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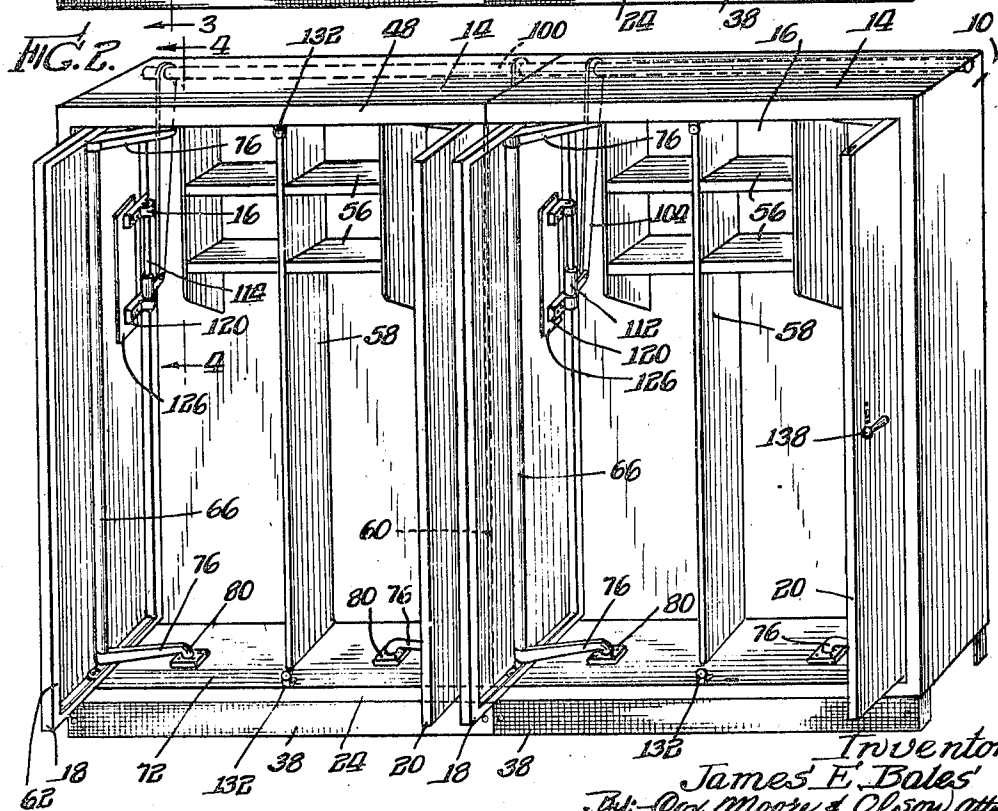
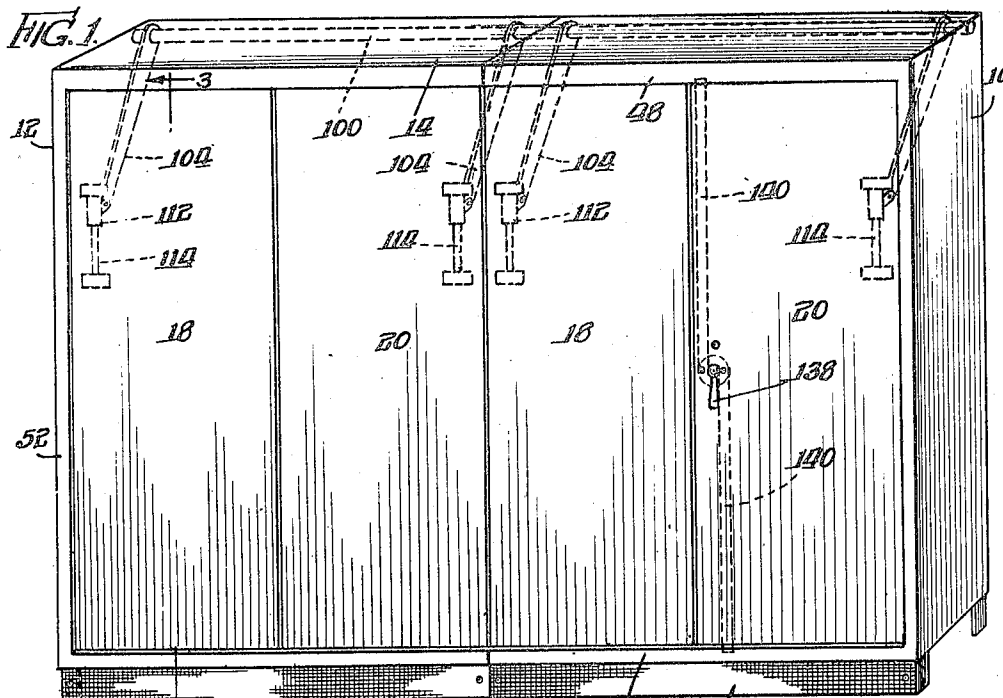
J. E. BALES

2,326,320

CABINET STRUCTURE

Original Filed Jan. 11, 1938

3 Sheets-Sheet 1



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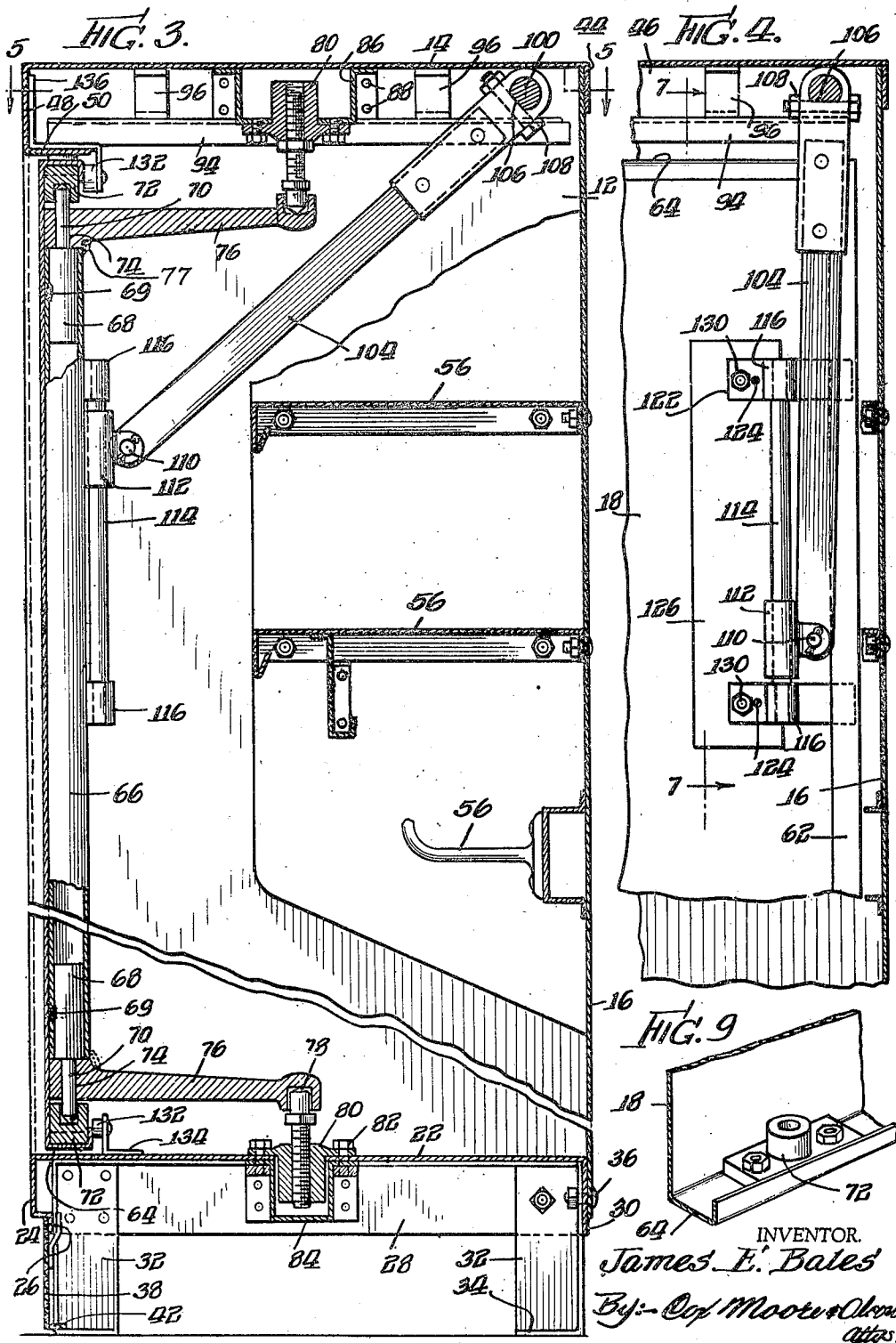
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UNITED STATES PATENT OFFICE

2,326,320

CABINET STRUCTURE

James E. Bales, Aurora, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill., a corporation of Illinois

Original application January 11, 1938, Serial No. 184,428. Divided and this application February 24, 1941, Serial No. 380,258

5 Claims. (Cl. 20-16)

The present invention relates to cabinet structures, and more particularly to doors and door mountings for cabinet structures.

The present application is a division of my application Serial No. 184,428 filed January 11, 1938, now Patent No. 2,248,920 patented July 15, 1941, entitled Cabinet structure.

Among the objects of the present invention are to provide a door mounting means of simple construction; certainty of operation, compactness, and which very quickly and economically may be attached to a sheet metal door and, when so attached, serves to cause the door to be shifted from a closed position to an open position wherein the door moves substantially wholly within the cabinet; to provide a simple type of door mounting means for a door wherein the weight of the door is borne by the mounting means having a bearing in the bottom portion of the cabinet and arranged so that the door may shift from a closed position wherein it lies substantially parallel to the front of the cabinet, to an open position wherein it lies substantially parallel to the side of the cabinet disposed at right angles to the front, and wherein the door lies substantially within the cabinet.

Another object of the invention resides in providing means for pivotally mounting a door to swing about a vertical axis disposed remotely from the door, and wherein the weight of the door is carried solely at the base of the pivotal mounting; a further object is to provide a sheet metal door having a marginal, intumed flange and wherein the pivotal door mounting for the door extends substantially vertically of the central portion of the door, and so as to also rigidify the door; to provide a door mounting for a vertically elongated door having upper and lower bearings remotely disposed from the door, and about which the door bodily swings, said bearings being disposed on a common axis and being vertically adjustable toward and from each other; to provide these and other objects as will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein—

Figure 1 is a perspective view of a locker assembly constructed in accordance with the present invention;

Figure 2 is a perspective view the same as Figure 1, but showing the doors in open position;

Figure 3 is a sectional elevation taken on the line 3-3 in Figure 1;

Figure 4 is a detail sectional elevation taken on the line 4-4 in Figure 2;

Figure 5 is a detail plan section taken on the line 5-5 in Figure 3;

Figure 6 is a sectional view the same as Figure 5, but showing the door in open position;

Figure 7 is a detail sectional elevation taken on the line 7-7 in Figure 4;

Figure 8 is a detail plan section taken on the line 8-8 of Figure 7; and

Figure 9 is a fragmentary perspective view of a bearing construction used on the lower and which bounds the top of the doorway.

The door structure forming the subject matter of the claims of the present application is illustrated in connection with the cabinet construction heretofore illustrated and described in my aforesaid copending application. The preferred embodiment of the cabinet comprises a locker assembly having exterior side walls 10 and 12, as well as top walls 14 and rear walls 16 all suitably joined together along adjacent edges.

The preferred embodiment shown in the drawings for the purpose of illustrating the present invention, comprises a locker assembly having exterior side walls 10 and 12, as well as top walls 14 and rear walls 16, all suitably joined together along adjacent edges. Attention is directed to the fact that the top wall 14 is divided centrally into two sections, each of which sections is co-extensive with and corresponds to one of the locker sections or units, each of which has two doors 18 and 20, respectively.

The base of each of the sections comprises a bottom wall 22 preferably of sheet metal, the front edge of which is bent downwardly as at 24 to provide a molding effect for the lower portion of the doorway and then terminates in the inwardly and downwardly extending flange 26. The opposite sides in the rear margin of the bottom wall 22 are provided with downwardly extending attachment flanges 28 and 30, respectively (Figure 3) to the four corners of which are secured the legs 32. Each of the legs 32 is preferably provided with a horizontally extending foot portion 34. In the embodiment shown, fastening means 36 are employed to hold the legs in place, although the invention comprehends their securement by welding, riveting, or by any other suitable type of fastening.

The strip of sheet material 38, Figures 1, 2 and 3, is located just below the molding 24 and above the floor in order to conceal the front legs 32, as well as the underpart of the cabinet, and provide

a finished appearance therefor. The strip of material preferably will comprise metal screening, metal caning or some other suitable reticulated material to permit free access of exterior air for ventilating purposes. The screening may be held in position by a plurality of clips 40 located along the interior side thereof and cooperating with an intumed foot portion 42. In order to assemble the strip of screening 38 in the position shown, the clips 40 are first engaged about the downwardly projecting flange 26 and the foot portion 42 moved to the position shown in Figure 3.

The top wall 14 of the cabinet has downwardly extending flanges 44 and 46 along its rear and side edges, respectively, for attachment to associated elements which will be hereinafter described. The downwardly extending wall portion 48 formed along the front edge of the top wall 14 terminates in the inwardly extending flange 50 which bounds the top of the floorway.

The exterior side walls 10 and 12 are flanged outwardly along their forward edge, as indicated by the reference numeral 52 (Figure 6). The marginal molding constituted by this flange 52 is adapted to cooperate with the adjacent wall or building structure but engaging therewith. More particularly the present type of locker is adapted to be employed in more or less permanent built-in installations. Accordingly, the assembly may be inserted into a suitable aperture in a wall, for example, with the molding flanges 52 engaging the marginal edges of the aperture.

The back wall 16 of the cabinet is secured to the flanges 30 and 44, as well as to the flanges 54 which terminate in the rear edge of the side members 12 whereby the cabinet structure proper is rigidly supported and arranged. Supporting means 56 for garments or other paraphernalia are secured to the side and rear walls and further strengthen the assembly. Each of the locker sections or units is further divided by the internal partitions 58 so that each unit in reality comprises two separate lockers, each having a door co-extensive with the front thereof.

The internal side wall 60 of the locker sections or units may be constructed and arranged identically in the same manner as the side walls 10 and 12, although preferably without the provision of the flange 52 on the forward edge thereof. This wall 60 may comprise two adjacent co-extensive walls, each of which is mounted to one of the locker sections. In accordance with the preferred embodiment, however, the wall 60 will be a single sheet of material secured to only one of the sections. In this connection it must be remembered that each of the sections may be prefabricated and stocked by the manufacturer and dealer to be made up into assemblies of as many sections or units as are desired for any particular order. The wall 60 will, accordingly, be permanently secured, for example, to the right-hand section, as shown in Figures 1 and 2. The lefthand section will, in its original individual form, be open on its left-hand side. When the units are assembled, as shown in the figures, and bolted together along the adjacent flanges 28 and 46, this open side is closed by the adjacent wall 60.

The cabinet structure hereinbefore set forth is adapted to be closed by a plurality of doors working in pairs and operable in closed position to lie parallel to the plane of the front of the cabinet and in open position to lie at right angles to the side walls of the cabinet and substantially with-

in the cabinet. In Figure 1 the doors are shown as at 18 and 20. Each door is reversely flanged along the side edges as at 62 and also along the top and bottom edges as at 64. These doors pivotally support an upstanding tubular housing or member 66. This is clearly shown in Figure 3. This tubular member 66 terminates at each end substantially short of the top and bottom flanges or edges 64. The mounting of the tubular member 66 on each of the doors is accomplished very simply by the provision of pintle members 68, which are securely positioned and fastened in either end of the tubular member 66 by means of the welded portion 69. Each one of these pintle members 68 have formed integrally therewith oppositely projecting pintles 70. The free ends of these pintles are pivotally journaled in bushings 72, which bushings, in turn, are rigidly fastened to the central or intermediate portions of the upper and lower flanges 64.

For the purpose of supporting the doors from pivotal points remotely removed from the door proper, supporting arms 76 are provided. These arms are bored at their outer ends as at 74 to slip over the upper and lower ends of the pintles 70, and are rigidly fastened to one end of the tube and therefore to the pintle and pintle block by means of the welding 77. Each of the arms is pivotally mounted at its other end upon fixed pivots 78, which pivots are adjustably threaded in upper and lower bushings 80. The lower bushing 80 is fastened as at 82 to a transversely extending channel member 84 rigid with the side flanges 28 and rigid with the bottom wall 22 of the locker. In order to accomplish this, the bottom wall is provided with a central aperture to permit the bushing to extend therethrough as shown in Figure 3.

A pair of transversely extending members 86 is fastened as at 88 and welded to the top wall 14 of the locker, having inwardly extending flange portions 90 to which the upper bushing 80 is rigidly attached by screws 92.

In the present structure the weight of the door is supported upon the lower pivot 78, being transmitted along the arm 76. Each door is guided in its path of movement with respect to the pivot 78 by tracks 94 secured preferably to the upper wall 14 of the cabinet by means of the U-shaped braces 96, which are spot-welded to this top wall 14. The tracker guide member 94 is arranged with its two sides opening downwardly to engage a guide roller 98 (see Figure 5), which projects above the upper margin of the door adjacent one corner thereof. Although this roller 98 may be pivotally arranged about its axis, in accordance with the preferred embodiment, nevertheless it may be fixedly positioned with respect to the door in some installations. If desired, the track 98 may be bent or flared slightly outwardly as shown in Figure 6 whereby to facilitate the action of the door. This bend, however, is not essential to the operation of the device.

The actuation of the doors to open and closed position is controlled by rotatable bar 100 journaled in the upper rearward portions of the cabinet and in the bearing 102, as shown in Figures 5 and 7.

The door opening mechanism and its connection to the door mounting forms more particularly the subject matter of the claims of my prior application Serial No. 184,428 aforesaid. Opposite each door the bar 100 supports an arm 104. Attention is directed to the fact that the cylindrical surface of the bar 100, as shown in Fig-

ures 3 and 4; is interrupted along one side by the flat wall 106. Bolts 108 pass through suitable aligned apertures so that one side is located along the flat face 105 for the purpose of locking each of the arms 104 to the bar for rotation therewith. The other end of each arm 104 is pivotally mounted as at 110 to the sleeve 112, which is slidable upon the vertically extending bar 114 rigidly mounted upon the rearward face of the door in a manner to be described hereinafter more in detail. It will be evident from this disclosure that, when the bar 100 is rotated, it carries with it the arms 104. The lower end of the arms 104 tends to push, pull, or drag the adjacent edge of the door to which it is secured in the horizontal direction of movement thereof, the sleeve 112 sliding upwardly or downwardly upon the bar 114 as the end of the arms 104 is raised or lowered as the case may be.

Means is provided to adjust the slide bar 114 so that the doors may be properly aligned in open and closed position and consists of a pair of supporting blocks 116 secured to the upper and lower end of the slide bar 114, as seen in Figures 2, 3, 4, 7, and 8. Horizontally extending arms 118 project under the reversely extending flange 62 along a vertical marginal edge of the respective door. The lower surface of the arm, as viewed in Figure 8, is undercut or relieved as at 120 freely to clear the wall of the door so that the whole block or bracket may be moved arcuately in its horizontal plane with respect to the door about the edge while being retained in the position shown by the flange 62.

An oppositely extending arm 122 is provided with a set screw 124 bearing against a plate 126 welded flatwise to the wall of the door. The plate 126 performs the additional function of rigidly engaging the tapered head of the machine screw 128 for positioning it rigidly with respect to the door (Figure 8). The machine screw extends freely through an aperture in the arm 122 and is engaged by a lock nut 130. Accordingly, when it is desired to adjust the position of the slide bar 114 for the purpose of determining the closed or open position of the door, the nut 130 and the set screw 124 are manipulated to move the arm 122 toward or away from the door. This adjustment controls within predetermined limits the vertical positioning of the arm 114.

A pair of resilient stop members 132 is mounted in the position shown in Figure 2 for the purpose of cushioning the closure of the doors, as well as positioning the doors when closed. The lower stop member is mounted in the L-shaped bracket 134 fastened to the lower wall 22 of the cabinet while the upper member 132 is mounted upon the bracket 136 fastened to the flange 50 of the wall section 48.

While the operation of the rotatable control bar 100 may be controlled in various ways and from various positions or stations in accordance with the present invention, in the preferred embodiment disclosed, rotation thereof is controlled by actuation of the righthand door 20, as viewed in Figures 1 and 2. To this end the door 20 is provided with a control handle 138 which may be associated with any conventional lock. The control handle furthermore is associated with oppositely reciprocal slide bars or bolts 140 slidably mounted on the inner face of this door and having end portions engageable selectively with suitable recesses in the upper and lower portions of the doorway. Accordingly, when this door is bolted and/or locked, the remaining doors of the

assembly will be likewise maintained in closed position. When the door 20 is actuated to open position, the control bar 100 rotates through a counter-clockwise arc, as viewed in Figure 3, whereupon the remainder of the arms 104 drag their respective doors from the position shown in Figure 5 to the position shown in Figure 6.

The present invention provides a simple and improved door mounting for lockers and particularly of the type wherein the operation of all the doors thereof is effected from a master control station. This invention is particularly adaptable to lockers or cabinets having doors of the instant type which are pivotally mounted for bodily movement with respect to a track. In addition, the present control mechanism is particularly useful in cabinet assemblies of the present type comprising a plurality of sections or units which may be prefabricated and then assembled at some later time.

While the control bar 100 has been described in the preferred embodiment of the drawings as being a single bar extending through all of the sections and releasably attachable to the arms 104, nevertheless the present invention comprehends the provision of individual bars for one or more of the sections provided with interlocking means adjacent their edges so that they may operate together when the sections are arranged in the order disclosed. At the same time, the control bar and its associated mechanisms are positioned well away from the location of any articles which would normally be stored in the cabinet. The movable parts are all readily adjustable with little difficulty and may be assembled from prefabricated units without the necessity for any special equipment.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction, and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein described being a preferred embodiment for the purpose of illustrating the invention.

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

1. A cabinet door of the class described formed of sheet metal having upper and lower flange portions, said flanges extending inwardly of the faces of the door, pintle blocks mounted in said flange portions and having colinear, rigidly spaced apart pintles pivotally mounted therein, an arm carried by each of said pintle spacing means, and pivotal mounting members for the ends of said arms remote from the door, said mounting members being mounted in the upper and lower portions of said cabinet.

2. A sheet metal door structure for a cabinet comprising a vertically elongated door formed of sheet metal having marginal intumed flanges substantially throughout the marginal extent of the door, upper and lower bearings mounted on the upper and lower flange portions substantially centrally thereof, and an elongated rigidifying member extending adjacent the sheet metal of the door centrally and vertically thereof, pintle members carried by and at the upper and lower ends of said rigidifying member disposed in said bearings, upper and lower laterally extending arms rigidly secured to said rigidifying member, and upper and lower pivotal

bearings on said cabinet pivotally connected with said arms whereby to permit swinging movement of the door pivotally and bodily about said last mentioned bearings.

3. In a door mounting for a cabinet, the combination of upper and lower wall portions of the cabinet, a sheet metal door therefor vertically elongated and having marginal upper and lower intumed flanges, a bearing disposed within each upper and lower flange at the central portion thereof, each bearing including a socket, a relatively elongated tube vertically disposed centrally of said door adjacent the inner wall thereof, said tube terminating short of the inner edge of the upper and lower intumed flanges, the upper and lower ends of the tube each having a pintle member therein having a pivot pin projecting outwardly and engaging in the socket of the respective bearing, and the upper and lower ends of said tube each having a laterally extending arm, said arms at their inner ends each having a central bore, said arms, pintle members and tube being weldingly interconnected to form an integral unit, and pivotally mounting means on the upper and lower wall portions of said cabinet for pivotally mounting the ends of said laterally projecting arms remote from said door.

4. A sheet metal cabinet door having marginal upper and lower intumed flanges, a supporting member, means for pivotally mounting said door on the supporting member at remote, aligned and vertically spaced points, said mounting means including spaced, oppositely and vertically extending pivot members rigidly secured on said

supporting member, and complementary bushing means rigidly secured within the upper and lower flanges at the central portion of said door and pivotally engaging the free ends of said pivots.

5. In combination with a structure providing a top and bottom and a door opening, a door for said opening, said door comprising a sheet metal structure having top and bottom horizontal flanges, said horizontal flanges terminating in upstanding vertical flanges spaced from the vertical plane of the door, a bushing mounted in the space formed between the upstanding flange and the plane of the door, each bushing including an outwardly opening well, said wells being in vertical alignment, a sheet metal tube disposed on the rear face of said door, pintle blocks rigidly mounted in the upper and lower ends of said tubes with pintles projecting freely from the ends of the tubes, arms having their outer ends bored to concentrically fit around said projecting pintles, said arms being rigid with said tubes, the outer ends of said arms being provided with oppositely disposed sockets, the socket of the lower arm facing downwardly and the socket of the upper arm facing upwardly, a pin threadedly mounted in the bottom of said compartment and a pin threadedly mounted in the top of said compartment, said pins being in vertical alignment and each being provided with a head freely detachable from the socket of the arm and turnable with respect thereto, whereby said door may turn freely about said threaded pins.

JAMES E. BALES.

CERTIFICATE OF CORRECTION.

Patent No. 2,326,320.

August 10, 1943.

JAMES E. BALES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 13, for "which bounds the top of the doorway" read --upper portions of each locker door --; page 3, first column, line 55, for "in the" read --on the--; page 4, first column, line 25, claim 3, for "sail" read --said--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of December, A. D. 1943.

(Seal)

Henry Van Arsedale,
Acting Commissioner of Patents.