

Feb. 21, 1933.

P. D. PHILLIPS

1,898,742

TOGGLE LATCH

Filed June 27, 1931

2 Sheets-Sheet 1

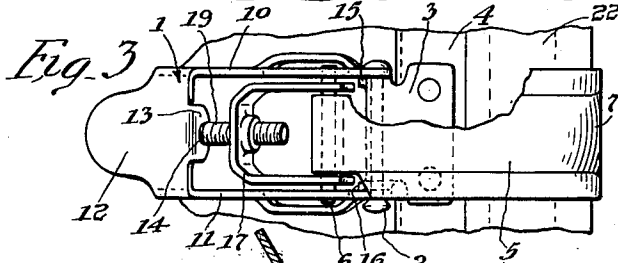
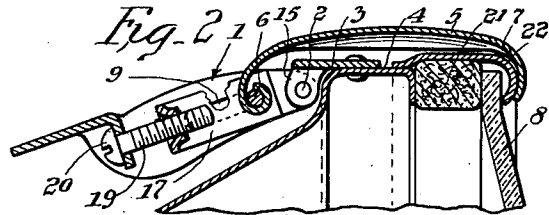
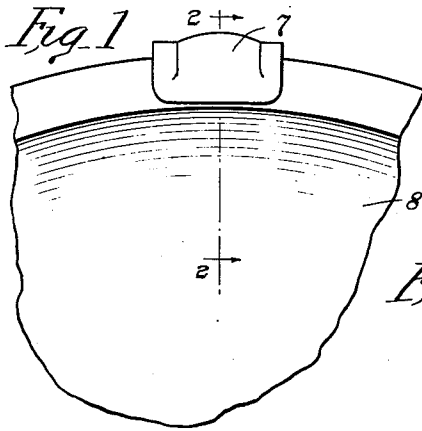


Fig. 5

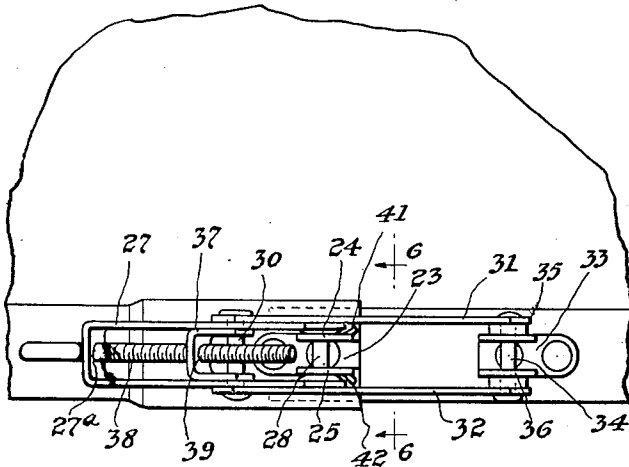


Fig. 4

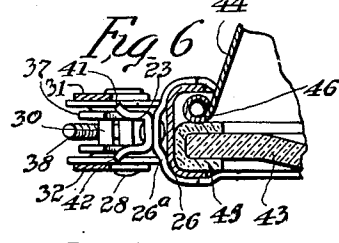
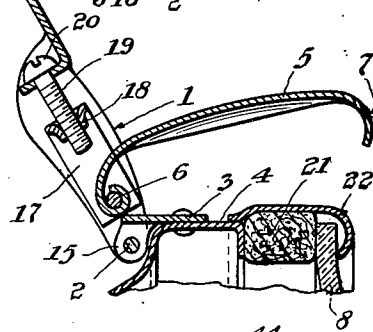


Fig. 7

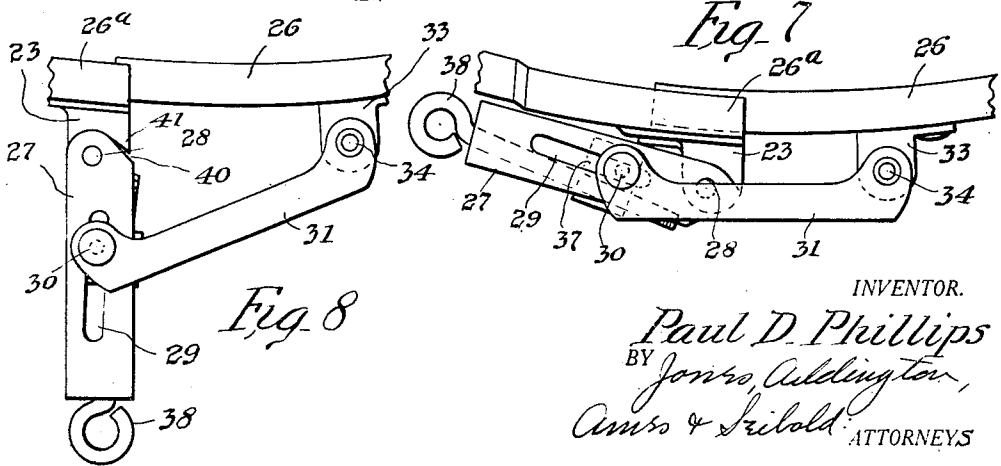


Fig. 8

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2 Sheets-Sheet 2

Fig 9

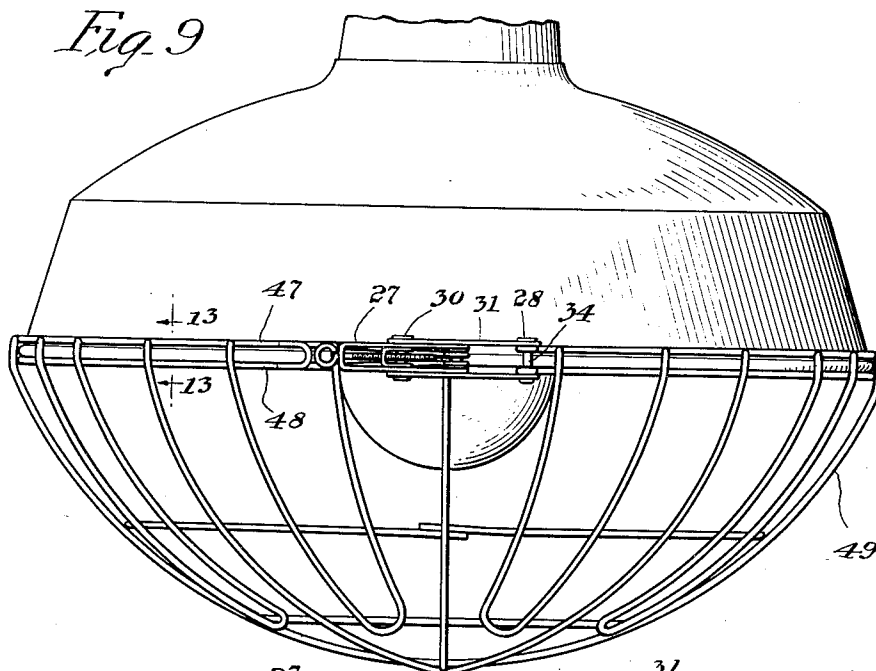


Fig 10

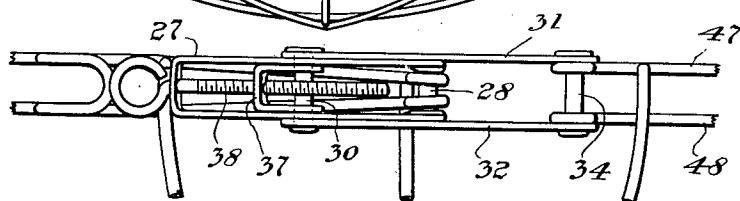


Fig 11

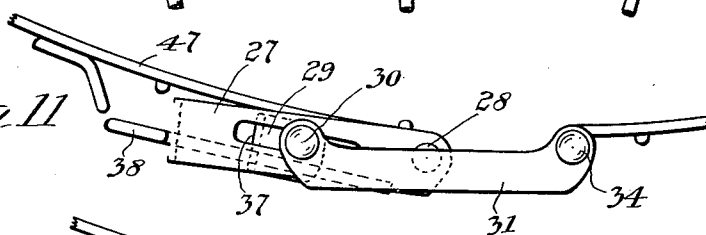


Fig 12

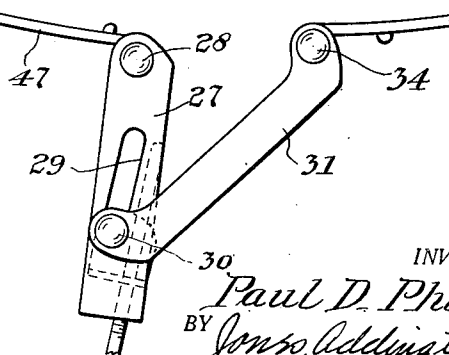
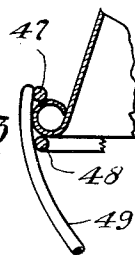


Fig 13



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TOGGLE LATCH

Application filed June 27, 1931. Serial No. 547,229.

This invention relates to clamping means and has special reference to an adjustable toggle latch.

More particularly, this invention relates to an adjustable clamping member comprising a pivotally mounted lever and a link for transmitting the clamping action of the lever. The pivotal connection of the link with the lever is adjustable so that when the clamping member is in clamping position the distance from the outer end of the link to the pivot of said lever may be varied as required. If the invention is to be used for adjustably connecting the ends of a clamping band the lever is pivotally connected to the band adjacent one end and the outer end of the link is pivotally connected to the band adjacent the other end thereof. Such an arrangement is particularly suitable for use in clamping glass fronts, guards, and the like to lighting fixtures.

An object of this invention is to provide a clamping member which is readily adjustable.

Further objects and advantages will be apparent from the following description when taken together with the accompanying drawings, in which latter:

Figure 1 is a fragmentary bottom plan view of a glass held in position in a reflector by means of a clamp embodying this invention;

Fig. 2 is a central longitudinal cross sectional view of a clamp embodying this invention shown holding a glass in place in a lighting fixture;

Fig. 3 is a top plan view of the clamping member shown in Fig. 1 with the link partly broken away to show the connecting means between the lever and the object to which it is to be attached;

Fig. 4 is a view similar to Fig. 2 but showing the device in an unclamped position;

Fig. 5 is a side elevational view of another form of the present invention used for adjustably connecting the ends of a clamping ring or the like;

Fig. 6 is a cross sectional view taken on the line 6-6 of Fig. 5;

Fig. 7 is a top plan view of the device shown in Fig. 6;

Fig. 8 is a view similar to that of Fig. 7 but showing the device in an unclamped position;

Fig. 9 is a side elevational view of a reflector with a guard fastened to the annular bead on the edge of the reflector by a clamping member similar to that shown in Figs. 5 to 8, inclusive;

Fig. 10 is a side elevational view of a clamping member connected to the ends of the circular clamping wires of the guard;

Fig. 11 is a top plan view of the device shown in Fig. 10;

Fig. 12 is a view similar to that of Fig. 11 but showing the device in an unclamped position; and

Fig. 13 is a cross sectional view taken on the line 13-13 of Fig. 9.

Referring more particularly to the drawings, the invention disclosed comprises a lever 1 pivotally connected at one end by the pivot 2 to the securing member 3 which is preferably permanently attached to an object, such as a reflector 4, or any other object to which it is desired to clamp another member. A link 5 having one end connected to pivotal connecting means such as pin 6, may have an outer end 7 thereof bent over or rounded so as to hook over the member to be clamped to the object on which the lever is mounted which is shown in the drawings for purposes of illustration, as a glass lens or covering 8. The ends of the pivot 6 slide in the slots 9 provided in the sides of the lever 1. The lever 1 may be formed with two opposing sides 10 and 11, the ends of which are provided with apertures through which the pivot 2 extends, the ends of the pivot 2 being formed with enlarged heads to prevent it from sliding out of the lever. An end cross piece 12 may be used to connect the outer ends of the sides 10 and 11 and is preferably shaped to provide a means for grasping the lever 1 to pivot it about the pivot 2. The end 12 is provided with an extension 13 transversely of the sides 10 and 11 having an aperture 14 therein. The securing member 3 is formed with openings therein through which rivets or the like may be inserted for securing it to an object and has two parallel ears 15

and 16 with apertures therein through which the pivot 2 extends. The link itself may be formed arcuate with rounded ends so that less movement of the lever 1 is necessary to swing the pivot 6 of the link 5 past dead-center. It is to be understood that any other desirable form of link may be used.

In order to adjust the device to vary the distance from the outer end 7 of the link to the pivot 2, a yoke 17 which may be U-shaped is employed. Openings are provided adjacent the ends of the yoke through which the pivot 6 which may be in the form of a pin, extends. The cross member of the yoke which extends outwardly toward the outer end of the lever is provided with a threaded opening 18. The portion 13 of the outer end 12 of the lever 1 is provided with an aperture through which a screw 19 may extend, the screw having a head or enlarged portion 20 to limit the inward movement thereof through the opening 14. The end of the screw threads into the threaded opening 18 in the yoke 17. Thus, by rotating the screw in one direction the yoke 17 is moved toward the outer end of the lever 1 so that when the clamping member is in a clamped position, as shown in Figs. 1 and 2, the distance between the pivots 2 and 6 is increased while the distance between the pivot 2 and the outer end of the link 5 is decreased. When the screw is rotated in the opposite direction the reverse results.

When the clamping member is to be used to hold a glass front or lens to a fixture, the securing member 3 may be permanently riveted to the hood or reflector 4, as shown in Figs. 1, 2 and 3. A packing ring 21 may be placed adjacent the outer end of the reflector 4. The glass 8 is placed against the outer face of the packing ring and an annular ring member 22 which may have the outer end edge rounded inwardly, is placed so that the inner edge abuts the glass 8 and the side lies adjacent the outer face of the packing ring 21. It is preferable to have the inwardly extending edge of the ring 22 rounded so as to conform to the outer rounded end of the link 5. The link 5 is then pivoted down over the rounded face of the annular ring 22 while the lever 1 is in the position shown in Fig. 4, after which the lever 1 is pivoted so as to swing the link pivot 6 past dead-center so that there is no possibility of the device becoming unclamped until the lever 1 is manually moved. With this construction, the same clamping member may be used with glass fronts of various thicknesses and packing rings of different sizes by merely adjusting the pivot 6 with respect to the lever by rotation of the screw 19. Although, in Figs. 1 to 4, inclusive, the clamp is shown as used with a particular form of fixture, it is evident that the clamping member may be used with other forms.

In Figs. 5 to 8, inclusive, a slightly modi-

fied form of device is shown mounted on the ends of a clamping ring, which ring shown in the drawings for purposes of illustration, is of a type used for holding a glass cover in place on a reflector or lighting fixture. In this form, a securing member 23 having outwardly extending side portions 24 and 25 may be fixedly secured to the outer surface of one end 26a of the clamping ring 26 by riveting or any other desirable means. A lever 27 which is preferably U-shaped is mounted on the securing member 23 by means of a pivot member 28 extending through the ends of the lever 27 and the sides 24 and 25 of the securing member 23. Substantially longitudinally slots 29 are formed in the sides of the lever 27. A link pivot 30 rides in the slots 29 and connects the sides 31 and 32 which form a link, together at one end, so that this end of the link is movable longitudinally of the lever 27. A second securing member 33 similar to the securing member 23 is mounted on the outer face of the clamping ring 26 at a distance from the other end thereof. A pivot 34 passes through the sides 35 and 36 of the securing member 33 and through the other ends of the link sides 31 and 32 so as to form a pivotal connection between the link and the securing member 33. A yoke or positioning member 37 is formed with apertures in the ends through which the pivot 30 passes so that as the yoke is moved the pivot 30 is carried along with it in the slots 29. The outer end of the lever 27 is provided with an aperture 27a through which a thumb screw 38 or other suitable means passes and threads into the threaded opening 39 in the yoke 37. With this construction, by rotating the thumb screw 38 the yoke and thereby the pivot 30 is moved longitudinally of the lever 27 so that when the device is in a clamped position, as shown in Fig. 7, the distance between the securing members 23 and 33 may be varied. In order to limit the movement in one direction of the lever 27, the ends are biased as at 40 to engage the stop portions 41 and 42 on the securing member 23. These stop portions 41 and 42 prevent the lever from being pivoted beyond a certain position so that the ends of the clamping ring 26 always overlap more or less.

Fig. 6 shows the clamping ring on which may be mounted the form of the device shown in Figs. 5, 7 and 8. It may be used as shown to hold a lens 43 in place against the edges of a reflector 44. In this construction, an annular cushion ring 45, U-shaped in cross section, is placed over the edge of the glass 43 which is then positioned against the edge of the reflector 44 which may be formed with an annular bead 46 at the outer edge thereof. To mount the glass in the fixture, the clamping ring which is in expanded position with the clamping member as shown in Fig. 8, is positioned over the

annular bead 46 and the glass 43 having the cushion ring 45 around the edges, after which the lever 27 is moved to the position shown in Fig. 7 thereby contacting the band 26 to securely hold the glass in place on the reflector. It is to be understood that the clamping ring with the form of clamping member shown in Figs. 5 to 8, inclusive, attached thereto may be used for any number of other purposes in addition to that shown in the drawings.

In Figs. 9 to 13, a clamping member, similar to that shown in Figs. 5 to 8, is attached to a wire guard for adjustably fastening the same to a fixture. The only difference between the construction of Figs. 9 to 13 and that of Figs. 5 to 8 is that the securing members 23 and 33 of Figs. 5 to 8 are dispensed with and the pivot 28 extends through the rounded ends of the clamping wires 47 and 48 so that the lever 27 is directly mounted on these wires, and the pivot 34 extends through the opposite curled ends of the wires 47 and 48. This provides a very simple and efficient means for adjustably expanding and contracting the clamping wires 47 and 48 of the guard 49.

While I have shown and described various embodiments of the present invention, it will be apparent to those skilled in the art that various modifications thereof may be made without departing from the spirit and scope of this invention and, therefore, I wish to be limited only by the scope of the prior art and the appended claims.

I claim:

1. A clamping construction for drawing two members together and holding them in position comprising a link pivotally connected with one of said members, a link pivotally connected with the other of said members, means for pivotally connecting said links together, and means whereby the pivotal connection between the links may be shifted rectilinearly along one of the links to vary the effective length thereof.

2. A clamping construction for drawing two members together and holding them in position comprising a link pivotally connected with one of said members, a link pivotally connected with the other of said members, means for pivotally connecting said links together, and means whereby the pivotal connection between the links may be shifted rectilinearly along one of the links to vary the effective length thereof, the pivotal connection between the links being movable past the dead center position with respect to the point of pivotal connections with the members to hold the parts in clamping position.

3. A clamping construction for drawing two members together and holding them in position comprising a link pivotally connected with one of said members, a link

pivotally connected with the other of said members, means for pivotally connecting said links together, and means whereby the pivotal connection between the links may be shifted rectilinearly along one of the links to vary the effective length thereof, comprising a pivot carrier slidably mounted on one of said links, and a screw for operating said pivot carrier.

4. A clamping construction for drawing two members together and holding them in position comprising a link pivotally connected with one of said members, a link pivotally connected with the other of said members, means for pivotally connecting said links together, and means whereby the pivotal connection between the links may be shifted rectilinearly along one of the links to vary the effective length thereof, one of said links having spaced parallel sides having rectilinear slots therein, the pivot of said carrier being guided in said slots.

5. A clamping construction for drawing two members together and holding them in position comprising a link pivotally connected with one of said members, a link pivotally connected with the other of said members, means for pivotally connecting said links together, and means whereby the pivotal connection between the links may be shifted rectilinearly along one of the links to vary the effective length thereof, comprising a pivot carrier slidably mounted on one of said links, and a screw for operating said pivot carrier, said screw extending longitudinally of the link on which the pivot carrier is slidably mounted.

In witness whereof, I have hereunto subscribed my name.

PAUL D. PHILLIPS.