Feb. 5, 1957 A. J. BRAUN 2,779,967

HINGE ASSEMBLY

Filed March 10, 1951

Fig. 1.

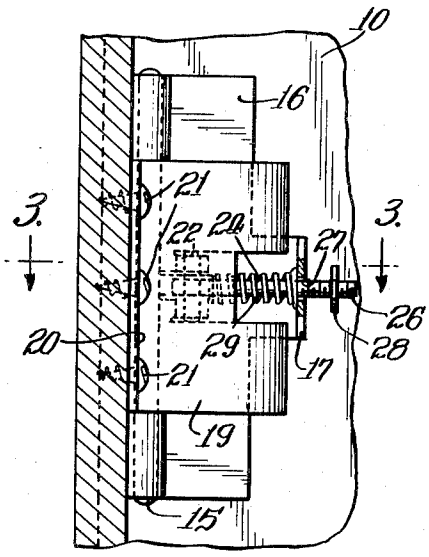


Fig. 2.

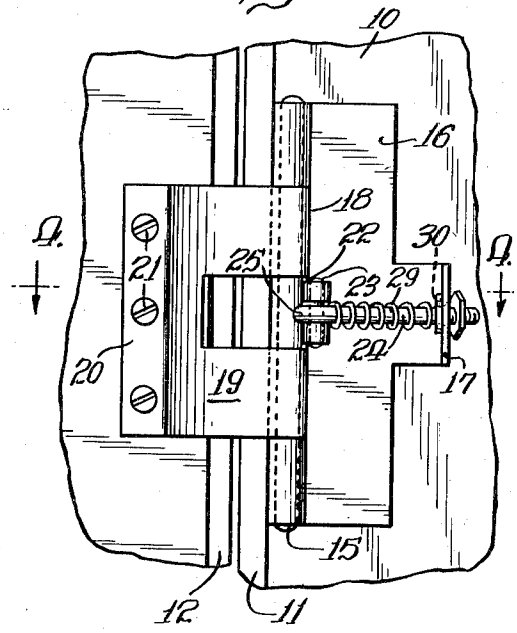


Fig. 3.

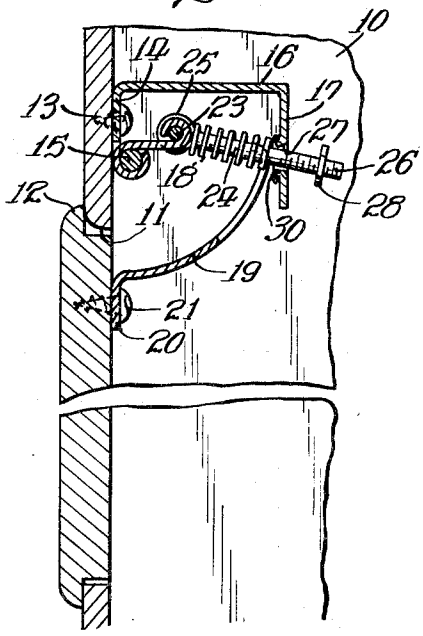
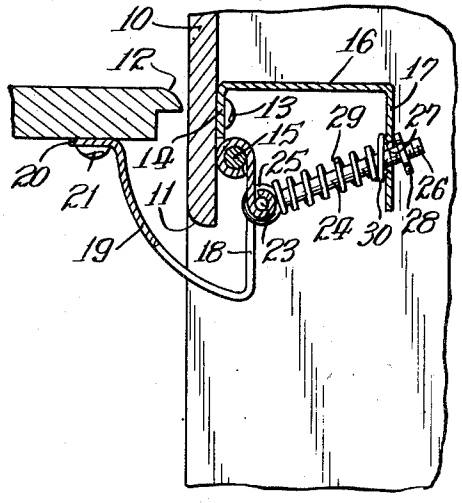


Fig. 4.



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HINGE ASSEMBLY

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2 Claims. (Cl. 16—163)

This invention relates to improvements in a hinge assembly.

It is an important object of this invention to provide a hinge assembly of type which is concealed from view when the parts to which the hinge assembly is applied are in closed position relative to the stationary structure on which said parts have swinging movement.

It is a further object to provide such a hinge assembly which is operative to maintain the swinging part in either limit position of movement.

It is a still further object to provide a device of this character which is adapted for many purposes and at the same time very strong and durable, and simple and economical both in the matter of material and assembly.

Further objects pertaining to details and economies of this invention will appear from the description to follow.

A hinge assembly embodying the features of this invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary elevation of the hinge assembly as it would appear when viewed in a direction edgewise of a door when the latter is held in closed position under control of the hinge assembly.

Fig. 2 is a similar view as the device would appear when the door is in open position.

Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a similar view taken on line 4—4 of Fig. 2.

A hinge assembly embodying the features of the present invention is shown herein as applied to a door and a stationary wall part on which the door is supported for swinging movement toward and away from a closed position.

Referring more particularly to the drawing, **10** represents such a stationary wall part having an edge portion **11** adapted to be overlapped by the lip of a door **12**. Secured to the wall part **10** by means of suitable fastening means such as a screw **13** is a base plate **14**. A shaft or pin **15** mounted along the edge of the base plate **14** parallel to the edge portion **11** of the stationary wall part **10** provides a pivot to be referred to hereinafter. The plate **14** at its edge directly opposite the pivot pin **15** is bent angularly to the plate to provide an extension **16** which is bent angularly inwardly at its outer end to provide an arm **17** in spaced opposed relation to the plate **14**.

The door **12** is supported for swinging movement about the pivot pin **15** by means of a lever comprising a plate bent to provide an arm or inner section **18**, a second arm or intermediate section **19** which diverges from the inner section **18**, and a third arm or outer section **20**. The door **12** is mounted on the outer section **20** by suitable fastening means such as a screw **21**. It will be observed that the inner section **18** is of such radial length as to clear the arm **17** on the base plate **14** when the lever is swung about the pivot pin **15** toward the extension **16** of the base plate **14** as shown in Fig. 3. It will also be observed from Fig. 4 that the intermediate

section **19** of the lever is arranged at a distance sufficiently away from the pivot pin **15** to accommodate swinging motion of the door **12** mounted on the outer section **20** of the lever into a position in excess of 90 degrees away from the closed position shown in Fig. 3.

As shown in Fig. 2, as well as Fig. 1, the inner section **18** and the intermediate section **19** of the lever is notched approximately centrally of its radial edges, which notch presents a transverse edge portion **22** in spaced parallel relation to the pivot pin **15** near the end of the inner section **18** at said pivot pin. This edge portion **22** is divided midway of its length to provide a pair of beads curled in the direction away from the portion of the lever extending therefrom, which beads form bearings for a pivot pin **23**.

A bolt **24** having an eye or loop **25** at one end thereof, which eye is penetrated by the pivot pin **23**, and having a threaded portion at its opposite end, as at **26**, which threaded end projects through an opening **27** in the arm **17** of the plate **14** substantially directly opposite the pivot pin **15**, provides a link connecting the lever with the arm **17** of the plate **14**. The threaded end **26** of the bolt **24** is equipped with a suitable nut **28** which engages the outer surface of the arm **17** about the opening **27** to adjustably limit the swinging movement of the lever about the pivot **15** in the direction of the outer section of the lever. As will be noted from Fig. 3, the inwardly facing surface of the extension **16** of the base plate **14**, presents a suitable stop for limiting the swinging movement of the lever in a direction away from the outer section of the lever.

In connection with movement of the door **12** between the closed position shown in Fig. 3 and the open position shown in Fig. 4, the inner section **18** of the lever is operated to shift the pivot pin **23** through a dead center position defined by a plane radially of the pivot pin **15** and coincident with the longitudinal axis of the bolt **24** where the latter engages the edges of the opening **27** in the arm **17**. A coil spring **29** surrounding the portion of the bolt between the lever and the arm **17**, and acting between the pivot pin **23** and the surface of the arm **17** about the bolt receiving opening **27**, accordingly is adapted to yieldably force the inner section **18** of the lever away from said dead center position of the pivot pin **23** and toward the limit position of movement of the inner section **18** of the lever in the direction in which the pivot pin **23** is located away from said dead center position. Thus the spring **29** acts to force the lever toward a position to maintain the door **12** in open position when the pivot pin **23** is away from dead center position in the direction of the door **12** as in Fig. 4 whereas the spring forces the lever toward a position to maintain the door closed when the pivot pin **23** is away from dead center position in a direction away from the door **12** as in Fig. 3.

To eliminate binding action between the inner surface of the arm **17** about the bolt receiving opening **27**, incident to movement of the bolt in said opening, and the spring portion engageable therewith, the surface about the opening is preferably domed as at **30**.

I claim:

1. A hinge assembly comprising in combination a base plate having pivoting means along one edge thereof and an extension projecting angularly from its opposite edge, an arm in spaced opposed relation and joined to said base plate via said extension, a lever having swinging movement about said pivoting means as an axis, said lever having an inner section of such length as to clear said arm on the base plate and having an outer section connected to said inner section by an intermediate section whereby said outer section is positioned substantially 90 degrees apart from said inner section, said outer

section and all portions of said intermediate section being spaced from said pivotal means a distance at least equal to the distance between said pivotal means and the remote end of the inner section of the lever, a link having one end connected to a portion of the lever away from said pivotal means for relative pivotal movement about an axis parallel to the axis of swinging movement of the lever, said arm on the base plate having an opening through which the other end of said link projects for relative lengthwise sliding movement of said link therein whereby swinging movement of the lever toward and away from a position between said base plate and the arm on the base plate operates to shift the axis of pivotal movement of the link relative to the lever through a dead center position defined by a plane extending radially of the lever pivoting means and coincident with the position of the longitudinal axis of the link within said opening in the arm on the base plate, means operable to limit movement of the lever in one direction away from a position wherein the axis of pivotal movement of the link relative to the lever is in said dead center position including a nut having threaded connection with the portion of the link projecting through said opening in the arm on the base plate and engaging the surface of the latter about said opening opposite the surface of

the arm facing the base plate when the lever is in one of its limits of swinging movement, and means operative to yieldably urge the lever toward its limits of swinging movement in the direction in which the axis of pivotal movement of the link is displaced away from said dead center position.

2. A hinge assembly in accordance with claim 1 wherein the aforesaid means operative to yieldably urge the lever toward its limits of swinging movement includes a spring acting between the connection of the link with the lever and the surface of the arm about said opening facing the base plate.

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