Dec. 19, 1944. E. H. BENSON 2,365,378

HINGE

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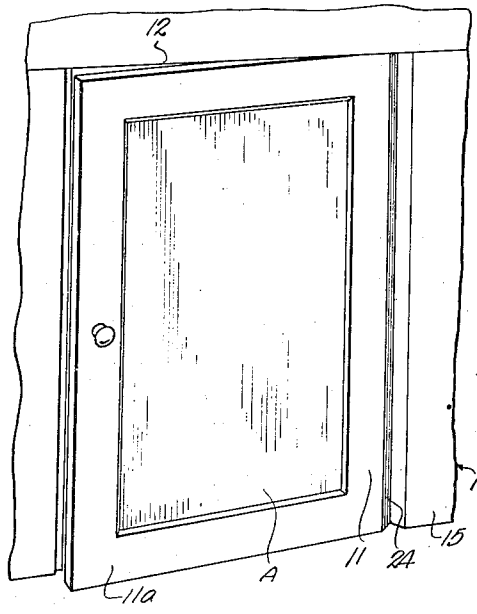


Fig. 1.

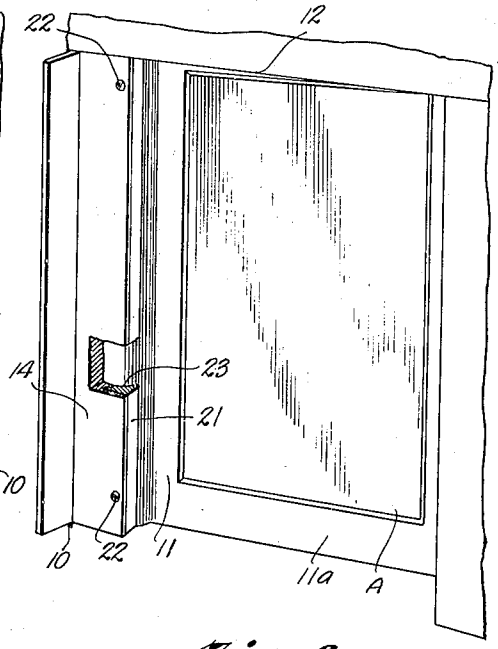


Fig. 2.

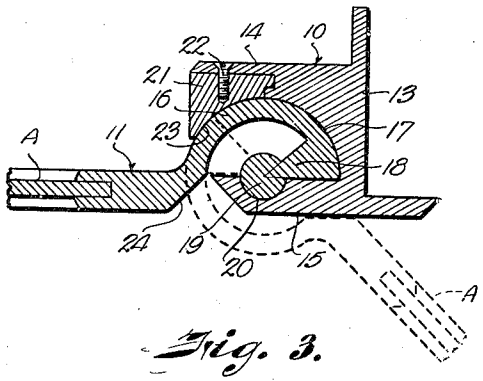


Fig. 3.

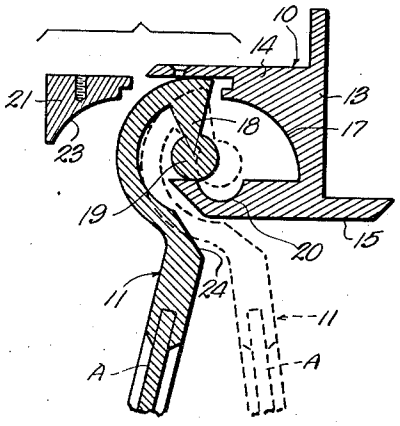


Fig. 4.

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UNITED STATES PATENT OFFICE

2,365,378

HINGE

Ernest H. Benson, Kansas City, Mo.

Application March 4, 1944, Serial No. 524,988

3 Claims. (Cl. 16—171)

My invention relates broadly to new and useful improvements in hinges and more particularly to a hinge structure that can be used on either horizontally or vertically swinging doors or panels.

It is frequently desirable to remove a door during warm weather or when moving furniture through a doorway, and it is sometimes imperative that it be removed quickly in case of a fire or other emergency. If the door is to be removed for a considerable length of time it is further desirable that the portion of the hinge attached to the door jamb present a neat appearance and that there be no projecting parts upon which a person passing through the doorway can scratch himself or snag his clothing.

Conventional hinge structures are generally unsatisfactory. The hinge cannot be readily disassembled, and after the door is removed the portions of the hinge attached to the door jamb are unsightly. Moreover, the attached hinge portions form projections upon which clothing is easily caught and snagged. If these hinge portions are removed from the jamb their imprint and the screw holes are clearly visible. Furthermore, when the hinges are disassembled the various pieces easily become lost and are not readily replaced.

An important object of my invention is to provide a hinge structure that can be readily adapted to either vertical or horizontal doors or panels.

Another object of my invention is to provide a hinge that does not present an unsightly appearance when disassembled and the door or panel removed.

Still another object of my invention is to provide a hinge that has no projecting parts to obstruct passage through the doorway when the door is removed.

Yet another object of my invention is to provide a two-piece hinge, one piece attached to the door and the other piece to the door jamb so that there are no loose elements to become lost when the door is removed.

Other objects and advantages of my invention will be apparent during the course of the following description.

In the drawing forming a part of this specification and wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a perspective view showing a conventional door equipped with a hinge embodying my invention,

Fig. 2 is a view similar to Fig. 1 but showing the reverse side of the door, part of the hinge structure being broken away,

Fig. 3 is an enlarged transverse sectional view through the hinge and showing the hinge parts in interfitting relation, and

Fig. 4 is a view similar to Fig. 3 but showing the parts disassembled.

In my Patent No. 2,302,661 issued November 24, 1942, I disclose a two-piece hinge construction that is particularly adapted for use on articulated horizontal doors or panels such as skylights. However, the structure is such that the hinge pieces sometimes inadvertently become separated if the hinge is used in a vertical position. The instant device is an improvement on my patented structure since it works equally well in either a vertical or horizontal position.

Referring now to the drawing wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numerals 10 and 11 designate articulated stationary and movable hinge parts, respectively. Both parts 10 and 11 extend the full length of the doorway 12 as shown in Figs. 1 and 2.

The stationary part 10 is essentially channel shaped, and is mounted in the doorway with the flat back surface 13 against the door jamb and the sides 14 and 15 extending into the doorway. Part 10 is secured in this position in any suitable manner.

The movable part 11 is integral with or attached to the rear edge of a door A and is provided with an arcuately curved flange 16 which extends into the channel of part 10 with the distal portion of its outer face seating against the arcuate bearing surface 17. A radial rib 18 integral with flange 16 is formed at its free edge with a cylindrical bead 19 which seats in a groove 20 and forms a pivot about which the movable hinge part turns. The groove 20 is located at the center of bearing surface 17 and concentric with the arcuate outer face of flange 16 so that the flange 16 is in engagement with and supported by the bearing surface during pivotal movement of part 11. The channel opening is unrestricted, as shown in Fig. 4, so that parts 10 and 11 can be easily assembled and disassembled. However, when assembled, part 11 is retained by a removable strip 21 mounted in the channel behind flange 16. Strip 21 is normally held in place by screws 22 with its arcuate inner surface 23 against the proximal portion of flange 16. The surface 23 is concentric to groove 20 and on the same radius as surface 17. Thus, surface 23 is on the same locus as surface 17 and in effect

constitutes an extension or projection of bearing surface 17. As best shown in Fig. 3, strip 21 extends only part way across the channel opening so that a narrow vertical slot is provided through which flange 16 extends.

When the door A is closed, hinge parts 10 and 11 occupy the solid line position in Fig. 3. When the door is opened, hinge part 11 pivots about the bead 19. Throughout its swinging movement the door is supported by engagement of flange 16 with the bearing surfaces 17 and 23. When in the fully opened position, the hinge parts occupy the dotted line position in Fig. 3. The door is fully opened when rib 18 reaches the channel wall or when the beveled surface 24 meets the stationary hinge part 10.

To remove the door the hinge parts are disassembled. This is done by removing screws 22 and strip 21. When the door is moved to the dotted line position of Fig. 4 with the distal portion of flange 16 out of engagement with bearing surface 17 the door may be manipulated to lift bead 19 from its seat. The hinge is then shifted to the full line position in Fig. 4 and removed from the channel.

After removal of the door, strip 21 is replaced and secured by screws 22. The only visible evidence of the door's removal is the narrow slot between the edge of strip 21 and the opposite side of the channel. There are no projecting parts to snag clothing or to create an unsightly, half-finished appearance. The hinge parts can be expeditionsuly assembled and disassembled. When assembled, the door is freely movable about bead 19 and is steadily supported in any position.

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

Having thus described my invention, I claim:

1. A hinge comprising interfitting stationary and movable parts; the former having a channel formed with a longitudinal groove and an arcuate face concentric to the groove; the latter provided with a transversely curved flange extending into said channel and positioned so that the distal portion of its outer surface is slidably supported by the arcuate face of the stationary part, and a radial rib extending inwardly from the flange with its free edge seated in the longitudinal groove; and a strip removably attached to the stationary part having an arcuate surface concentric to said groove on the same radius as the channel face and positioned to slidably support the proximal portion of the outer face of the flange.

2. A hinge comprising interfitting stationary and movable parts; the former having a channel formed with a longitudinal groove and an arcuate face concentric to the groove; the latter provided with a transversely curved flange extending into said channel and positioned so that the distal portion of its outer surface is slidably supported by the arcuate face of the stationary part, and a radial rib extending inwardly from the flange having a beaded free edge seated in the longitudinal groove; and a strip removably attached to the stationary part having an arcuate surface concentric to said groove on the same radius as the channel face, the arcuate surface of said strip cooperating with the arcuate face of the stationary part to form a bearing surface for the flange of the movable part.

3. A hinge comprising interfitting stationary and movable parts; the former having a channel formed with a longitudinal groove and an arcuate face extending through an angle of approximately 90 degrees and positioned concentric to the groove; the latter part provided with a transversely curved flange extending into said channel and positioned so that the distal portion of its outer surface is slidably supported by the arcuate face of the stationary part, and a radial rib extending inwardly from the flange with its free edge seated in the longitudinal groove; and a strip removably attached to the stationary part, having an arcuate surface extending through an angle less than 90 degrees and positioned at the outer edge and on the same locus as the arcuate face of the stationary part to provide additional bearing surface for the proximal portion of the flange.

ERNEST H. BENSON.