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HINGED CLOSURE ASSEMBLY

Filed May 1, 1969

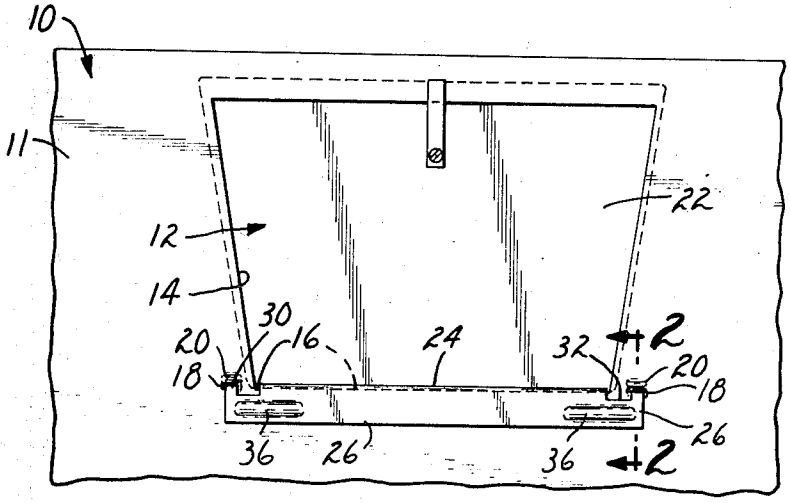


FIG. 1

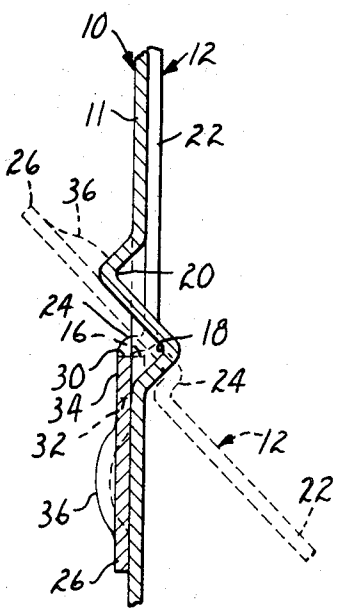


FIG. 2

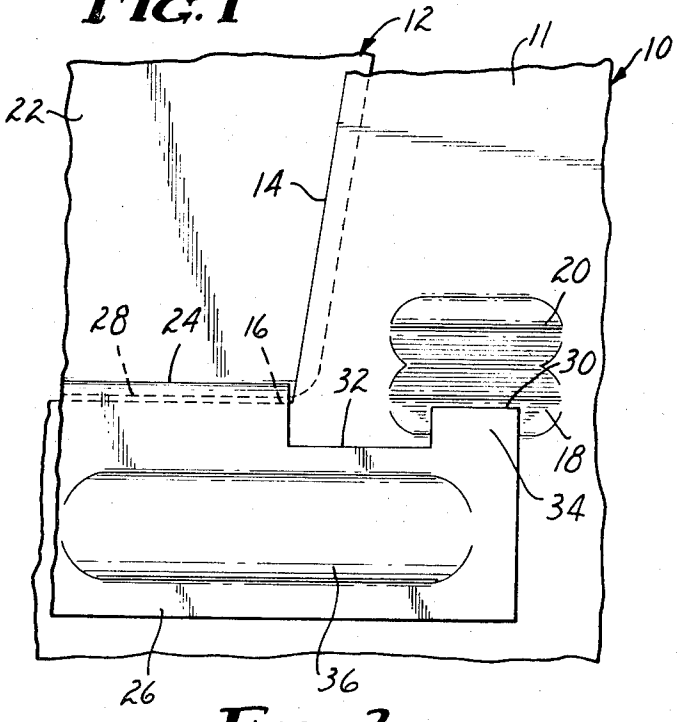


FIG. 3

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HINGED CLOSURE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A hinged closure assembly in which a door is formed with a body portion extending along one face of a wall panel and covering an opening therein, a linking segment extending through the wall opening, and a retaining segment extending along the opposed face of the wall panel to both sides of the opening to cooperate with dimples protruding from the opposed face of the wall panel to retain the linking segment of the door in position on the wall panel as the door is opened to expose the wall opening.

This invention relates to an improved hinged closure assembly in which a door and wall panel are respectively formed with a retaining segment and dimples that cooperate to form a free hinge structure and retain the door on the wall panel as the door is opened.

Prior art devices have generally required that the hinge providing rotation of the door and retention of the door on the wall panel be a separate part such as a piano hinge. In many applications, however, such devices are unduly expensive since they require the independent manufacture of a hinge and the steps of securing the hinge to the door and the wall panel. For this reason, prior art devices such as those illustrated in U.S. Pat. Nos. 2,746,081 and 3,236,408 have utilized, as one wall of a box, a one-piece molded or stamped cover having one or more tabs which extend through apertures in an adjacent wall of the box to provide hinging of the cover. However, these devices are generally not useful when it is desired that a door cover an opening in a generally planar wall panel. Furthermore, they require the formation of apertures in the wall panel in addition to the opening to be covered by the door which may be esthetically displeasing.

It is, therefore, an object of the present invention to provide a hinged closure assembly wherein the hinge is formed by cooperating portions of a door and a generally planar wall panel. It is a further object to provide a hinged closure assembly wherein the only aperture in the wall panel is the opening covered by the door.

The present invention has the advantages desired of a hinged closure assembly and comprises a door formed with a body portion extending along one face of a wall panel and covering an opening therein, a linking segment extending through the wall opening, and a retaining segment extending along the opposed face of the wall panel to both sides of the opening to cooperate with dimples protruding from the opposed face of the wall panel to retain the linking segment of the door in position on the wall panel both while the door is in a closed position and as the door is opened to expose the wall opening.

The novel features and advantages of the present invention will become apparent after reading the following description which refers to the accompanying drawing wherein:

FIG. 1 is an elevational view of a hinged closure assembly made in accordance with the present invention;

FIG. 2 is an enlarged longitudinal section view taken along line 2—2 of FIG. 1; and

FIG. 3 is an enlarged detail view of one portion of the hinged closure assembly.

The hinged closure assembly of the present invention consists of two pieces, a wall panel **10** and a door **12**.

The wall panel **10** is preferably formed from a sheet of metal such as steel with an opening **14** having at least one straight edge **16**. A pair of similar elongated recesses **18** are formed in the inner face **11** of the wall panel **10** on a line that is aligned with the straight edge **16** of the panel opening **14**. The recesses **18** are formed one to each side of the panel opening **14** generally equal distances therefrom. A pair of similar elongated dimples **20** are also formed in the wall panel **10** to project from the inner face **11** thereof. The dimples **20** are of generally the same length as the recesses **18** and one dimple **20** is aligned along its length with each of the recesses **20** on the side thereof nearer the opening **14**. The recesses **18** and the dimples **20** are preferably formed by a single stamping operation to assure their proper alignment.

The door **12** is preferably formed from a sheet of a resilient material such as steel with a body portion **22**, an offset linking segment **24** and a parallel depending retaining segment **26**. The door may be cut from a sheet of such material by stamping or blanking to produce an integral member with segments which are then bent to the preferred shape mechanically.

The body portion **22** is formed with a shape similar to and dimensions larger than the wall panel opening **14** to extend along the outer face of the wall panel **10** across the opening **14** with one straight edge **28** generally aligned with the straight edge **16** of the opening **18**. The linking segment **24** is generally rectangular and is offset from one edge of the straight edge **28** of the body portion **22**. It has a length less than that of the straight edge **16** of the wall opening **18** and it extends from the body portion **22** generally perpendicular to the faces thereof a distance sufficient to extend through the wall opening **18** as the body portion **22** covers the opening **18**.

The retaining segment **26** is generally rectangular and is connected intermediate one generally straight edge **30** to the extended edge of the linking segment **24**. It extends parallel to the body portion **22** in a direction away from the body portion **22**. The retaining segment **26** is formed with a length along its straight edge **30** sufficient to position its ends in alignment with the recesses **18** when the body portion **22** covers the wall opening **14**. It is preferably formed with a pair of rectangular reliefs **32** in its straight edge, one relief **32** extending between each recess **18** and the juncture of the retaining segment **26** with the linking segment **24**. The formation of the reliefs **32** provides a tab **34** at each end of the retaining segment **26** aligned with a recess **18** and a dimple **20** in the wall panel **10**. In the illustrated embodiment strengthening ribs **36** are also stamped into the retaining segment **26**, one near each end thereof, to prevent distortion of the retaining segment **26** in use.

In use the closure assembly is assembled by maneuvering the door **12** through the wall panel opening to position the body portion **22** on the outer face of the wall panel **10** and the retaining segment on the inner face thereof aligned with and generally above the dimples **20** as viewed in FIG. 1. The door **12** is then moved downward until the tabs **34** at the ends of the retaining segment **26** pass over the dimples **20** and lie adjacent the recesses **18** and the linking segment **24** abuts the straight edge **16** of the wall opening **14**. The resiliency of the door material and the provision of the strengthening ribs **36** aid to return the retaining segment tabs **34** into their original plane after passing over the dimples **20**, thereby trapping the tabs **34** behind the dimples **20**. The door **12** may then be opened by rotating it about the straight edge **16** of the wall opening **14**. As the door is opened, the retaining tabs **34** enter the wall panel recesses **18** and the linking segment **24** rotates on the straight edge **16** of the wall

opening **14** providing opening of the door **12** to the dotted line position illustrated in FIG. 2, thereby fully exposing the wall panel opening **14**.

It will be understood that the door **12** may also be assembled on the wall panel by maneuvering the retaining segment **26** through the panel opening **14** in an oblique manner to capture one tab **34** beneath a cooperating dimple **20** and then rotating the door about that tab to align the linking segment **24** with the straight edge **16**. This movement will then position the second tab **34** beneath the other dimple **20** to retain the door on the wall panel while the door is closed, as the door is opened and while in open position.

Having thus described the present invention, what is claimed is:

1. A hinged closure assembly comprising:

a wall panel formed with an opening having at least one straight edge and a pair of similar dimples protruding from the inner face of said panel, said dimples being formed one to each side of said opening generally equal distances therefrom on a straight line parallel to and adjacent said one straight edge of said opening, and

a door formed from a sheet of a resilient material with a body portion having at least one straight edge aligned with said straight edge of said wall panel opening and extending along the outer face of said wall panel across said wall opening, a generally rectangular linking segment offset from one edge of said straight edge of said body portion and extending through said wall opening, and a retaining segment formed with and connected intermediate one generally straight edge to said linking segment to extend along the inner face of said wall panel parallel to said body portion and having a length along said one straight edge thereof greater than the spacing between said dimples,

whereby said door normally covers said wall panel opening and may be rotated about said one straight edge of said wall panel opening to expose said wall opening while said one straight edge of said door panel retaining segment cooperates with said wall panel dimples to retain said door panel on said wall panel.

2. A closure assembly as recited in claim **1** wherein said dimples are elongated along said straight line on which they are formed and said door retaining segment extends along its said straight edge generally to the furthest spaced ends of said dimples and it is relieved along its straight edge between said dimples and its juncture with said linking segment, and including means defining a pair of elongated recesses formed in the inner face of said wall panel along a line which is generally aligned with said one straight edge of said wall opening, one said recess being parallel to and coextensive with each of said dimples.

References Cited

UNITED STATES PATENTS

1,415,148	5/1922	Condon	220—31
2,742,051	4/1956	Chanda et al.	220—31X

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49—402; 220—31