-sectional view of my novel locker door highlighting the construction of the top and bottom peripheral margin;

Figure 4 is an enlarged fragmentary cross-sectional view taken on the line IV—IV of Figure 1, looking downwardly;

Figure 5 is an enlarged fragmentary cross-sectional view taken on the line V—V of Figure 1 looking downwardly and showing my hinge assembly and also showing in

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dotted lines how my novel door rotates on the hinges and with respect to an adjoining locker;

Figure 6 is an enlarged fragmentary vertical cross-sectional view of the novel handle insert taken on the line VI—VI of Figure 1 looking in the direction of the arrows;

Figure 7 is a fragmentary cross-sectional view taken on the line VII—VII of Figure 4 looking in the direction of the arrows and partly in elevation showing the cooperation of the handle with the latch bar;

Figure 8 is a fragmentary cross-sectional view taken on the line VIII—VIII of Figure 4 looking in the direction of the arrows and illustrating one of my novel lost-motion connections; and

Figure 9 is an exploded perspective view of one of my hinge structures.

As shown on the drawings:

The reference character 10 designates generally the cabinet body or locker with the locker door 11 mounted thereon by means of hinges 12 positioned along the front vertical edge 13 of the locker 10 (Figure 1). The locker body 10 and the door 11 lend themselves to economical manufacture from sheet metal. Air louvres or vents 14 are optically located on the locker door 11 above and below a novel inset handle assembly unit 15 which is positioned generally offset but close to the opposite vertical edge 13a of the locker 10.

It will be noted that the novel locker door 11 (Figures 1 to 5, inclusive) is of a new type that overlaps the front edge 16 of body 10 on each of its four sides and in such a manner as not to be wholly inset within the locker opening O but rather to overlap the edge 16 and extend beyond the confines of the door opening O. In this respect, my locker distinguishes from the type of locker now on the market in which the door and its latch mechanism are wholly inset in the door opening.

Figure 2 shows diagrammatically how my locker door 11 appears prior to the deformation of the peripheral areas of the door. Subsequently, the flange areas 11a are turned under as indicated by the score lines (Figure 2); the development of the flange areas 11a being more clearly seen in Figures 3, 4 and 5. Thereafter, the inset handle assembly unit 15 and the latching mechanisms are assembled on the door 11 (Figure 1).

Along the outer peripheral margin of the door 11 (Figure 4) is an integral turned under continuous stepped flange 17 which is so formed as to abut the continuous stepped locker edge 16 along the leg or surface 18 of the flange 17. Secured to the rear side of the locker door 11 is an L-shaped flange 19 having a looped terminal end 19a for receiving terminal flange 17a, the two flanges being suitably secured at 20 to form and enclose there-within a box-like cavity 21.

The L-shaped flange 19 has a transverse aperture 22 therethrough for receiving a latch bar actuating arm 23 and which has a free end extending laterally into one side of the hollow post or box-like cavity 21. The arm 23 is angular and is part of the handle assembly unit 15 and is secured by bolt means 24 to a manually movable handle 25 mounted in a flanged and dished inset 26. This inset 26 comprises a generally rectangular stamping extending rearwardly through an opening 26a in the door and also concealing the edge of such opening. As best shown in Figure 7, the flanged edge of handle inset 26 has opposite deformed tabs 27 extending rearwardly through concealed suitable apertures in the door front for firmly securing the inset to the door.

Fitted around the rear surface of the fixed dished inset 26 on the rear of the door is a dished plate 28 movable up and down with the handle 25 upon manual actuation of same. The plate 28 has an apertured side flange 29

(Figure 4) extending over the curved margin of the dished inset 26 and terminates on opposite sides in aligned flanges or tabs 30—30 slidably engaging the rear surface of the locker door 11 about the inset 26. It should be noted that in a vertical direction dished plate 28 is larger than the dished inset therein so as to be movable vertically thereon.

The dashed inset 26 has slots 31—31 aligned with apertures 31a—31a in flange 29 of plate 28 for receiving handle extensions 32—32, one of the extensions terminating in a rearwardly bent angular end 33 abutting on the outer surface of the flange 29 and the other extension 32 being bolted at 24 to the angular arm 23. Thus, it will be observed that that dished plate 28 is embraced on one of its vertical sides by angular handle end 33 and on its other side by angular arm 23.

Now, since the dished inset 26 is fixed to the door, whereas dished plate 28 is vertically movable by and with handle 25 over the rear surface of inset 26, opposite slots 31—31 in the inset 26 must be elongated, as is clearly shown in Figure 6, in order for handle extensions 32—32 to move up and down in slots 31—31. However, in the case of opposite apertures 31a—31a in dished plate 28, the handle extensions 32—32 snugly extend therethrough so as to move plate 28 with manually movable handle 25.

The advantage of the foregoing described handle assembly unit 15 resides in the fact that by virtue of the handle slots 31—31 being in the sides of dished inset 25, they are not readily visible from the front of the locker and hence do not detract from the frontal streamlined appearance of the locker. In addition, the slots 31—31 are not readily accessible for the insertion of a tool by one interested in tampering with the latch mechanism.

The plate 28 also has a vertically downward projecting extension 34 (Figures 6 and 7) with a laterally forward projecting integral lock tab 35 which passes through the slot 36 of the locker door 11 and into an outer enclosed tab receiving member 37. The member 37 is secured from within the slot 36 to the locker door 11 by deformed divergent tabs 38—38. The member 37 also has an aperture 39 therethrough and aligned with a similar aperture 40 in the tab 35 when the tab 35 is in its normal closed position in order to receive a padlock (not shown) such as is customarily used on lockers.

From the foregoing description, it will now be clear that upon actuation of the handle 25, the plate 28, the tongue flange 23, and the tab 34 will all move in unison so as to perform their various functions. I shall now proceed to describe the latch bar assembly.

Disposed within the box-like cavity 21 (Figures 4 and 8) defined by the offset margin of the locker door 11, the underturned stepped flange 17 and the L-shaped flange 19, is a vertically movable U-shaped or channelled latch bar 41 running the vertical length of the locker door 11 entirely outside of the confines of locker door opening O. At a point intermediate its length, it has an aperture 22' aligned with aperture 22 and the edge of which aperture 22' is engageable by handle arm 23 for moving the bar vertically.

Displaced and suitably secured in vertical spaced relationship on the latch bar 41 are spaced compression springs 42 (only one being shown (Figure 7)). Suspended from each of compression springs 42 is a vertical extending U-shaped or channelled catch keeper 43 apertured at 44 and which aperture is aligned with an aperture 45 in the flange leg 18 in order to receive a catch member 46 attached to the locker edge 16 (Figure 4). It will be appreciated that spring 42 continuously urges the catch keeper 43 downwardly against catch member 46, thus making it difficult for a tamperer to open the locker by shaking the catch keepers out of locking engagement.

In Figure 1, I have shown by dotted lines four sets

of catches and keepers although it will be understood any suitable number can be employed. However, in each instance, the keeper 43, together with the associated compression spring, constitute a lost motion connection between the catch and the latch bar 41; the extent of the lost motion being determined by the extent the spring 42 may be compressed. This is advantageous since, if one keeper or catch fails to operate in latching the door, it will not interfere with the operation of the others. In proper latching operation of bar 41 by handle arm 23, all keepers will function together. The up movement of the bar 41 will, of course, release the keepers from the catches, whereas the downward gravitation of the bar will engage the keepers with the catches when the door is closed.

Upon actuation of the handle 25, the arm 23 causes the latch bar 41 to be lifted upward, while contemporaneously the catch keeper 43 will be raised by the compression spring 42, causing the catch keeper apertured edge 47 to be disengaged from the catch member 46 and upon a slight outward pull, the locker door 11 may be opened.

Now, referring to hinges 12 (Figure 5), it will be noted that the hinged side of the door also has a stepped underturned flange 48 integral with the locker door 11 and an L-shaped flange 49 having a looped terminal end 49a, flange 49 being secured to the rear side of the locker door 11, and end 49a being secured to the stepped flange 48 at 50. The flange 48 can, if it is so desired, although not necessarily so, be made as an integral continuation of angular flange 16 on the opposite side of the door and may likewise extend around the top and bottom of the door for seating on the edge of the cabinet defining door opening O. Abutting the stepped flange 48 is an underturned continuous flange 16 extending from the cabinet body side wall 51 and which is similar to flange 19 on the opposite side of the door.

The triple thickness of metal at 20 and 50 in Figures 4 and 5, in reality, comprises a rectangular frame-like rearward extension around the rear surface of the door and snugly fits inside of the door opening O in telescoping cooperation therewith when the door is closed (Figure 2). Obviously, when the door is thus closed the latch bar mechanism is completely outward and laterally to one side of the door opening but directly over the cabinet edge or margin defining the door opening.

While I have illustrated (Figure 1) the locker as having four hinges 12 of the pintle type and which are identical in construction, it will, of course, be appreciated that any suitable number may be employed without departing from the spirit of the invention. As best shown in the exploded view of Figure 9, each hinge 12 embodies a lower hinge plate 52, an upper hinge plate 53 adapted to be superimposed thereupon, and a hinge pintle 54 extending through the turned pintle portions 55 and 56 of the plates 52 and 53, respectively, in the usual way. The lower plate 52 includes two angular legs 57 and 58 which, as best shown in Figure 5, are of such length and arrangement that they can extend through an aperture 59 in the corner of the cabinet and be suitably secured to the inner surfaces of the cabinet with the pintle portion 55 projecting forwardly from the cabinet and located substantially at the front plane of the door 11. Actually, the leg 58 is aligned with and secured to the inside surfaces of the side wall 60 of the cabinet and the angular leg 57 is at right angles thereto and secured to the inner surface of the cabinet marginal flange 16 defining the opening O. Thus, in the case of each hinge, the weight of the door is carried by the lower hinge plate 52 which is, in turn, supported by the locker cabinet.

Each of the upper hinge plates 53 includes a main leg 61 (Figure 9) and ears 62—62 at right angles thereto and substantially at opposite ends of the turned pintle portion 56.

Now, again referring to Figure 5, it will be noted that

the leg 61 of the upper plate as well as the ears 62 are disposed wholly within the cavity defined by the flanges 48—49 and the locker door 11 proper. These legs are suitably anchored to the interior surfaces of this hollow corner post defined by the corner of the door with the turned pintle portion 56 projected outwardly beyond an opening 63 in the corner post so that the pintle portion 56 is aligned with the lower pintle portion 55 of the lower plate 52. This arrangement is such as to locate the pivot axis of the hinge substantially aligned with the side wall 60 of the cabinet and substantially at the plane of the outermost front surface of the door 11.

Now, in Figure 5, I have also illustrated, by dotted lines, an adjoining cabinet 11, having a door 10, positioned in bank arrangement with the above described cabinet as is common practice in the mounting of the lockers. From this illustration, it will be perceived why it is necessary to locate the axis of the hinge substantially at the outermost plane of the door so that upon the swinging of the door of one cabinet, it will not interfere with or strike the door of the adjoining cabinet in the bank.

It is only by virtue of the manner in which the legs of the lower hinge plate 52 are projected along the lateral side edge of the door to the extreme outermost corner of the door that it is possible to dispose the pivot axis in the proper locale. Needless to say, the angular arrangement of the legs of the lower plate 52 is such as to enable proper support of the plate 52 so that it can effectively carry the weight of the door and minimize the likelihood of the springing of the door.

In conclusion, it should be evident that the disposition of the main body of the door 11 outwardly of the door opening O with the margin of the door overlapping edges of the cabinet defining the opening occasioned a number of problems particularly with regard to the hinging and latching of such a door to the cabinet. In the locker structure of my invention described above, all of the mechanisms of the handle insert, the latch bar, and the hinge structure cooperate in the attainment of the unitary result of enabling the locker door to be located as aforesaid properly hinged to one side of the cabinet and effectively latchable to the other side of the cabinet.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In a door construction including a door panel having latching mechanism along one vertical margin of the door panel, and handle structure for actuating said latch mechanism comprising a flanged cup-shaped member telescoped through a hole in said door with the flanged area of the cup-shaped member bearing against the outer side of the door panel concealing the opening, means connecting the flanged cup-shaped member to the door panel, slot means on the cup shaped member on the inner side of the panel, and a handle member retainingly disposed in said slot means in said cup-shaped member on the inner side of the door but with the handle member accessible from the outer side of the door and movable vertically in said slot means.

2. The door construction of claim 1 further characterized by a dished plate telescoped over said cup-shaped member at the inner side of the door having portions connected to opposite ends of said handle member and movable vertically therewith, said dished plate having a lock tab extension extending forwardly through the door for cooperation with a lock for locking the extension to the door panel to prevent lifting of the handle member.

3. A metal locker door assembly including a locker door panel with the periphery of the panel provided with a continuous underlying tubular flange structure for overlapping concealing placement relative to substantially all of a locker cabinet body for maintaining the door panel at all times entirely laterally forward of a vertical plane passing through an inwardly turned marginal cab-

inet flange on the cabinet body and with the tubular flange structure and door panel defining a door recess, hinge means carried by said tubular flange structure at one vertical side of said door panel for swinging the door into and out of overlapping concealing relation relative to the cabinet body, latching mechanism carried in said tubular flange structure at an opposite vertical side of said door panel for latching cooperation with latch keeper structure carried on a cabinet body, an outwardly opening cupped insert fixedly mounted on the door panel substantially at the rear side thereof inset in said recess and supported by said door, and a liftable handle mounted substantially within said outwardly opening cupped insert and with said handle having a laterally extending actuator arm connected to actuate said latching mechanism, the handle lying in a plane rearward of the vertical plane of the door panel and being movable relative to said door panel and the fixedly mounted outwardly opening cupped insert.

4. In a door construction including a door panel having latching mechanism along one vertical margin of the door panel, handle structure for actuating said latch mechanism comprising a flanged cup-shaped member telescoped through a hole in said door with the flanged area of the cup-shaped member bearing against the outer side of the door panel concealing the opening, means on said cup-shaped member on the inner side of the panel for carrying a handle member, and a handle member mounted on the cup-shaped member held in position by said means, the handle being disposed on the inner side of the door panel and being accessible from the outer side of the door panel and movable vertically relative to the cup-shaped member.

5. In a door construction including a door panel having latching mechanism along one vertical margin of the door panel, handle structure for actuating said latch mechanism comprising a flanged cup-shaped member telescoped through a hole in said door with the flanged area of the cup-shaped member bearing against the outer side of the door panel concealing the opening, means on said cup-shaped member on the inner side of the panel for carrying a handle member, a handle member mounted on the cup-shaped member held in position by said means, the handle being disposed on the inner side of the door panel and being accessible from the outer side of the door panel and movable vertically relative to the cup-shaped member, and a dished plate telescoped over said cup-shaped member at the inner side of the door having portions connected to opposite ends of said handle member enabling the dished plate and the handle member to move vertically together, the dished plate having a lock tab extension extending forwardly through the door panel for cooperation with a lock to prevent lifting of the handle member.

6. A metal door assembly including a door panel with the periphery of the panel provided with a continuous underlying tubular flange structure for overlapping concealing placement relative to substantially all of a cabinet body for maintaining the door panel at all times entirely laterally forward of a vertical plane passing through an inwardly turned marginal cabinet flange on the cabinet body and with the tubular flange structure and door panel defining a door recess, hinge means carried by said tubular flange structure at one vertical side of said door panel for swinging the door into and out of overlapping concealing relation relative to the cabinet body, latching mechanism carried in said tubular flange structure at an opposite vertical side of said door panel for latching cooperation with latch keeper structure carried on a cabinet body, an outwardly opening cupped insert carried by the door panel substantially at the rear side thereof inset in said recess and supported by said door, a liftable handle mounted substantially within said outwardly opening cupped insert and with said handle having a laterally extending actuator arm connected to actuate said latching

mechanism, the handle lying in a plane rearward of the vertical plane of the door panel, and a plate being mounted on said door substantially overlying said cupped insert and movable generally in the plane of said handle, said plate having an apertured tab extending through a slot on said door panel, said slot being enclosed by an apertured member mounted on said door, said apertures on said tab and member being aligned in normal position to permit the two to be suitably locked together.

7. In combination, a locker door and a locker cabinet the cabinet including side walls and having an opening defined by a vertical cabinet flange lying in a forwardmost plane of the cabinet, a catch carried on the vertical flange between its transverse opposite edges and extending away from the cabinet, the door comprising a main door panel having its edge at one side turned under and secured to the under side of the main door panel thereby providing an under turned peripheral margin defining a vertically extending tubular cavity disposed on the under side of the main door panel, the under turned peripheral margin being disposed forwardly of the plane of the vertical cabinet flange, a U-shaped latch bar mounted in the cavity with the bottom of the U of the U-shaped latch bar being in sliding engagement with the under side of the main door panel, at least one U-shaped lost motion catch keeper disposed within the box-type vertically extending tubular cavity, the bottom of the U of the U-shaped lost motion catch keeper being spaced rearwardly of the bottom of the U of the U-shaped latch bar in generally parallel relation, means connecting the catch keeper to the latch bar, the catch keeper and the peripheral margin having edges defining aligned openings through which said catch is insertable for latching cooperation with the catch keeper, a handle mechanism carried on the door panel to one side of the latch bar, the handle having an extension disposed on the rear side of the main door panel connecting the handle mechanism to the latch bar to disengage the catch keeper from the catch, said handle mechanism including a flanged cup-shaped member adapted to be telescoped through a door opening in the main door panel with the flanged area of the cup-shaped member bearing against the outer side of the main door panel to conceal the door opening, means on the flanged cup-shaped member for connecting the flanged cup-shaped member to the door, slot means on the cup-shaped member, and a handle member extending across the cup-shaped member and retainingly disposed

in said slot means in said cup-shaped member with the handle member being accessible from the outer side of the cup-shaped member and movable vertically in said slot means.

5 8. A locker cabinet comprising a cabinet body having a locker door pivotally mounted on the cabinet body, the cabinet body having catches and the locker door having a latch mechanism cooperable with the catches, and a handle structure on said door connected to said latch mechanism for actuating the latch mechanism, the handle structure comprising a flanged cup-shaped member adapted to be telescoped through a door opening in the locker door with the flanged area of the cup-shaped member being adapted to bear against the outer side of the door panel to conceal the door opening, means on the flanged cup-shaped member for connecting the flanged cup-shaped member to the door, slot means on the cup-shaped member, and a handle member retainingly disposed in said slot means in said cup-shaped member with the handle member being accessible from the outer side of the cup-shaped member and movable vertically in said slot means, the handle member being connected to said latch mechanism for actuating same to open the door.

15 9. The locker cabinet of claim 8 further characterized by a dished plate telescoped over said cup-shaped member at the inner side of the door having portions connected to opposite ends of said handle member enabling the dished plate and the handle member to move vertically together, the dished plate having a lock tab extension extending forwardly through the door for cooperation with a lock to lock the cabinet.

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