Aug. 11, 1942. J. VISSER 2,292,590

RECEPTACLE WITH DISAPPEARING CLOSURE

Filed Aug. 4, 1939 2 Sheets-Sheet 1

Fig. 1.

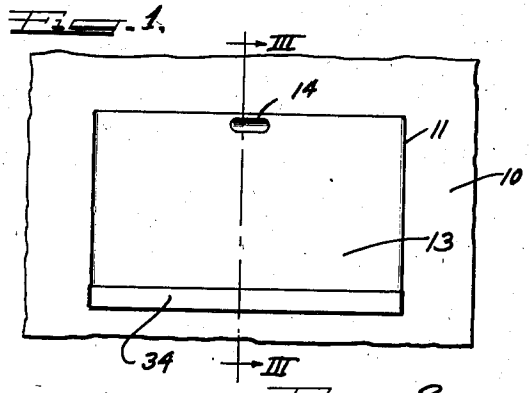


Fig. 2.

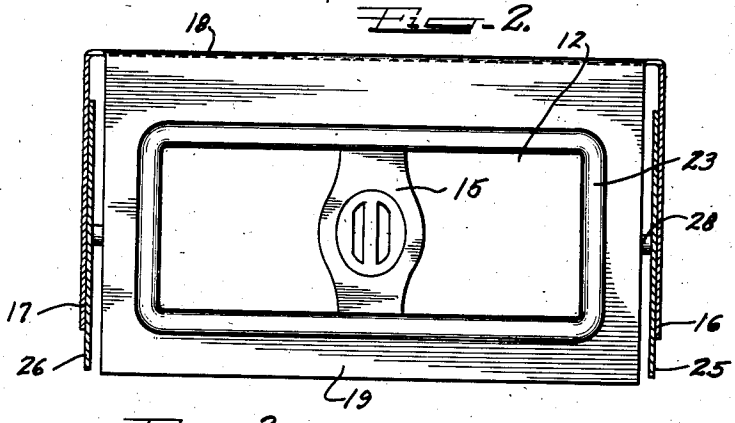
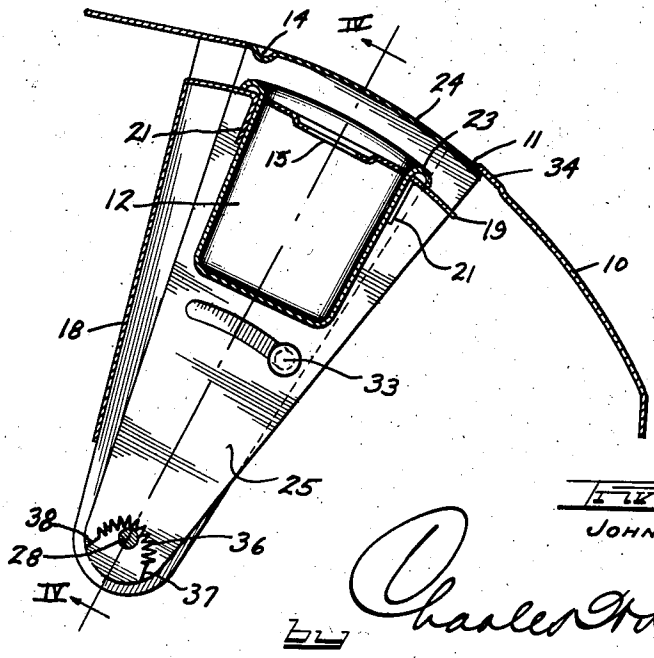


Fig. 3.



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Fig. 4.

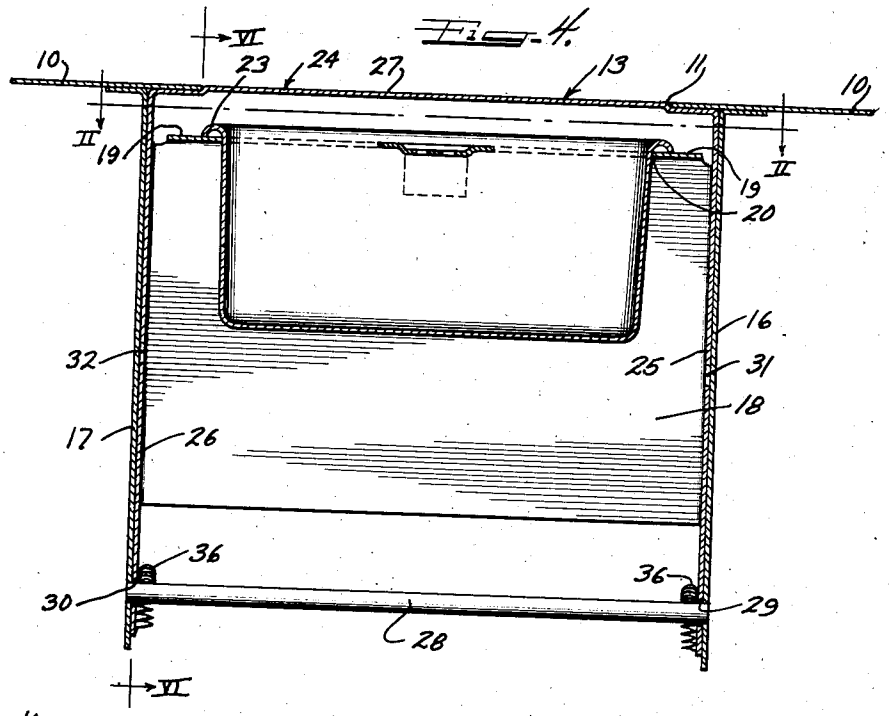


Fig. 5.

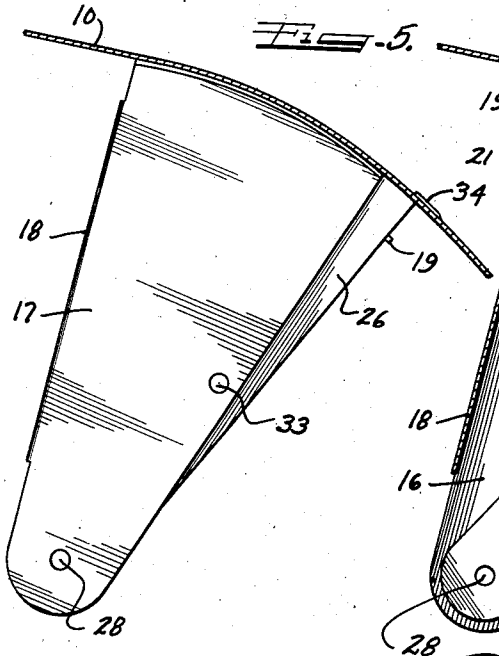
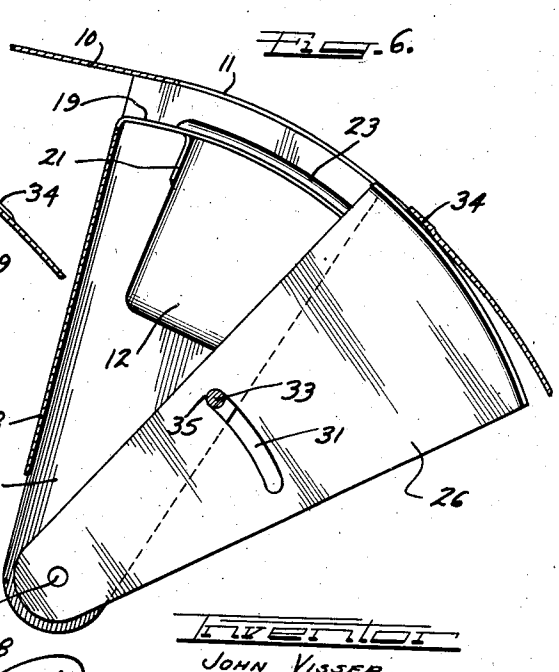


Fig. 6.



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UNITED STATES PATENT OFFICE

2,292,590

RECEPTACLE WITH DISAPPEARING CLOSURE

John Visser, Grand Rapids, Mich., assignor, by mesne assignments, to Reconstruction Finance Corporation, Detroit, Mich., a corporation of the United States

Application August 4, 1939, Serial No. 288,306

3 Claims. (Cl. 206—19.5)

This invention relates to closure means, and more particularly to a novel method and means for closing an opening in a panel wherein the closure member is adapted in its closed position to lie flush with the front face of the panel and to be disposed in a concealed position behind the panel in its opened position.

A wide variety of closure members have, of course, been provided in the past for closing various types of openings in panel members and the like. Some of these closure members have been of the type which are pivotally mounted on the front face of the panel and swing outwardly to afford access to the opening. Others have been mounted in a similar manner but on the back side of the panel and swing inwardly. Still other forms of closure members have been mounted in such a manner that they slide across the opening. In the design of closure members for openings in the panel member of an automotive vehicle which is commonly referred to as the "dash" board" the various known types of closure members have not been altogether satisfactory. A pivoted closure member which swings outwardly is undesirable because of its unsightly appearance in an open position. A closure member which swings inwardly is usually objectionable since there is not sufficient space behind the panel or "dash board" to permit such movement of a closure member. The common form of sliding closure member is also objectionable since the outer face of the member in its closed position is not flush with the outer surface of the panel.

It is an object of the present invention to provide a novel closure member which in its closed position presents a surface which is substantially continuous with the outer surface of the panel member on which it is mounted but which in its open position is disposed in a concealed position behind the panel.

Another object of this invention is to provide a novel closure means which is economical to manufacture and which is rugged and reliable in use.

A further object of this invention is to provide a novel method and means for supporting and moving a closure member for an apertured panel.

Another object of this invention is to provide a novel combination of panel, ash receptacle, and closure member.

Another and further object of this invention is to provide a novel combination of panel supporting member, an instrument carrying and apparatus supporting sub-panel, and closure member therefor.

Another and further object of this invention is to provide an improved and simplified mechanism for accomplishing the above object.

Another and still further object of this invention is to provide resilient and frictional means for holding a closure member in either open or closed position.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its organization and manner of construction, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings, in which:

Figure 1 is a plan view of a portion of a panel having an aperture therein and a closure member for the aperture, the closure member being in its closed position;

Figure 2 is a section on an enlarged scale taken just below the level of the panel shown in Figure 1, the plane of the section being shown II—II in Figure 4;

Figure 3 is a cross section taken along the line III—III of Figure 1.

Figure 4 is a section taken along the line IV—IV of Figure 3;

Figure 5 is a side elevational view partly in cross section;

Figure 6 is a side elevational view in cross section taken along the line VI—VI of Figure 4.

The general outer appearance of the preferred embodiment of the invention is shown in Figure 1 and includes in general a panel 10 which has an aperture 11 therein that affords access to an ash receptacle 12 mounted behind the panel. In order to enhance the general appearance of the construction and in order to cover the ash receptacle when it is not in use, a closure member or cover 13 having an operating groove 14 is provided for disposition over the aperture 11. As will presently be described, the closure member 13 is mounted in such a manner that in its closed position, as shown in Figure 1, the outer surface of the aperture closing portion of the cover 13 is arranged so that it presents substantially a continuous surface with the outer surface of the panel 10, while in its open position, as shown in Figure 6, it is arranged to be disposed behind the panel 10 in a substantially completely concealed position. Ash receptacle 12 is preferably of the removable

type and is provided with a snuffer element 15.

Referring now to Figures 2, 3, 4, 5 and 6, the detailed construction of the closure member mounting means and its method of operation will be described.

The supporting structure associated with panel 10 upon which the cover 13 is pivotally mounted for movement into and out of aperture 11 includes a pair of brackets 16 and 17 which are secured to the rear face of panel 10 in proximity to aperture 11 in some suitable manner such as by welding or the like. Although the brackets 16 and 17 may assume a wide variety of shapes without departing from the spirit and scope of the present invention, a highly satisfactory form is to cut them generally pie-shape or triangular shape. Extending between the rear edges of brackets 16 and 17 is a connecting plate 18. The upper edge of connecting plate 18 is provided with a forwardly extending flange 19 which extends behind and in spaced relationship with panel 10 opposite aperture 11. The central part of flange 19 is provided with an opening 20 which is substantially similar in shape to that of aperture 11 of panel 10 but of slightly smaller dimensions. In cutting the opening 20 in flange 19 portions of the stock are left to provide a plurality of integral downwardly extending tongues 21. Flange 19 is thus arranged to support and receive an ash receptacle 12. The ash receptacle 12 may, of course, assume any of a wide variety of forms but is shown in the drawings as being a substantially rectangular metal box 12 having curled outer edges 23. The dimensions of the rectangular ash receptacle 12 are such that it snugly slides through opening 20 until outer curled edges 23 engage flange 19 to be supported thereby.

The integral tongues 21 of flange 19 frictionally engage the side walls of the ash receptacle 12 to snugly and firmly hold it in place.

Although the connecting plate 18, the flange 19, and the tongues 21 are all shown as being formed integral with the pie-shape arms or brackets 16 and 17, since a piece of stock may be economically stamped and bent into the desired shape, it will, of course, be understood that these various portions of bracket 17 may be cut separately and subsequently secured together in any suitable manner without departing from the spirit and scope of the present invention.

The novel form of the cover construction 13 and the manner in which it is mounted on brackets 16 and 17 will now be described. Cover 13 includes in general a top portion 24 and two rearwardly extending pie-shape supporting arms 25 and 26 which are preferably formed integral with portion 24. The central portion of the top part 24 of cover 13 is slightly raised to form an aperture-closing portion 27 which snugly fits within aperture 11 in such a way that the outer surface of aperture-closing portion 27 is substantially flush with the outer surface of panel 10. In other words, the outer exposed surface of cover 13 in its closed position presents a surface which is substantially continuous with the outer surface or front face of panel 10.

The cover mounting means which will now be described is of such a character that it will permit the aperture-closing portion 27 of cover 13 to be angularly moved or slid out of aperture 11 to a concealed position behind panel 10. More particularly, the lower ends of arms 25 and 26 are pivotally mounted on a rod 28 which extends between the lower ends of the brackets 16 and 17 and which is permanently secured thereto. Rod 28 extends through two holes 29 and 30 provided in arms 25 and 26 of cover 13 as shown in the drawings. At an intermediate point on each of arms 25 and 26 arcuate guide slots 31 and 32 are provided, the guide slots being arranged for disposition over guide stud 33. From the above description it will be apparent said slots 31 and 32 limit the angular movement of arms 25 and 26 and cover 13, since the guide stud 33 will abut the forward end 35 of slots 31 and 32 when the cover is in its open position behind panel 10 and will abut the rear ends of slots 31 and 32 when the cover is in its closed position.

In order that the cover 13 may move into its substantially flush position with the front face of panel 10 without there being any interference between the cover 13 and the panel 10, the edge 34 of the aperture 11 behind which the cover 13 swings is raised slightly above the level of the surrounding portion of the panel 10, as clearly shown in Figures 1, 3, and 6. This allows the cover 13 to swing down behind the panel 10 from the position shown in Figure 3 to the position shown in Figure 6.

In order that the cover 13 may be resiliently and frictionally retained in either its open or closed position, a coil spring 36 is connected to the lower end of each of the arms 25 and 26 so as to extend over rod 28 in the manner shown in Figure 3 of the drawings. Opposite ends 37 and 38 of springs 36 are secured to the arms 25 and 26 in any suitable manner such as by hooking their ends over the lower edges of the arms. Springs 36 are mounted in such a manner as to remain under tension, thereby biasing arms 25 and 26 in a radially outward direction. Although the tension springs 36 tend to move cover 13 radially outward from its pivot point as defined by rod 28, such movement is prevented by guide studs 33 riding in slots 31 and 32 for all angular positions of arms 25 and 26. The apertures 29 and 30 in arms 25 and 26 are preferably made with sufficient clearance around rod 28 to permit the lower side of slots 31 and 32 to frictionally bear against the guide studs 33. It will thus be understood that when cover 13 is in aperture closing position or in any intermediate position, it is held firmly and tightly in place by virtue of springs 36 urging the lower edges of slots 31 and 32 against the under sides of guide studs 33 and by virtue of the fact that accidental movement of panel 10 is prevented by the friction between the guide studs and the edges of slots 31 and 32.

The manner in which the cover 13 is operated from its closed to open position is illustrated in Figure 3 and 6 of the drawings. The cover 13 in its closed position (i. e., in its aperture closing position) is shown in Figure 3. If access to the ash receptacle 12 is now desired, a finger is engaged in the groove 14 and a tractive force applied to the cover 13. The cover 13 and its associated structure is thereby caused to slide to a concealed position behind the right-hand portion of panel 10. During this angular or rotational movement of cover arms 25 and 26, the cover 13 is maintained in spaced relation below the undersurface of panel 10 by virtue of the fact that it swings about the rods 28 as a center and the undersurface of the portion of panel 10 under which cover 13 swings is spaced further from the rods 28 than the upper surface of cover 13. As the guide studs 33 reach the end of slots 31 and 32, cover arms 25 and 26 and cover top portion 24 are in the position as shown in Figure 6 of the drawings. To close aperture 11, it is

simply necessary to push upwardly on the groove 14 thereby causing counterclockwise rotation of cover arms 25 and 26. This swings cover 13 back to the position shown in Figure 3 in which it is retained by the springs 36 and the frictional engagement of guide ends 33 with the lower edges of slots 31 and 32. The ash receptacle and novel cover arrangements therefor described above may, of course, be mounted in a wide variety of manners and in a wide variety of places. The panel 10, instead of being mounted in a generally sloping position, may be either vertical or horizontal. In the latter case, the ash receptacle 12 may be mounted in angle to the panel in order that it may more efficiently retain ashes and cigarette stubs and the like deposited therein.

While I have shown a particular embodiment of my invention, it will, of course, be understood that I do not wish to be limited thereto, since many modifications may be made, and I, therefore, contemplate by the appended claims to cover all such modifications as fall within the true spirit and scope of my invention.

I claim as my invention:

1. In a panel assembly, a panel having an aperture therein, a receptacle structure having its ash receiving mouth in alignment with said panel aperture and mounted behind said panel, a disappearing closure member mounted behind said panel for movement from behind said panel into said panel aperture, and means affording bodily movement of said closure member by a purely rotational movement into said panel aperture as said closure member moves to its aperture closing position, the center of rotational movement of said closure member being located to one side of a line normal to the center of the aperture, the outer surface of said closure member being constructed to form a substantially flush and continuous surface with said panel.

2. In a panel assembly, a curved panel having an aperture therein, a disappearing closure member mounted behind said panel for movement from behind said panel into said panel aperture, and means for enabling bodily movement of said closure member into the opening of said panel aperture as said closure member moves to its aperture closure position so that the external surface of said member will be substantially flush with that of said panel and forming a substantially continuous surface with the main portion of said panel, said means including a pivotal support for said member and means for confining said movement of said member solely to movement over an arcuate path, the center of arcuate movement of said member being laterally displaced from the center of curvature of said panel a distance commensurate with the thickness of the panel material.

3. In a panel assembly, a curved panel having an aperture therein, a disappearing closure member mounted behind said panel for movement from behind said panel into said panel aperture, and means for enabling bodily movement of said closure member into the opening of said panel aperture as said closure member moves to its aperture closure position so that the external surface of said member will be substantially flush with that of said panel and forming a substantially continuous surface with the main portion of said panel, said means including an outwardly disposed offset at the edge of the aperture presented by said closure member, a pivotal support for said member and means for confining said movement of said member solely to movement over an arcuate path, the center of arcuate movement of said member being laterally displaced from the center of curvature of said panel.

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