July 7, 1953 F. A. SAAF 2,644,555

DOORPOST CONSTRUCTION

Original Filed Dec. 27, 1945 2 Sheets-Sheet 1

Fig. 1.

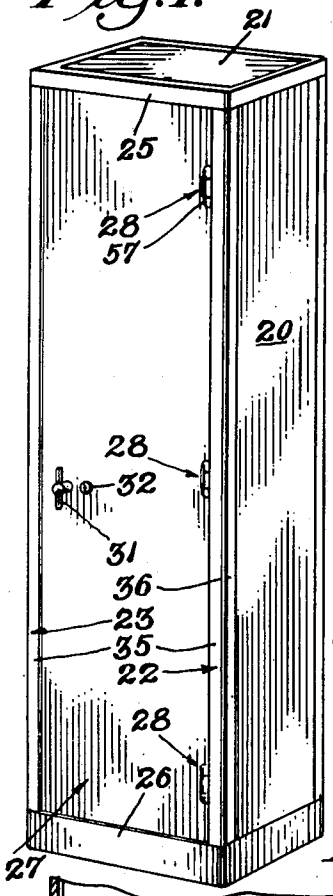


Fig. 2.

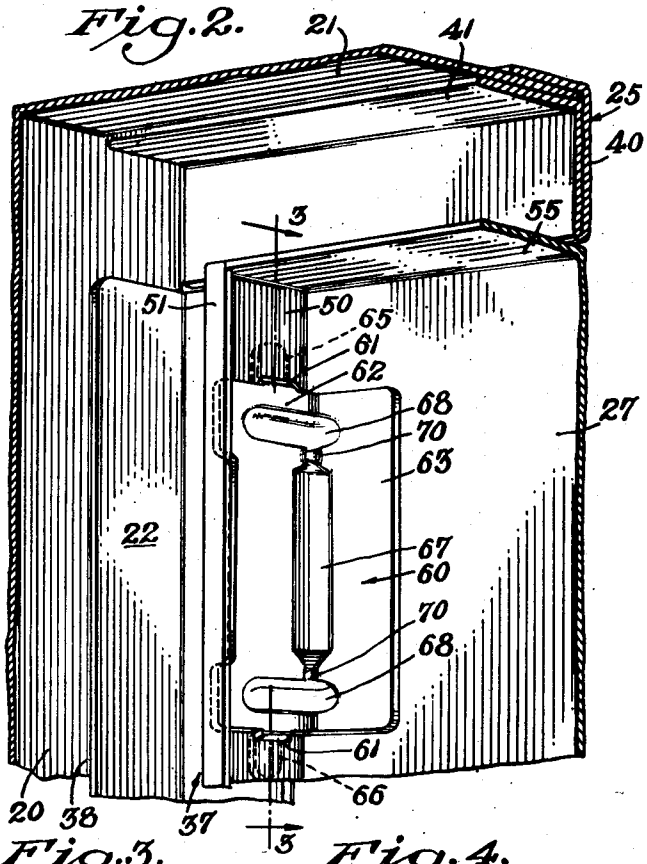


Fig. 3.

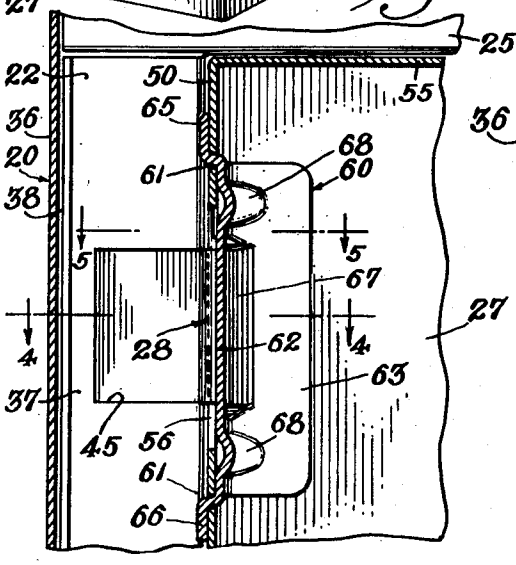
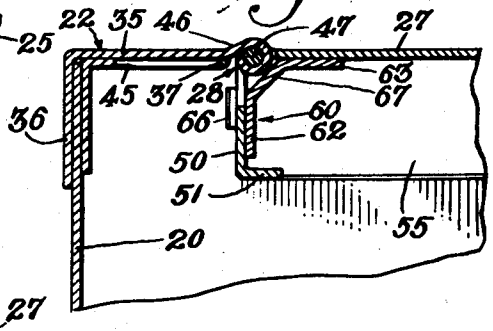


Fig. 4.



Inventor
Fritz A. Saaf
By
Mann and Brown
Attorneys.

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Fig. 6.

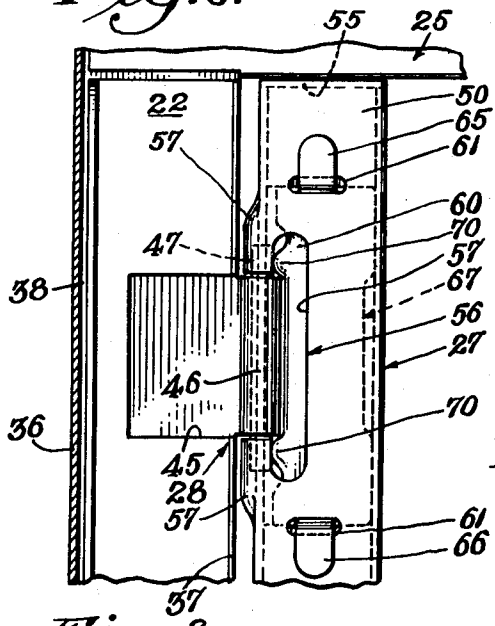


Fig. 5.

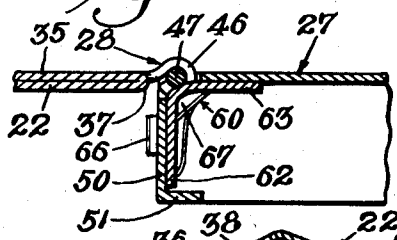


Fig. 7.

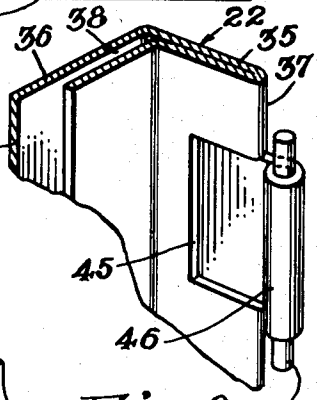


Fig. 8.

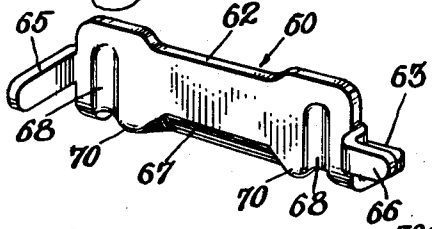


Fig. 9.

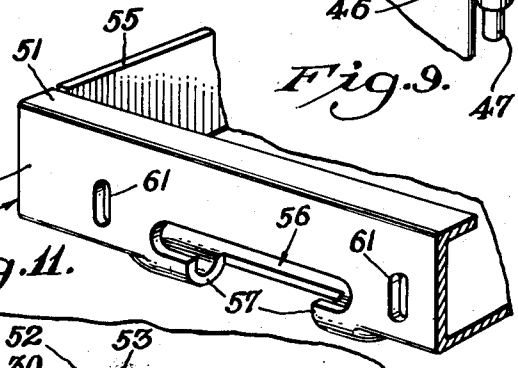


Fig. 10.

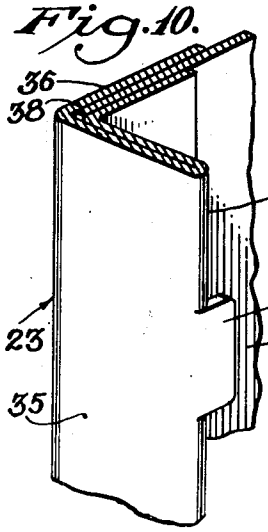
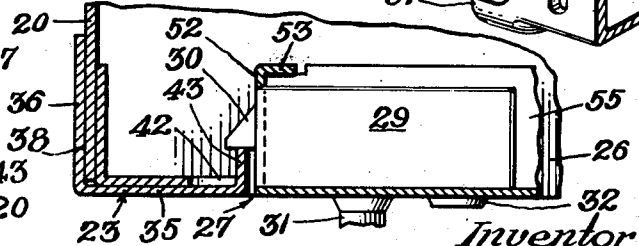


Fig. 11.



Inventor
Fritz A. Saaf
BY
Mann and Brown
Attorneys

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2,644,555

UNITED STATES PATENT OFFICE

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DOORPOST CONSTRUCTION

Fritz A. Saaf, Aurora, Ill., assignor to All-Steel Equipment Inc., a corporation of Illinois

Original application December 27, 1945, Serial No. 637,396. Divided and this application October 8, 1949, Serial No. 121,162

3 Claims. (Cl. 189—46)

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This invention relates to means for securing metal doors in door openings formed by metal walls, and, for the purpose of the present disclosure, will be described as applied specifically to the construction of metal lockers and the like.

A locker of the general type under consideration is of sheet metal construction throughout, the fabrication of the locker including such operations as shearing, forming, welding, riveting and bolting. The door panel is a sheet of metal having a front or face portion and inwardly turned edge flanges.

For mounting the door panel separate hinge straps for carrying pintles are commonly affixed to the metal door post on one side of the door opening, and the flanged door panel is apertured to receive the hinge strap so that the pintles may cooperate with inner surfaces of the door panel. The sheet metal of the door panel usually forms special sockets for the two ends of each pintle, and since such sockets are generally open or incomplete on one side, suitable retaining members are mounted on the inner side of the door panel to keep the pintle ends seated in the sockets.

The general object of my invention is to improve upon the described door mounting arrangement by providing a simpler and more efficient combination of elements, which combination may be assembled with less labor than heretofore required.

One object of my invention is to provide a combination for hingedly mounting a sheet metal door on a sheet metal door post, in which combination the door post is so constructed as to reduce the number of separate elements in the combination. More particularly stated, this object is to provide an integral hinge strap in the door post construction thereby making it unnecessary to fabricate such a strap separately and further eliminating the usual step of attaching the hinge strap to the door post.

A group of objects of the invention relate to the construction of the retaining member, per se. These objects include: to provide a retaining member for mounting on the inner side of a door panel that will compensate at least in part for the weakening of the door panel by the aperture that receives the hinge strap; to provide a retaining member that stiffens the edge flange of the door panel; to provide a retaining member that makes extensive reenforcing contact both with the edge flange of the door and the adjacent portion of the panel face; to provide a sheet metal retaining member with two legs

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forming an angle, the sheet metal being swaged or offset across the vertex of the angle to stiffen the two legs with reference to each other; to provide a retaining member having exceedingly strong portions in contact with the ends of the associated pintle; to provide a retaining member formed with bosses for retaining contact with the associated pintles; and to provide a retaining member that may be mounted on a door member by placing tongues integral with one of said members through complementary slots in the other of said members, and then bending or deforming said tongues to effectively engage the two members with each other.

A further object of the invention is to provide a sheet metal door post construction that is adapted for various modes of cooperation with a door. In general this object is attained by bending the sheet metal of the door post upon itself to form a folded edge for one side of a doorway, and in effect peeling off a tongue from the inner layer of sheet metal to extend laterally from the folded edge for various purposes of cooperation with the door. In one practice the tongue of metal replaces the usual hinge strap. In another practice the tongue of metal is formed to serve as a keeper in the combination of elements for latching the door.

The above and other objects and advantages of my invention will become apparent from the following detailed description taken with the accompanying drawings.

In the drawings, which are to be regarded as merely illustrative:

Fig. 1 is a perspective view of a steel locker embodying a preferred practice of my invention;

Fig. 2 is a fragmentary perspective view, on an enlarged scale, of an upper front corner of the locker, the view being taken from inside the locker with the door closed;

Fig. 3 is a fragmentary vertical section taken as indicated by the line **3—3** of Fig. 2;

Figs. 4 and 5 are fragmentary horizontal sections taken as indicated by lines **4—4** and **5—5**, respectively, of Fig. 3;

Fig. 6 is a fragmentary elevational view from inside the locker, with the door swung open;

Fig. 7 is a fragmentary perspective view of a sheet metal door post formed with the hinge strap integral therewith;

Fig. 8 is a perspective view of the retaining means for the pintle employed in my preferred hinge combination;

Fig. 9 is a perspective view of a portion of a

flanged door panel as constructed in the preferred practice of my invention;

Fig. 10 is a fragmentary perspective view of a sheet metal door post with a keeper integral therewith; and

Fig. 11 is a fragmentary horizontal section showing how the door post of Fig. 10 cooperates in the latching of a door.

The drawings show a metal locker the structure of which includes two side panels or sheets **20**, a top panel or sheet **21**, two door posts or jambs **22** and **23** forming the sides of a door opening, a lintel member **25** at the top of the door opening, a sill member **26** at the bottom of the door opening, and a door member or panel generally designated **27**.

The door panel **27** is mounted on the door post **22** by a plurality of suitable hinge means, generally designated **28**. As best shown in Figs. 1 and 11, the door panel **27** may be provided with a lock **29** having a catch **30**, a handle **31** rotatable for retracting the catch, and a keyhole means **32** for receiving a key to lock the latch against retraction.

The two door posts **22** and **23** are preferably of the folded sheet metal construction shown in Figs. 7 and 11, respectively. In each of these figures the illustrated door post is of angular configuration with a front leg **35** and a side leg **36**. Each of the door posts is fabricated by bending a single sheet of metal back on itself to form a folded edge **37** for one side of the door opening of the locker. The outer layer of metal and the inner layer of metal of each door post lie close together in the front leg **35** but in the side leg **36** are spaced apart to form a deep narrow channel **38** to receive the corresponding side panel **20** of the locker. Any suitable expedient, such as spot welding, riveting or bolting, may be employed to secure the side panels **20** in the channels **38**, spot welding being preferred.

The lintel **25** at the top of the doorway may be of the same general construction as the door post. Thus Fig. 2 shows the lintel **25** formed with a front leg **40** and a top leg **41**, the top leg providing a channel to receive the margin of the top panel **21**. The door sill **26** may be of similar construction.

A feature of my invention is the concept of in effect peeling away a portion of the inner layer of metal of the door posts **22** and **23** to form tongues integral with the outer layers of metal for cooperation with the door panel **27**. Figs. 10 and 11 depict one example in which the inner layer of metal of the door post **23** is cut away, as indicated at **42**, to form a laterally extending tongue **43** to serve as a keeper for engagement by the door catch **30**. Fig. 7 depicts a second example in which the inner layer of metal of the door post **22** is cut away, as indicated at **45**, to form a laterally extending tongue **46** integral with the outer layer of metal to serve as a hinge strap. The tongue or hinge strap **46** is formed to cylindrical configuration to embrace a suitable pintle or hinge pin **47**, the strap and pintle being elements of the hinge means **28** heretofore mentioned.

Turning to the door construction, the door panel **27** is provided on its hinge edge with an inward flange **50** which may be return bent, as indicated at **51**, for reenforcement (see Figs. 2 and 4). In like manner the free or swinging edge of the door may be formed with an inward flange **52** (Fig. 11), which flange may be return bent for reenforcement, as indicated at **53**. The top and bottom edges of the door may be provided with plain flanges **55**, as best shown in Fig. 2.

To receive each of the hinge straps **46** the door panel **27** is cut away to provide a vertically elongated aperture **56**, which aperture may be just long enough to clear the hinge strap if the pintle **47** is removable for insertion after the strap is passed through the aperture. In my preferred construction the pintle **47** is fixedly embraced by the hinge strap **46**, and the aperture **56** is sufficiently elongated to clear both ends of the pintle.

Preferably the sheet metal of the door adjacent the ends of each aperture **56** is swaged or otherwise formed to provide two sockets **57** for the two ends, respectively, of the pintle **47**. As clearly revealed in Fig. 9, each of the sockets **57** is open from one side to permit the pintle **47** to be moved laterally into the sockets in the assembly procedure, and therefore suitable means, such as a retaining member generally designated **60**, is required to keep the pintle seated.

While each retaining member **60** may be attached to the door member **27** by any suitable means, I prefer to provide slots in one of the members and to provide tongues integral with the other member for passing through the slots into engagement with the other member. Rather than cut slots in the retaining member **60** I provide two slots **61** in the door member in the vicinity of each of the hinge apertures **56**, as best shown in Fig. 9.

The retaining member **60**, which is preferably a sheet metal stamping, is of angular cross-sectional configuration with two legs, one leg **62** for extensive face to face contact with the inner surface of the door panel flange **50**, and a second leg **63** for extensive face to face contact with the inner surface of the face portion of the door panel. Integral with the leg **62** are two tongues **65** and **66**, corresponding to the two slots **61** in the door panel flange **50**. It is contemplated that the two tongues will be inserted into the slots and then bent, as best shown in Figs. 3 and 6, into positive engagement with the door panel flange. At least one of the tongues may be straight prior to use, the tongue **65** being thus shown in Fig. 8. Preferably the other tongue **66** is preformed or prebent for the positive engagement with the door panel flange, as shown in Fig. 8, so that in assembling the retaining member into engagement with the door panel the workman has the task of bending only one of the tongues. The assembly procedure consists of holding the retaining member approximately horizontal, inserting the leading portion of the tongue **66**, swinging the retaining member upward about the tongue **66** as a pivot or fulcrum to bring the other tongue **65** into the other slot **61** and then bending or hammering over the tongue **65** to make the engagement positive.

A feature of the preferred practice of the invention is the stiffening of the retaining member **60** across the vertex of the two legs **62** and **63** by suitably swaging or offsetting the metal to form reenforcements across the vertex; and a further feature is the employment of such offset to achieve purposes in addition to reenforcement. In the particular retaining member **60** shown in the drawings, for example, the two legs are stiffened by a simple longitudinal offset **67**, shown in perspective in Fig. 8 and shown in cross-section in Fig. 4. The secondary purpose in forming the offset **67** is to provide liberal clearance between the retaining member and the hinge strap

46 to prevent marring of whatever surface finish is given the strap, such clearance being apparent in Fig. 4.

Further reenforcements across the vertex of the retaining member are achieved by offsetting the metal to form two transverse ribs 68 spaced from the offset ends of the central offset 67. The additional purpose achieved by adding the ribs 68 to the central offset 67 is the formation thereby of what may be termed two bosses 70 for contact, respectively, with the two ends of the pintle 47.

The described retaining member 60 provides inherent exceptional strength at the points of contact with the ends of the corresponding pintle 47 for a number of reasons. In the first place, the retaining member is braced by extensive abutment both with the door panel flange 50 and the adjacent area of the face portion of the door panel. In the second place, the retaining member is exceedingly rigid by virtue of the central offset 67 and the two ribs 68. In the third place, the metal of the retaining member extends in all directions from the points of contact with the pintle, the retaining member being distinguished in this respect from the use of relatively weak unsupported tongues in contact with the pintle. In the fourth place, the points of contact are strengthened by the bosses 70, a "domed" sheet metal configuration being stronger than a flat sheet. It is also to be noted that the concave surfaces of the bosses 70 provide relatively small areas in contact with the pintles, with consequent reduction in hinge friction.

My description in specific detail of a preferred form of the invention as required by Sec. 4888 R. S. will suggest to those skilled in the art various changes and substitutions within the scope of my appended claims.

This application is a division of my earlier application, Serial No. 637,396, filed December 27, 1945, now Patent Number 2,513,366, granted July 4, 1950.

I claim as my invention:

1. A door post for cooperation with a side panel and a door comprising a metal sheet folded back upon itself to form parallel inner and outer layers of metal which together comprise the front section of the door post, the fold in the sheet forming a smooth edge which defines a part of the door opening, and the free ends of the inner and outer layers being bent in the same direction at right angles to said front portion, but spaced apart the thickness of said side panel to form the side portion of the door post, said space between the metal layers forming the side portion of the post being adapted to receive said side panel and mask the included edge therein from view.

2. A door post as set forth in claim 1 in which an integral tongue is cut from the inner layer of the front section and extends toward said door opening.

3. A door post as set forth in claim 2 in which the free end of the tongue is formed into a hollow cylinder to receive a hinge pintle.

FRITZ A. SAAF.

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