July 21, 1964 E. F. REISS 3,141,190

SEPARABLE HINGE ASSEMBLY WITH SPACER

Filed March 31, 1961

FIG. 1

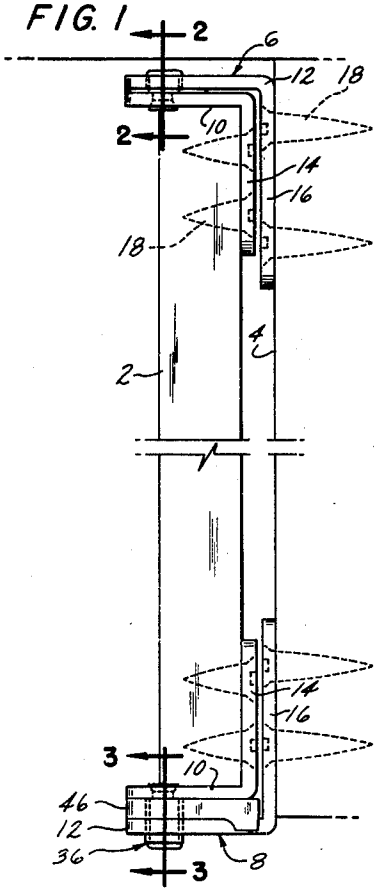


FIG. 2

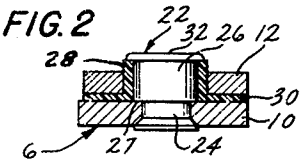


FIG. 3

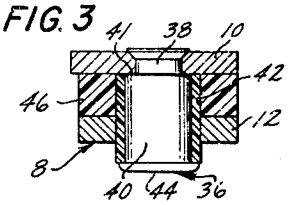


FIG. 4

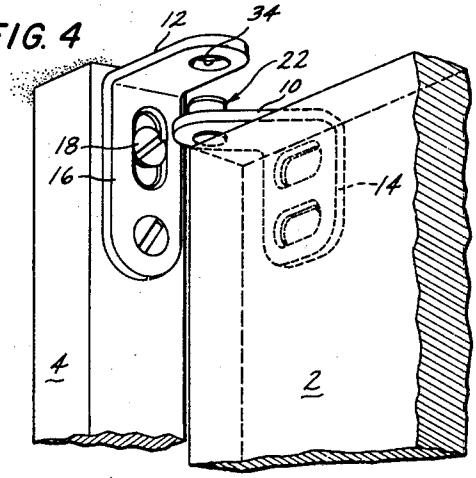
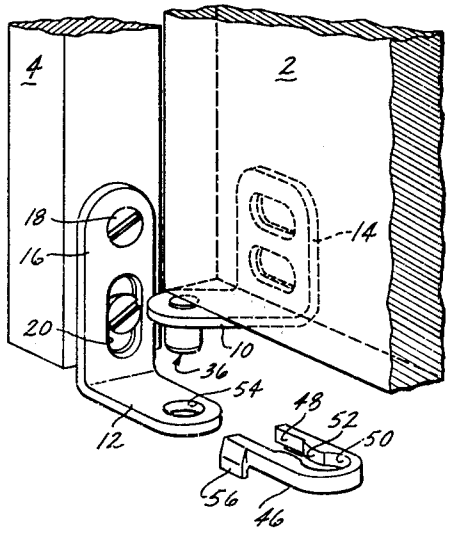


FIG. 5



INVENTORS
EDMUND F. REISS

BY Lindsey, Cretzman and Hayes
ATTORNEYS

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SEPARABLE HINGE ASSEMBLY WITH SPACER

Edmund F. Reiss, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn., a corporation of Connecticut

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4 Claims. (Cl. 16—171)

The present invention relates to hinges and more particularly to a readily demountable pivot hinge assembly for mounting cabinet doors and the like.

It is an aim of the present invention to provide a pivot hinge assembly which enables facile and speedy mounting of doors upon cabinets and the like.

It is also an aim to provide a rugged and economical pivot hinge assembly which is simple to manufacture, assemble and install, and which is smooth in operation and relatively free from wear.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a fragmentary side elevational view of a door mounted on a cabinet by a hinge assembly embodying the present invention;

FIG. 2 is a sectional view of the upper pivot hinge along the line 2—2 of FIG. 1;

FIG. 3 is a sectional view of the lower pivot hinge along the line 3—3 of FIG. 1;

FIG. 4 is a fragmentary perspective view of the upper pivot hinge and door as disassembled; and

FIG. 5 is a fragmentary perspective view of the lower pivot hinge and door as disassembled.

Referring to the drawings in detail, a cabinet door **2** is shown mounted upon a supporting structure **4** such as a wall cabinet by a hinge assembly embodying the present invention. The hinge assembly is comprised of the vertically aligned upper hinge and lower hinge, generally designated by the numerals **6**, **8**, respectively. Each of the hinges **6**, **8** has a door leaf **10** and a cabinet or supporting structure leaf **12** in overlying relationship with the door leaves **10** disposed between the supporting structure leaves **12**. Both leaves **10**, **12** have right angularly disposed mounting flanges **14**, **16** which are secured to the door **2** and supporting structure **4**, respectively, by threaded fasteners **18** which extend through mounting apertures in the flanges. Vertical adjustment of the leaves **12** during mounting is permitted by the elongated aperture **20** adjacent the juncture of the leaf.

As best seen in FIGS. 4 and 5, the door leaf **10** is angularly offset from its mounting flange **14** so as to enable attachment of the mounting flange inwardly of the side edge of the door while locating the pivot at the edge of the door for most effective installation and operation.

Referring specifically to the construction of the upper hinge **6** as best shown in FIGS. 2 and 4, the pivotal connection between the leaves **10**, **12** is provided by pivot pin or rivet **22** having a base portion **24** which is secured in the door leaf **10** by upsetting or other convenient means, and a projecting portion **26** of greater diameter providing a shoulder **27** which is seated against the leaf surface. The bushing **28** of synthetic plastic material having a low coefficient of friction such as nylon, "Delrin," or high density polyethylene has a radial flange **30** which extends outwardly along the surface of the leaf **10**. The bushing is maintained seated upon the projecting portion **26** against disassembly by the radially enlarged head **32** of the pin **22**. The projecting portion **26** of the pin **22**

extends into and through the pin receiving aperture **34** of the supporting structure leaf **12**. It can be seen that the bushing **28** provides both a radial and a thrust-bearing surface for the pivotal connection.

Referring now to the construction of the lower hinge **8** as best shown in FIGS. 3 and 5, the pivot pin **36** is generally similar to the pin **22** and has its base portion **38** secured in the door leaf **10**. The projecting portion **40** is similarly of enlarged diameter with its shoulder **41** seated against the surface of the leaf and is preferably of an axial length greater than the axial length of the projecting portion **26** of the upper pin **22** and of the thickness of a door leaf combined. Cylindrical bushing **42** is similarly seated on the projecting portion **40** to provide a radial bearing surface and held against disassembly by the radially enlarged head **44** of the pin **36**.

Removably seated between the leaves **10** and **12** of the lower hinge **8** is a generally U-shaped spacing member **46** having a slot **48** with a pin receiving portion **50** at its inner end, and, immediately adjacent thereto, a restricted portion **52** of lesser diameter than the bushing **42** of pin **36**. In assembled position, the pin **36** projects through the pin receiving portion **50** and extends into the pin receiving aperture **54** of the supporting structure leaf **12**.

The spacing member **46** is preferably fabricated from a resilient plastic material having a relatively low coefficient of friction such as nylon, "Delrin," or high-density polyethylene so as to provide a good thrust-bearing for the hinge leaves and also to enhance the "snap-fit" provided by the restricted portion **52** of the slot. At the side margins of the inside end of the spacing member **46**, there are provided a pair of depending legs **56** which engage on opposite sides of the leaf **12** and prevent the spacing member from turning. As will be readily appreciated from the drawings, the spacing member **46** is of sufficient thickness to maintain the pivot pins **22** and **36** seated in the pin receiving apertures **34**, **54**, and preferably take up any play between the leaves of the hinges.

As can be readily seen from the drawings, the hinge assembly of the present invention enables mounting and dismounting of the door upon the supporting structure with speed and facility simply by inserting the pivot pins **22** and **36** into the pin receiving apertures **34**, **54** and lifting the door upwardly against the upper leaf **12** while snapping the spacing member **46** into place between the leaves of the lower hinge **8** so as to take up the slack. When it is desired to demount the door, the spacing member is pulled out from between the leaves of lower hinge **8**, and then the door **2** is dropped down to remove the pin **22** from the upper leaf **12**, tilted forward and lifted to remove the pin **36** from the lower leaf **12**.

Although one or both of the pivot pins **22**, **36** may be secured in the leaves **12** which are attached to the supporting structure, the securing of the pins in the door leaves **10** is preferable from the standpoints of ease of assembly, manufacture, and in having the pivot pins removed from the supporting structure leaf upon disassembly. In a wall cabinet construction, the spacing member and longer pivot pin are preferably utilized in the lower hinge **8** for ease of assembly and disassembly and because lesser clearance is required between the upper hinge **6** and the ceiling, and conversely in a floor cabinet construction, particularly when clearance between the hinge and the floor is necessary. However, this combination may also be employed in the upper hinge of the wall cabinet to eliminate any possibility of the door falling loose if the spacer were inadvertently disengaged from between the leaves.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure

from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. In combination, a supporting structure; a door; and a hinge assembly pivotally mounting said door upon said supporting structure comprising a pair of hinges each having a pair of leaves pivotally connected in overlying relationship by a pivot pin adjacent one end, means mounting the inner leaves of the hinges to the door and the outer leaves to the supporting structure, said pivot pins being secured in one leaf and having a projecting portion detachably seated in the other leaf and being of a length to permit disengagement of one pin from its associated leaf while maintaining the other pin seated in its associated leaf, and a spacing member releasably engaged between the leaves of one of said hinges to maintain said pivot pins seated in said other leaves, said spacing member being generally U-shaped and having a pair of legs providing a channel therebetween, said channel having a portion adjacent its inner end dimensioned to closely receive the hinge pin of said one of said hinges and a portion of lesser width than the diameter of such hinge pin to provide a resiliently expandable lock to retain the spacing member about the pin.

2. For use in rapidly mounting and demounting a pair of members comprising a door and a door frame, a hinge assembly comprising a pair of hinges each having leaves disposed in overlying relationship, means for mounting the inner leaves of the hinges on one of said members and the outer leaves of the hinges on the other of said members, the leaf of each of said hinges adapted for mounting on one of said members having a pivot pin

secured thereto with the pivot pin being detachably seated in an aperture in the other leaf of the hinge, one of said pivot pins being greater in length than the other, and a spacer having a greater thickness than the difference between the length of the two pins and less thickness than the length of the longer pivot pin, said spacer being releasably engaged between the leaves of the hinge having the longer pivot pin to maintain the pivot pins in operative relationship, said spacer further being generally U-shaped with the legs thereof providing a channel dimensioned to receive the longer pivot pin at its closed end, said channel having a portion toward the open end thereof having a width less than the diameter of the longer pin to resiliently retain the spacer secured to the pin.

3. The combination set forth in claim 2 wherein the spacer is provided with vertically extending lugs for engagement with the edges of one of the leaves between which it is seated.

4. The combination set forth in claim 2 wherein the spacer is formed of a resilient synthetic plastic material having a low coefficient of friction.

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