Dec. 12, 1944. J. E. BALES 2,364,612

HINGE STRUCTURE

Filed May 9, 1941

FIG. 3.

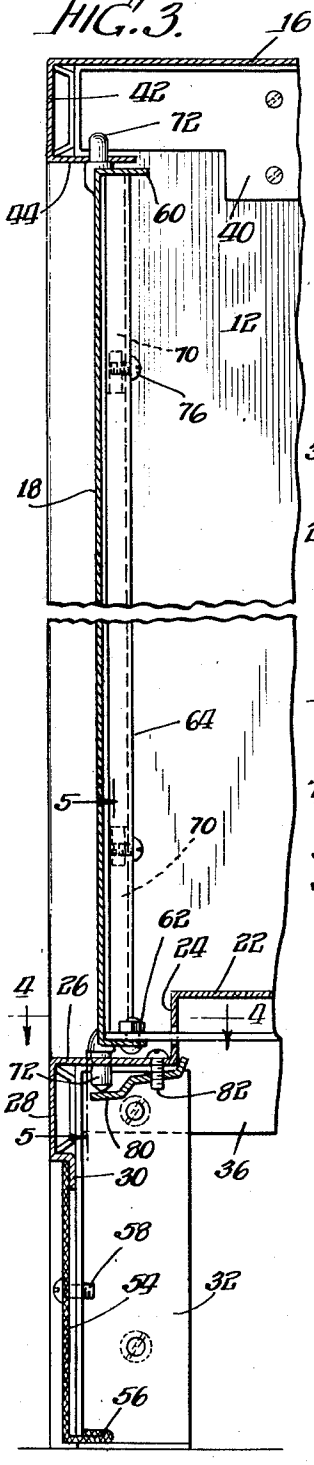


FIG. 1.

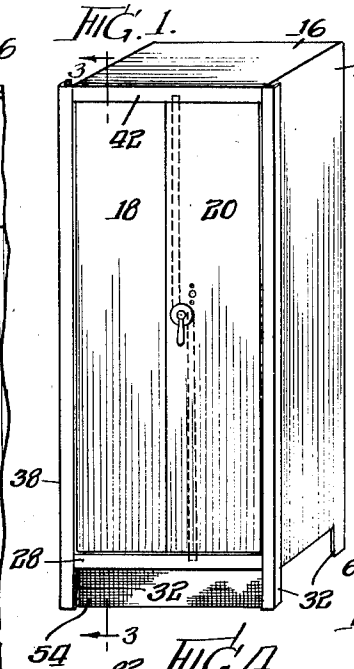


FIG. 2.

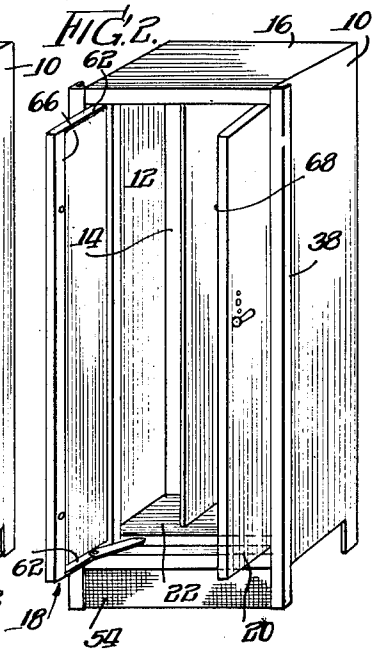


FIG. 4.

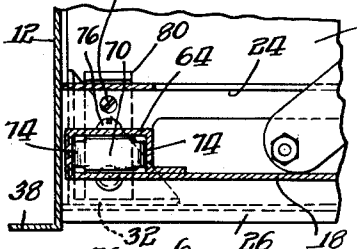


FIG. 5.

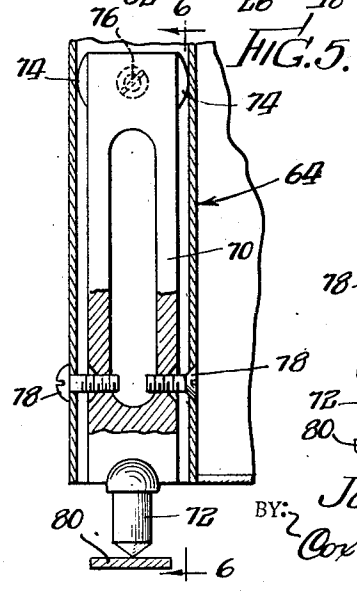


FIG. 6.

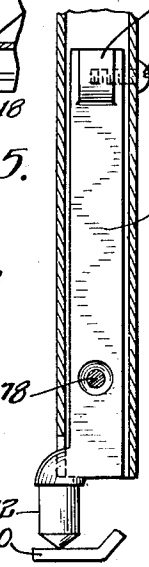
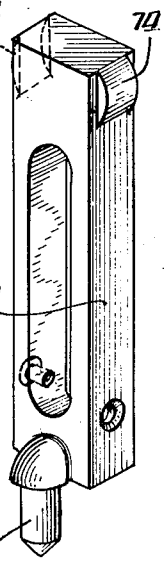


FIG. 7.



INVENTOR.

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UNITED STATES PATENT OFFICE

2,364,612

HINGE 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. 184,427. Divided and this application May 9, 1941, Serial No. 392,667

14 Claims. (Cl. 20—16)

The present invention relates to an adjustable hinge construction for closures, and more particularly for lockers.

The present application is a division of my co-pending application Serial No. 184,427, filed January 11, 1938, entitled Locker structure.

Among the objects of the present invention are to provide a locker door structure comprising pintles which are mounted in operative relationship to the door which may be adjustably tilted with respect to the door, and which may be locked releasably in any of the said positions for controllably adjusting the positioning of the pintles, and thereby properly to position the door with respect to the door frame.

Another object of the invention resides in providing a simple, economical, adjustable hinge for closures and other lockers.

Numerous other objects and advantages will more fully appear during the course and progress of the following specifications, wherein—

Figure 1 is a perspective view of a locker with the doors closed;

Figure 2 is a similar view, with the doors open;

Figure 3 is a vertical, sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a fragmentary plan sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 3;

Figure 6 is a detail sectional view taken on the line 6—6 of Figure 5; and

Figure 7 is a perspective view of a pintle block.

The present invention is most practically shown as applied to the door of a sheet metal locker. Obviously it may have other adaptations.

The locker assembly herein shown for the purpose illustrated in the present invention is of any desirable type comprising a pair of opposed side walls 10 and 12, a rear wall 14 and a top wall 16. In addition, there are a pair of doors 18 and 20 pivotally mounted on opposite sides so as to open outwardly, as clearly shown in Figures 1 and 2. Each of the sections is also provided with a corresponding bottom wall 22. This bottom wall is bent downwardly adjacent its forward portion to provide the downwardly extending wall 24, which at its lower end is bent outwardly as at 26 and provides the sill for the doors. This member is finally bent downwardly at 28 and inwardly against as at 30 in order to provide a finished molding for the front portion of the sill.

Each of the lockers is supported on four legs 32 preferably formed of angle iron or the like, and fastened by welding, or any other equivalent means, to the molding portion 28, as well as to the downwardly extending flange 36 formed along the side of the bottom wall. The side walls 10 and 12 are likewise secured by welding rivets, or the like, to the flange 36 and have bottom portions co-extensive with the front and rear legs 32.

The forward edges of the side walls 10 and 12 are formed with outwardly and then reversely extending flanges 38, if desired, for providing a finished molding-like appearance to the structure, whereby the device may be used in permanent installations, and particularly those wherein it is to be built in a recess within a permanent wall or partition. When so arranged, the flanges 38 will enclose a portion of the edge of the adjacent structure and confer a pleasing, marginal appearance.

The top wall 16 is secured to the rearwardly extending angle member 40, which, in turn, is secured to the side walls 10 and 12, as shown in Figure 3. The forward portion of the top wall 16 is bent to form the downwardly projecting wall section 42 and the inwardly extending flange 44 directly above and coextensive with the sill 26.

In addition, a sheet member 54 (see Figure 3) may be situated in the space just below the molding flange 38 and the floor. This member 54 is preferably formed of a piece of metal screening or other articulated sheet material so that the under portions of the assembly will be in communication with the surrounding air for filtration purposes. The screening is formed with an inwardly extending beaded portion 56 at its bottom edge, and is maintained in the position shown with its upper edge resting adjacent the flange 30 through the agency of fasteners 58 engaging in the respective front legs 32.

The doors 18 and 20 are formed of sheet material flanged at top and bottom as indicated by the reference numerals 60 and 62 (see Figure 3), and provided with a reversely extending boxlike structure 64 (see Figure 4) along vertical pivoted or hinged edges. This box-like structure provides a housing for the hinged mechanism now to be described.

The meeting edges of the doors are provided with reversely extending flanges 66 and 68. The longitudinally extending box-like configuration 64 on the hinged or pivoted edges of each door encloses upper and lower pintle blocks 70 having cylindrical, integrally formed pintles 72 extending from one end thereof and engaged rotatably

in suitable, alined apertures in the upper flange **44** and the lower sill **26** of a locker section or unit, as shown in Figure 3.

It is to be noted that the pintle blocks are throughout most of their length of substantially smaller transverse dimension than the width of the box-like housing **64** which encloses them, but are, adjacent their ends opposite from that from which the pintle **72** projects, formed with oppositely extending curved pivotal members, fulcrums, or ears **74**, which tend to position the member at this point centrally within their confining housing. The pintle blocks **70** are further positioned by the pivot **76**. The pintle blocks and the pintles are in this manner mounted for limited pivotal movement about the pivot **76**.

Machine screws **78** pass freely through opposite sides of the box-like marginal housing **64**, and are threaded into the pintle blocks adjacent their lower portions. Accordingly, the pintles at any time may be adjusted by merely loosening one of the screws **78** and tightening the other until the pintles **72** are positioned in the desired relationship with respect to the door or the door frame. Thus this hinge and its mounting provides a simple and effective means for adjusting the doors, so that they at all times register perfectly with the doorway or door frame and the doors are alined in closed position.

The weight of each of the doors is supported directly upon the abutment members **80** which, as shown, may be a strap of metal shaped as shown in Figure 3 and preferably of some resiliency. Each of these supporting or abutment members **80** is supported by the machine screw **82** which passes through the sill **26** of the doorway and engages into the strap member. It will be obvious from this disclosure that, since tightening of the screw **82** increases the axial stress applied against the end of the lower pintle **72**, this means may be employed to tension the movement of the doors, as well as accurately to control their vertical positioning with respect to the sill.

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. In a locker, a doorway, having upper and lower aligned portions into which may project pintles carried by the door, a door adapted to close the doorway, means for supporting said door for swinging movement with respect to the doorway comprising a first pintle on the upper portion of the door and adapted to project upwardly into pivotal engagement with the upper pintle receiving portion of the door, a pintle support, means pivotally mounting the upper portion of the pintle support on the lower portion of the door in general alignment with said upper pintle so as to permit said pintle support to swing about a horizontal axis, a pintle carried by the lower portion of the pintle support and engaging within the lower pintle receiving portion of the doorway, and means for adjustably holding said pintle support in various positions of adjustment about said horizontal axis.

2. In a locker having a doorway and a door adapted to open and close the doorway, means supporting the door for swinging movement with respect to the doorway comprising an elongated enclosure formed along the longitudinal inner margin of the door, a pintle member comprising a pivot or hinge portion and a pintle, said pintle being positioned within said enclosure, and means supporting the pintle member within the enclosure about a horizontal axis, and means for maintaining said member in any of a plurality of angularly disposed positions relative to said horizontal axis.

3. In a locker having a doorway, a door adapted to open and close the doorway, and means for supporting the door for swinging movement with respect to the doorway comprising a support formed on a terminal portion of the inner vertical edge of the door, a pintle carrier arranged on said support and having a pintle extending therefrom, a second support provided in the periphery of the doorway and underlying and engaging said pintle for positioning and pivotally supporting the weight of the door and means adjustably supporting said pintle block on said second support, said means being adapted to adjustably position the pintle in any of a plurality of positions transversely of the line parallel to the vertical inner edge of the door.

4. In a locker or the like having a doorway having spaced pintle receiving portions and a door adapted to open and close the doorway, means for supporting the door for swinging movement with respect to the door comprising spaced walls formed adjacent one edge of the door and supporting a first pintle adapted to project into one of said pintle receiving portions, a pintle block disposed between said spaced walls and spaced from said first pintle longitudinally of said edge of the door, said pintle block adjacent one end thereof being substantially the dimension of the space between the walls whereby to contact the interior faces of the walls thereat, said pintle block otherwise being of smaller cross section than the space between said walls, pivotal means engaging the doorway frame and the pintle block substantially adjacent the portion of the pintle block having the larger cross sectional dimension, whereby to form a pivot for said pintle block thereat, and adjustable means disposed substantially at the opposite end of said pintle block and engaging the doorway for adjustably swinging the pintle block about its pivot and for maintaining it in such adjusted position, said pintle block having at the end thereof remote from its pivotal mounting a pintle projecting therefrom and adapted pivotally to engage the other pintle receiving portion of the door frame.

5. In a locker construction or the like the combination with a door frame having upper and lower pintle receiving portions, a door mounted to open and close with respect thereto, said door including along one vertical edge spaced apart vertical walls, relatively elongated pintle blocks mounted in the upper and lower portions of said walls, each block having a pintle projecting outwardly longitudinally of the door edge from one end thereof and pivotally engaging in pintle receiving portions in upper and lower portions of the doorway, whereby to mount the door for pivotal movement about upper and lower vertical axes, one of said pintle blocks having, adjacent the end opposite from which the pintle

projects, a pivotal mounting extending transversely to the axis of the pintle whereby to permit the block to shift about said last mentioned pivotal mounting, and means interconnecting the door and pintle blocks on opposite sides of the axis of the pintle for adjusting the pintle end of the pintle block relatively to the door.

6. A hinge mounting for a locker door and the like comprising a relatively elongated pintle block having adjacent one end opposed outwardly approaching rounded ears and having means forming a pivotal axis disposed transversely of the longitudinal axis of the block, said pintle block at the opposite end having a pintle extending in a direction substantially parallel to the longitudinal axis of the pintle block, and said block having, at the pintle end thereof, means for shifting the pintle carrying end of the block angularly about the transverse pivoted axis of the block.

7. A hinge mounting for a locker door and the like comprising a relatively elongated pintle block having adjacent one end opposed outwardly projecting arcuate fulcra, said pintle block at the opposite end having a pintle extending in a direction substantially parallel to the longitudinal axis of the pintle block, and said block having, at the pintle end thereof on the same sides at which the opposed ears are located, means for shifting the block angularly about or on said fulcra.

8. In a hinge assembly for a locker or the like comprising a locker door frame, a door therefor having along its pivotal edge a box-like vertical housing providing spaced vertical walls, pivotal mountings secured in the upper and lower portion of said housing comprising a pair of pintles extending vertically upwardly and downwardly therefrom and engaging in pivotal mountings in confronting upper and lower portions of the door frame, one of said pintle mountings comprising a relatively elongated block mounted in said housing, one end of said block providing opposed rounded ears adapted to engage and contact confronting opposed walls of said housing, the remaining portion of said block being of smaller cross sectional dimensions than the cross sectional dimension of said housing, whereby to permit angular adjustment of the opposite end of said pintle block with respect to the walls of said enclosing housing, said pintle block at its opposite end having one of the hereinbefore mentioned pintles projecting therefrom in a direction parallel to the longitudinal axis of the pintle block, said pintle block at a point intermediate the distance between said projecting ears having an opening to receive a pivot pin engaging the housing, whereby to form a pivot for said pintle block, and adjustable means connected with opposed confronting walls of the housing and engaging opposed portions of that end of the pintle block adjacent the projecting pintle, whereby said end of the pintle block may be tilted about the opposite pivotal mounting in either direction, whereby to adjust the door relatively to the door frame.

9. In a sheet metal locker or the like in combination with a sheet metal door frame, a sheet metal door therefor having along one vertical edge a portion forming a housing, an elongated member vertically mounted in said housing and having a horizontal pivotal mounting at one end in the walls of the housing and a pintle projecting from the other end and extending parallel to the longitudinal axis of the elongated member, and means adjacent the pintle end of the elongated member for adjusting said member angularly about its pivot, said last mentioned adjusting means engaging the door housing.

10. In a sheet metal locker or the like in combination with a door frame having spaced horizontal upper and lower members provided with registering openings, a door, a pintle mounting at the upper portion of the door including a pintle projecting upwardly and engaging in one of said openings whereby to hinge the door at its upper portion, and a pintle mounting in the lower portion of said door, said mounting having a pintle projecting downwardly therefrom and extending through the opening in the lower horizontal member of the door frame, and a spring metal strap disposed beneath the lower horizontal member of the door frame and engaging a point on the lower end of the pintle, and adjustable means for adjusting the spring metal strap relatively to the lower horizontal member whereby to provide a vertical adjustment to the door.

11. In a locker having a door frame defining a doorway, a door adapted to open and close the doorway, means supporting the door on the frame for swinging movement, said means comprising a pintle member, and spring metal means carried by the door frame and underlyingly, pivotally supporting said pintle portion and means for adjusting the tension of said spring metal means for adjusting said pintle member and said door in a direction axially of the axis about which said door pivotally turns about said pintle.

12. In a hinge, a member having a pintle receiving portion, a second member, and a pintle carrier pivotally mounted about a predetermined axis on said second member and having a pintle disposed pivotally to enter said pintle receiving portion for turning about an axis transverse to said first mentioned axis.

13. In a hinge, a member having a pintle receiving portion, a second member, an elongated pintle block, and means for pivotally mounting one end of the block on said second member, the opposite end of the block carrying a pintle projecting therefrom at right angles to the axis of turning of said block and pivotally received in said pintle receiving portion.

14. An elongated pintle block having opposed curved lateral projections at one end thereof and means disposed equidistantly therebetween forming an axis of turning lying concentrically of said curved surfaces, the opposite end of said block having a pintle extending therefrom and lying on a line passing longitudinally of the block and passing through said axis of turning, said pintle carrying end of the block carrying means located in a direction transverse to said axis of turning for adjusting and fixing the angular position of said block about said axis.

JAMES E. BALES.

CERTIFICATE OF CORRECTION.

Patent No. 2,364,612. December 12, 1944.

JAMES E. BALES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 19, for "pivoted" read --pivotal--; 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 12th day of June, A. D. 1945.

Leslie Frazer

(Seal) Acting Commissioner of Patents.