Nov. 4, 1969 R. A. JORGENSEN 3,475,783

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Filed May 2, 1967 2 Sheets-Sheet 1

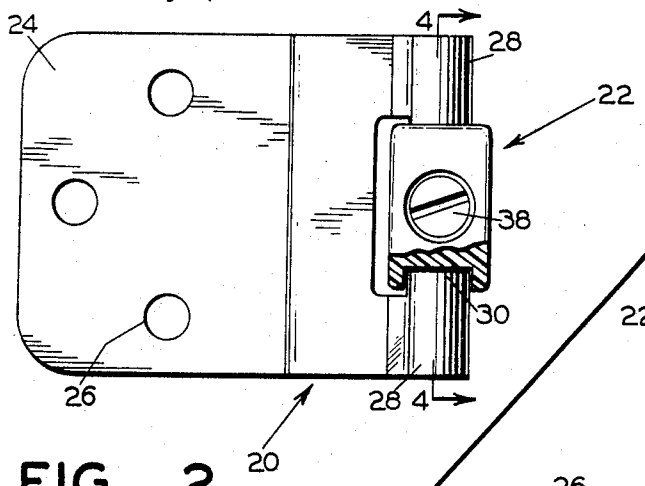
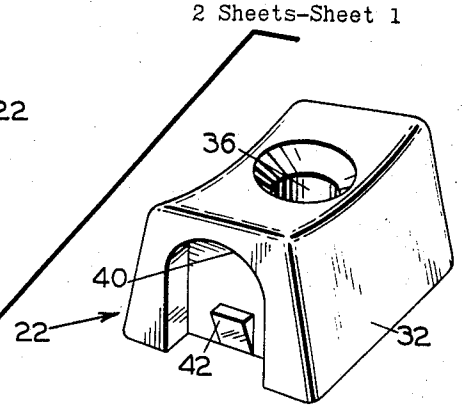


FIG. 2



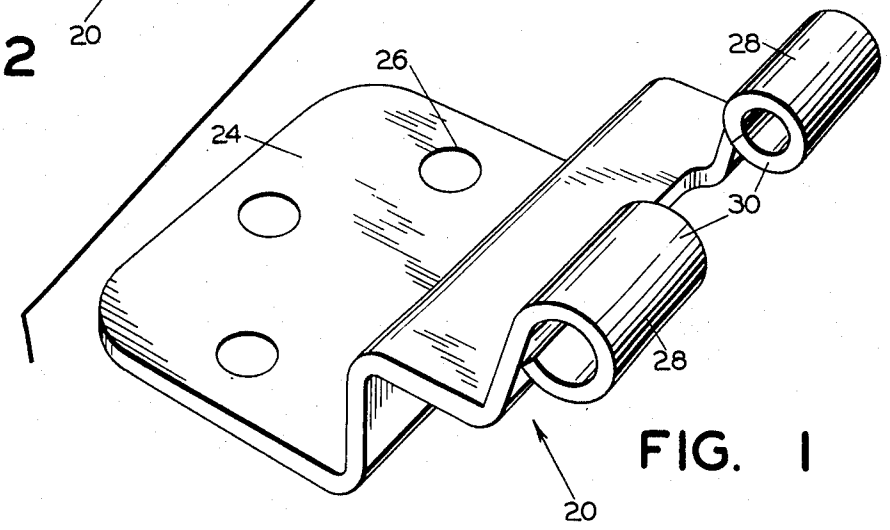


FIG. 1

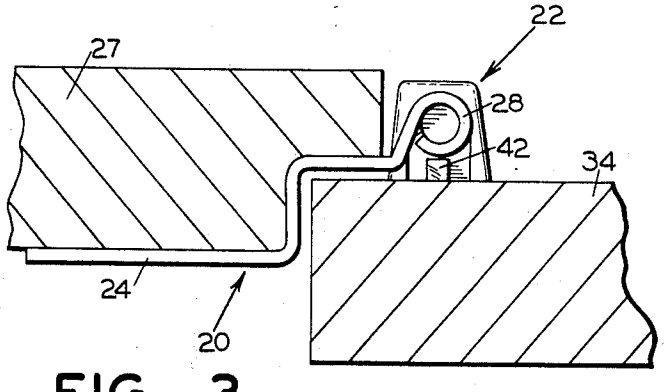
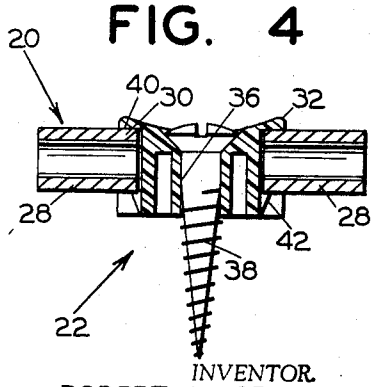


FIG. 3

FIG. 4



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FIG. 5

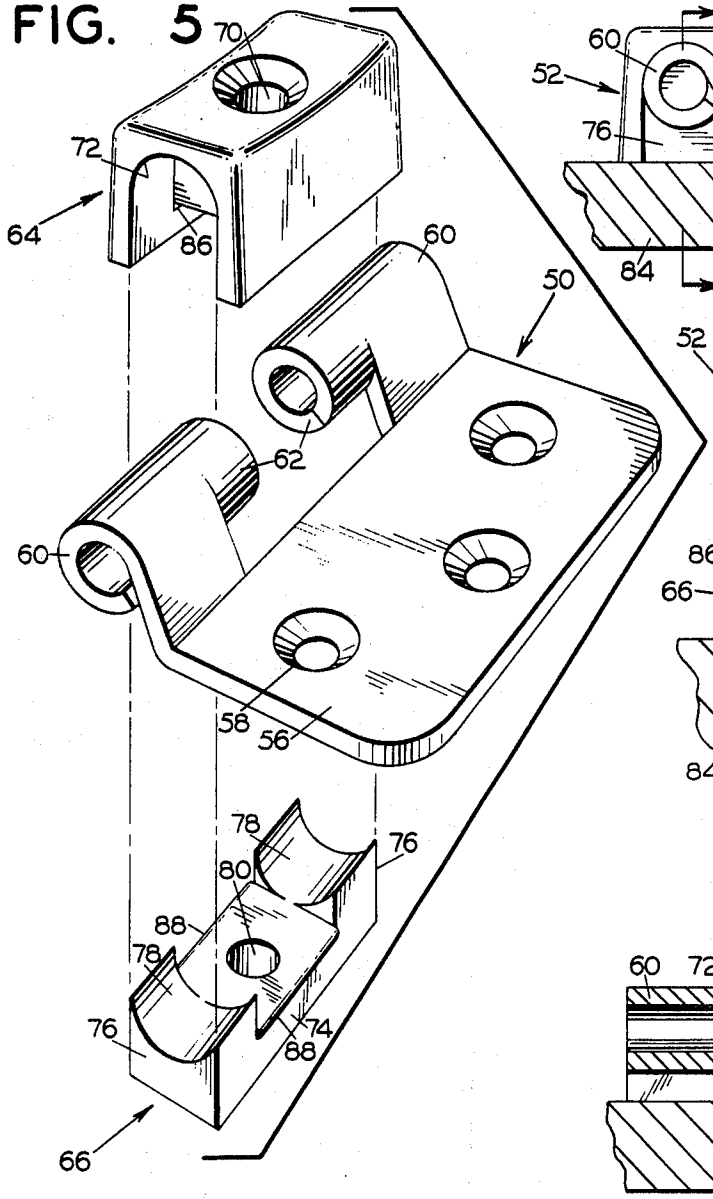


FIG. 6

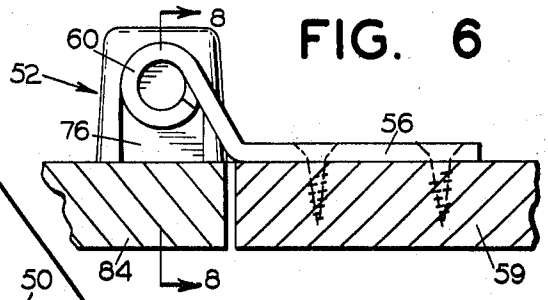
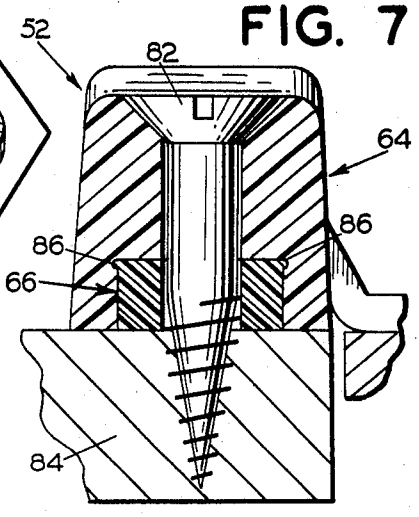


FIG. 7



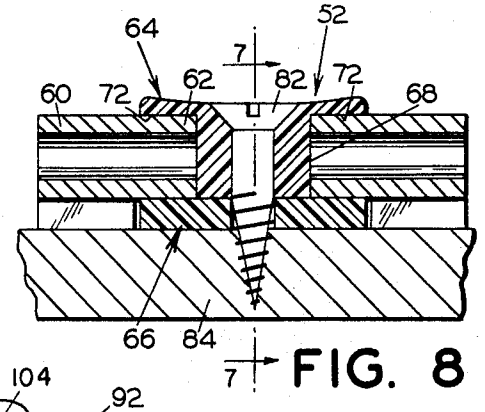


FIG. 8

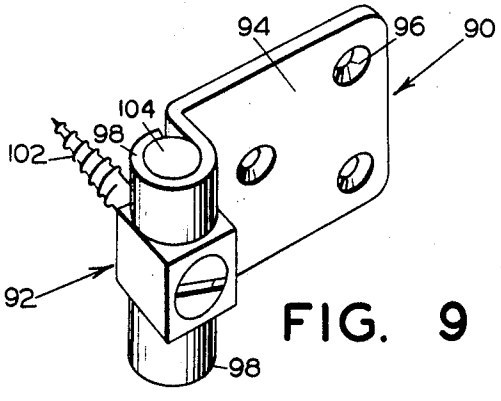


FIG. 9

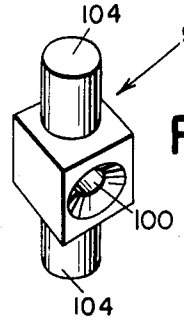


FIG. 10

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3,475,783

HINGE

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Filed May 2, 1967, Ser. No. 635,576
Int. Cl. E05d 15/00, 11/04
U.S. Cl. 16—128 7 Claims

ABSTRACT OF THE DISCLOSURE

A hinge comprises a leaf part and a base part. The leaf part comprises a leaf and a pair of substantially aligned, spaced-apart hinge barrels. The base part comprises a body dimensioned for insertion in the space between the barrels and securing means for securing the base part to a structural member. Bearing-forming means are positioned one on each side of the base and arranged for forming bearing connections between the base and the adjacent hinge barrels.

This invention relates to hinges, particularly to cabinet door hinges.

The hinge of the present invention is designed to replace pin-and-knuckle type hinges over which it has the following advantages:

(1) Eliminates the pin.

(2) Requires but one screw for mounting.

(3) Is silent and non-squeaking in operation.

(4) Includes as a component a conventional low cost door leaf member.

(5) Includes a low cost plastic base member which makes possible interesting decorative arrangements.

(6) Is easily and positively assembled.

(7) Is adaptable to various types of doors such as offset, full-overlay, and flush-surface mount doors.

(8) Eliminates necessity of precision alignment and bore diameters of the leaf knuckles.

(9) Is installed rapidly and easily.

Broadly considered, the hinge of my invention comprises a leaf part and a base part. The leaf part comprises a conventional door leaf member having spaced apart barrel or knuckle extensions. The base part comprises a body, preferably made of plastic, dimensioned for insertion in the space between the barrels. It is secured to a structural member by suitable means, as by a single screw.

Bearing-forming means, for example, recesses dimensioned to receive the hinge barrels, are positioned one on each side of the base and arranged for bearing connection between the base and the adjacent hinge barrels. In this manner the hinge barrels replace the conventional hinge pin in forming bearings which support the door and permit its angular movement.

Considering the foregoing in greater detail and with particular reference to the drawing, wherein:

FIG. 1 is an exploded view of the presently described hinge in one of its embodiments;

FIGS. 2, 3 and 4 are views in plan, elevation and longitudinal section, respectively, of the hinge of FIG. 1, FIG. 4 being taken along line 4—4 of FIG. 2;

FIG. 5 is an exploded view of the hinge of the invention in a second embodiment;

FIGS. 6, 7 and 8 are views in end elevation, transverse section, and longitudinal section, respectively, of the hinge of FIG. 5, FIGS. 7 and 8 being taken along lines 7—7 of FIG. 8 and 8—8 of FIG. 6;

FIG. 9 is a perspective view of the hinge of the invention in a third embodiment; and

FIG. 10 is a perspective view of a base part employed in the hinge of FIG. 9.

The hinge of FIGS. 1–4 essentially comprises a leaf part, indicated generally at **20**, and a base part, indicated generally at **22**. The leaf part is intended normally to overlie the door and the base part normally to be affixed to the door jamb, the cabinet side wall, or other structural member. However these usual positions of the parts may be reversed, if desired, in particular installations.

Leaf part **20** may comprise a metal hinge leaf such as is employed in a conventional pin and knuckle hinge. It comprises a leaf section **24** adapted to be secured by means of screws inserted through screw holes **26** to the cabinet door **27**, which it overlies.

Leaf section **24** is formed in various shapes and configurations as required for adaptation to various types of door mounting, for example, surface mountings, full overlays, and offset mountings.

It is provided in the usual manner with knuckle or barrel extensions **28**. These have aligned openings which normally receive the hinge pin. The barrels are spaced apart a predetermined distance and are formed with inwardly directed extensions **30**.

Base part **22** replaces the conventional pin and plate mounting components of the conventional pin and knuckle hinge.

The base part comprises a body **32** which is made of a suitable material, preferably a deformable plastic such as nylon or polyethylene. It also may be fabricated from zinc, diecast metals or pressed, powdered metals.

Body **32** is dimensioned for insertion in the space between hinge knuckles or barrels **28**. It is provided with means for attachment to a framing member **34**. To this end it is formed with a tapered central opening **36** dimensioned to receive a signal wood screw **38** by means of which the hinge is attached to the structural member.

Bearing forming means are positioned one on each side of base part **22** for forming bearing connections between the base and the adjacent projecting ends **30** of hinge barrels **28**.

In the FIGS. 1–4 form of the invention, the bearing-forming means comprise bearing recesses **40** arranged diametrically opposite each other and dimensioned to receive the inwardly projecting ends **30** of hinge barrels **28**. These elements are retained to their assembled position by means of locking burrs **42**.

To mount and assemble the hinge, leaf part **20** is secured to the door member. Base part **22** is snapped over barrel extensions **30** in the manner illustrated in FIG. 1. This is made possible by deformation of the plastic body of the base, which adjusts sufficiently to permit the barrel extensions to pass locking burr **42** and seat in recesses **40**. There thus is formed a journal bearing in which the hinge barrels themselves provide the mounting shafts. The door then is hung on the structural member by inserting screw **38** which not only supports the door, but also holds together the two hinge parts in working relation.

The embodiment of the invention illustrated in FIGS. 5–8 inclusive is similar except that the base part is divided longitudinally into two sections adapted to be placed on opposite sides of the hinge barrels. One of the sections is provided with barrel supports which underlie the barrels and absorb the thrust created during operation of the door.

To this end there is provided a leaf part indicated generally at **50** and a base part, indicated generally at **52**.

As before, leaf part **50** may be of conventional design and provided in a plurality of configurations to conform to various door designs. It includes a leaf **56** provided with screw hole openings **58** dimensioned to receive the mounting screws by means of which the leaf is attached to the underlying door **59**.

Leaf part **50** also is provided with integral barrels or knuckles **60**. These have inwardly directed extensions **62**

and are provided with aligned, central bores which normally receive a hinge pin.

Base part **52** is divided longitudinally into two sections, one of which is indicated generally at **64** and the other at **66**. Both of the sections of the base part are made of deformable plastic. Section **64** has a cross sectional area which is substantially greater than that of section **66** and is recessed to receive section **66** in nesting relation, as is particularly apparent in FIG. 7.

Base part section **64** includes a body **68**, FIG. 8, dimensioned to be received in the space between hinge barrels **60**. It also is provided with a central screw hole **70**, and a pair of recesses **72** positioned on opposite sides of the body and extending in diametrically opposed directions. These correspond to recesses **40** of the embodiment of FIG. 1–4. They are dimensioned to receive the projecting ends **62** of hinge barrels **60** in bearing forming relation.

Base part section **66** includes a body **74** formed with terminal sections **76**, the upper surfaces **78** of which are arcuate in configuration to conform to the contour of hinge barrels **60**. The central portion of the body is provided with a screw hole **80**.

Base part sections **64**, **66** are designed for placement on opposite sides of hinge barrels **60**. When they are brought together, the body **68** of section **64** enters the space between barrels **60** and abuts against the surface of body **74** of component **66**.

In this position, screw holes **78**, **80** align with each other so that they can receive a wood screw **82** by means of which the assembly may be secured to a door jamb, a cabinet side wall or other structural member **84**. Also, component **66** nests within component **64**, recesses **72** in the latter forming with arcuate surfaces **78** of the former a bearing housing which receives hinge barrel extensions **62** in bearing-forming relation.

The two components **64**, **66** are interlocked by suitable means, for example, by a snap lock including recesses **86** in component **64**, and flanges **88** in component **66**. When the three parts are assembled in the manner illustrated in FIG. 5, the plastic deforms sufficiently to permit flanges **88** to snap into recesses **86**, thus holding the parts together. In use they are further secured by means of screw **82** which penetrates both components as well as structural member **84**.

In the form of the invention illustrated in FIGS. 9 and 10, the arrangement of the bearing parts is reversed, i.e. the hinge leaf barrels or knuckles form the bearing component and the base part supplies the shaft.

Thus the hinge again comprises a leaf part, indicated generally at **90**, and a base part, indicated generally at **92**.

The leaf part **90** again is of conventional construction, being comprised of a leaf **94** with screw holes **96** for reception of the attaching screws. The leaf is provided with integral barrel extensions **98**, which normally receive the hinge pin, the barrel extensions are aligned with each other and separated by a space which receives the base part of the hinge.

The base part **92** again preferably is made of plastic and is provided with a central screw hole **100** dimensioned to receive a wood screw **102** by means of which the hinge is fastened to the structural support.

The base part is provided further with a pair of oppositely-extending, short shafts **104**. These extend diametrically opposite from each other and are dimensioned for reception in the aligned bores of hinge barrels **98**. This may be accomplished during manufacture simply by wrapping the leaf extensions about the shafts. The desired journal bearing relation thus is created.

To mount the hinge of FIGS. 9 and 10, it merely is necessary to attach the leaf part to the door and the base part to the supporting structural member by running screw **102** through opening **100** and driving it into the underlying support.

It is to be understood that the form of my invention herein shown and described is to be taken as an illustrative example of the same and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A hinge comprising:
(a) a leaf part and a base part,
(b) the leaf part comprising
  (1) a leaf, and
  (2) a pair of substantially aligned spaced-apart hinge barrels,
(c) the base part comprising
  (1) a body dimensioned for insertion in the space between the barrels and having a transverse central passageway dimensioned to receive a screw,
  (2) securing means for securing the base part to a structural member and comprising a screw dimensioned for insertion in the passageway and penetration into the structural member, and
  (3) bearing-forming means positioned one on each side of the body and arranged for forming bearing connections between the body and the adjacent hinge barrels.

2. A hinge comprising:
(a) a leaf part and a base part,
(b) the leaf part comprising
  (1) a leaf, and
  (2) a pair of substantially aligned spaced-apart hinge barrels,
(c) the base part comprising
  (1) a body dimensioned for insertion in the space between barrels, and
  (2) securing means for securing the base part to a structural member,
  (3) the body being provided on each of its sides with a recess dimensioned to receive the end of the adjacent barrel, the recess acting as a bearing and the barrel acting as a shaft journaled therein, thereby forming bearing connections between the body and the adjacent hinge barrels.

3. The hinge of claim **2** wherein the base part is fabricated of deformable plastic and includes locking burr means projecting into each recess and providing a snap fit for each barrel in each recess.

4. A hinge comprising:
(a) a leaf part and a base part,
(b) the leaf part comprising
  (1) a leaf, and
  (2) a pair substantially aligned spaced-apart hinge barrels,
(c) the base part comprising
  (1) a body dimensioned for insertion in the space between the barrels,
  (2) securing means for securing the base part to a structural member, and
  (3) bearing-forming means positioned one on each side of the body and arranged for forming bearing connections between the body and the adjacent hinge barrels,
  (4) the base part being longitudinally divided into two parts adapted for positioning on opposite sides of the barrels, one part being of greater cross section than, and recessed to receive, the companion part, the securing means being arranged to inter-engage both parts and hold them together upon installation of the hinge.

5. The hinge of claim **4** wherein one of the two parts of the base part underlies the barrels and is formed with arcuate barrel-support surface sections for absorbing thrust during operation of the hinge.

6. A hinge comprising:
(a) a leaf part and a base part,
(b) the leaf part comprising
  (1) a leaf, and

(2) a pair of substantially aligned spaced-apart hinge barrels,

(c) the base part comprising

(1) a body dimensioned for insertion in the space between the barrels,

(2) securing means for securing the base part to a structural member, and

(3) bearing-forming means positioned one on each side of the body and arranged for forming bearing connections between the body and the adjacent hinge barrels,

(4) the base part being longitudinally divided into two parts adapted for positioning on opposite sides of the barrels, one part being of greater cross section than, and recessed to receive, the companion part, and snap lock means interengaging the two parts.

7. A hinge comprising:

(a) a leaf part and a base part,

(b) the leaf part comprising

(1) a leaf, and

(2) a pair of substantially aligned spaced-apart hinge barrels,

(c) the base part comprising

(1) a body dimensioned for insertion in the space between the barrels,

(2) securing means for securing the base part to a structural member, and

(3) bearing-forming means positioned one on each side of the body and arranged for forming bearing connections between the body and adjacent hinge barrels, the bearing-forming means comprising a pair of short shafts extending outwardly in diametrically opposite directions from the body, each shaft being dimensioned for reception in one of the barrels in journal-bearing forming relation.

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D. L. TROUTMAN, Assistant Examiner

U.S. Cl. X.R.

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