

Oct. 7, 1941.

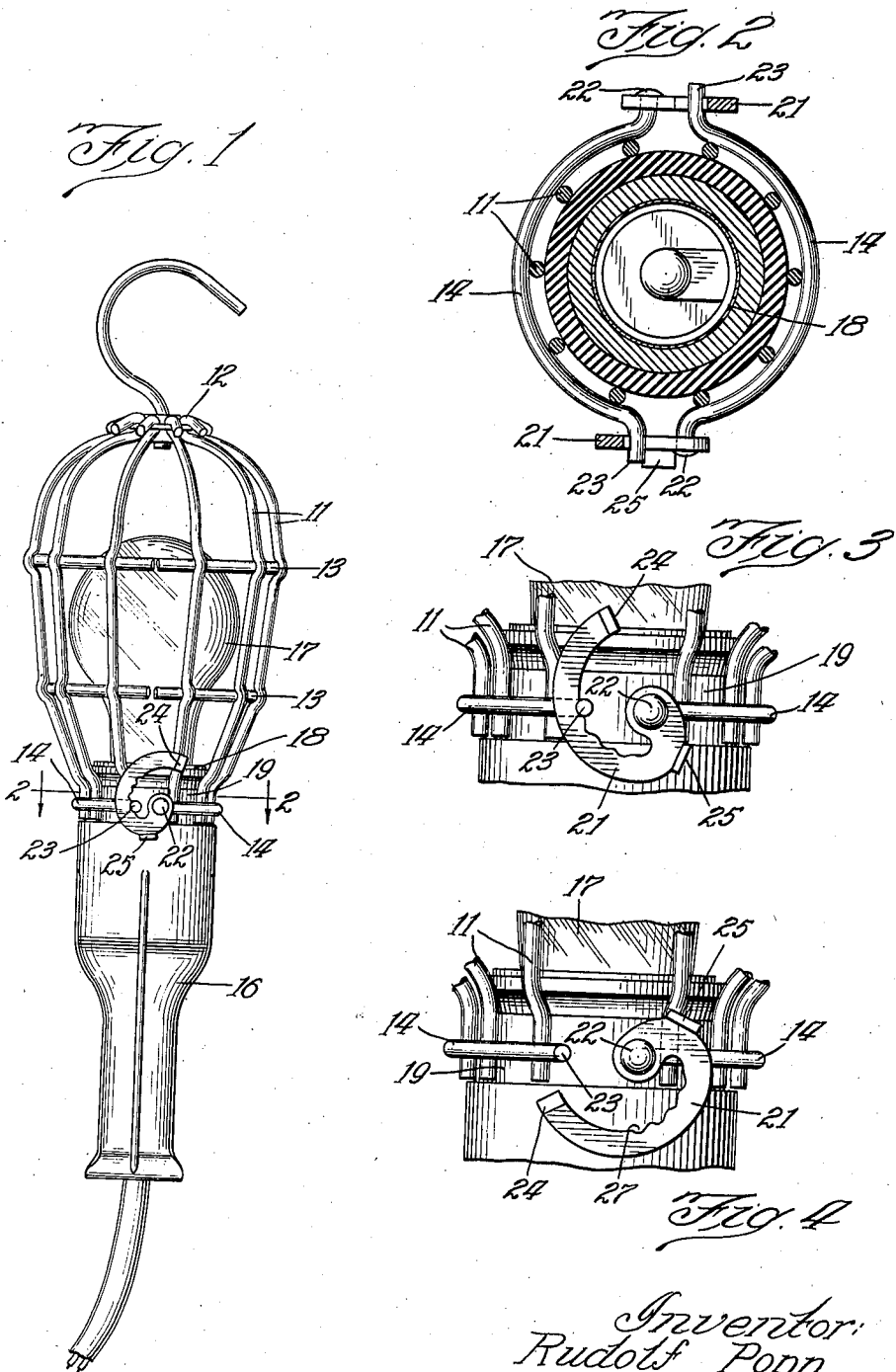
R. POPP

2,258,032

DETACHABLE LAMP GUARD

Filed May 6, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5

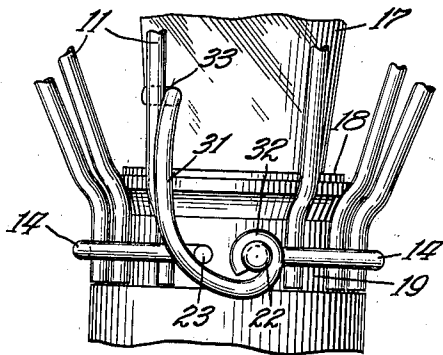


Fig. 6

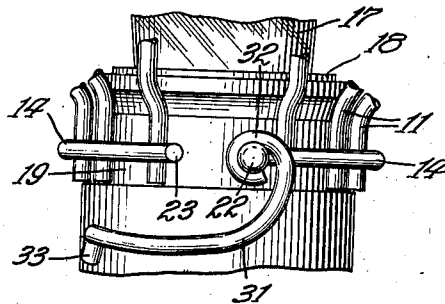


Fig. 7

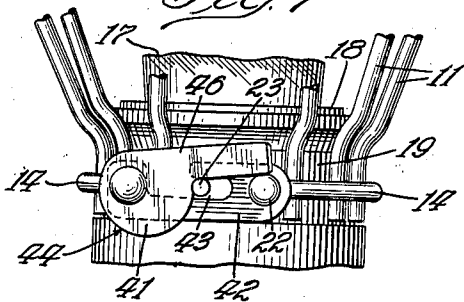


Fig. 8

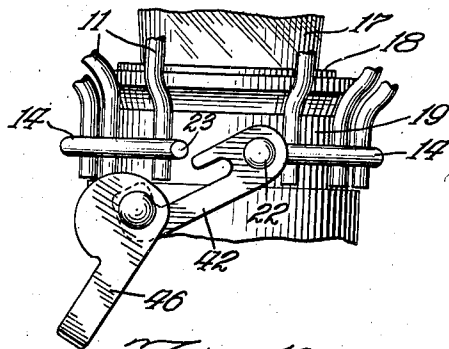


Fig. 9

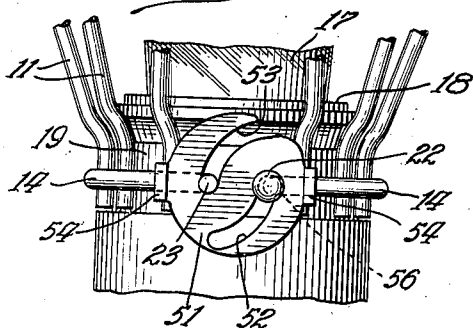
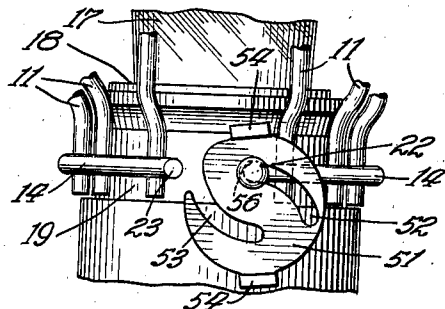


Fig. 10



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UNITED STATES PATENT OFFICE

2,258,032

DETACHABLE LAMP GUARD

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Application May 6, 1938, Serial No. 206,318

8 Claims. (Cl. 240—102)

This invention relates to wire cages or guards for portable lamps, and more particularly to that type of cage which is partly separable at the end through which the lamp is inserted, the separable parts being drawn together to clamp the cage to the lamp holder.

Wire cage guards have long been used for lamps. Although they are sometimes used with stationary lamps, their most common use is with portable hand-lamps in which a long flexible cord extends to a handle, in one end of which there is provided a socket into which the lamp bulb screws. When such portable lamps are not guarded by a wire cage they are frequently broken due to being dropped or struck by tools. It is of course desirable that the wire cage be secured to the handle quite firmly in order that it will protect the lamp bulb adequately. In the past the common practice has been to provide some form of split ring at the end of the cage engaging the handle, with one or more screws for drawing the split portions of the ring together to clamp the cage firmly to the handle. Usually the split ring has been in two separable parts, each part secured to one-half of the cage with the two halves secured together at the top in a pivot-like connection and adapted to spring apart enough to permit insertion of the handle and lamp bulb into the cage. This has necessitated the use of two screws, however, and has hence been doubly inconvenient. Even one screw is a nuisance from the standpoint of time required to unscrew it and screw it up again when it is necessary to replace a lamp bulb. Sometimes there is no screw-driver handy and the inconvenience is then still greater. Furthermore, the screws sometimes become lost and considerable time and energy are consumed in finding substitutes.

An object of the present invention is to provide a construction in which the cage may be secured to and removed from the handle more readily than heretofore, without the use of tools and without danger of losing the securing means. Stated more specifically, this object is to provide more convenient means for drawing the two separable parts of the cage tightly around the handle. Broadly speaking, this is accomplished by providing a lever member pivoted to one of the separable portions and coacting with the other separable portion to draw the two toward one another. Minuteness of adjustment is made unnecessary by virtue of using a resilient handle portion which will yield sufficiently to compensate for minor variations in the parts. The le-

vers are so constructed that the separable portions may be drawn toward one another with considerable force and effectively locked in the tightened position.

One of the features of my invention is the simplicity of construction with the resulting economy in manufacture. The split ring on the cage at the mounting portion thereof may be formed simply by a wire of the same material as the remainder of the cage and each of the separable portions of this ring may be formed with out-turned ends with which the clamping means may be associated.

The advantages and objects of the invention will be made more apparent by the following description and by the drawings, in which:

Fig. 1 is a side elevation of one form of cage embodying this invention as applied to a handle.

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary detail view showing the clamp lever of Fig. 1 in an intermediate position.

Fig. 4 is a corresponding view showing the clamp lever in a released position.

Figs. 5 and 6 are corresponding views showing a modified form of clamping lever in closed and open positions respectively.

Figs. 7 and 8 are corresponding views showing still another modified form of lever in closed and open positions respectively.

Figs. 9 and 10 are corresponding views showing still another modified form of clamping lever in closed and open positions respectively.

Although this invention may take numerous forms, only a few have been chosen for illustration. All are illustrated in conjunction with a wire cage for a portable lamp such as is illustrated in Fig. 1. The cage includes a plurality of longitudinal wires 11 secured at their top to a ring 12 and secured at intermediate points to semicircular circumferentially-extending wires 13 and at their ends to similar semicircular wires 14. Because the wires 13 and 14 are semicircular, i. e. are separated at diametrically opposed points, the cage is effectively formed in two halves both connected to the ring 12 with sufficient looseness or resiliency so that the two halves may be sprung apart to permit a handle 15 with a bulb 17 screwed into a socket 18 therein to be inserted into the cage. The two halves of the cage may then be drawn together tightly around the handle 15 so that the cage will be firmly secured to the handle. To prevent the cage from sliding longitudinally with respect to the handle 15, the

handle is formed with an annular groove 19 therein, with which the end portion of the cage coacts.

One preferred form of clamping link 21 has been illustrated in Figs. 1 to 4. This link is mounted on an out-turned end 22 of one of the wires 14 and engages an out-turned end 23 of the other of the wires 14. The end 22 is peened over to retain the link thereon. The link 21 is of a generally spiral shape so that as it moves from the open position shown in Fig. 4 to the closed position shown in Fig. 1 it will draw the ends 22 and 23 toward one another. To facilitate turning it, it is provided with an out-turned finger portion 24 at one end and preferably with another out-turned finger portion 25 approximately diametrically opposite the portion 24, that is, beyond the pivot 22 therefrom. These finger portions are quite desirable inasmuch as considerable force is necessary to draw the wires 14 toward one another as tightly as is desired in order to clamp the cage quite firmly to the handle.

The inside surface of the link 21 is preferably provided with notches or serrations 27 so that the link 21 will be locked by coaction between itself and end 23 in any one of a plurality of positions. This will provide enough variation to accommodate the cage to handles which may vary somewhat in diameter and also enough variation to compensate for irregularities in the sizes of the cages. At the same time the tightening adjustment will be sufficiently minute in view of the fact that the handle 16 is made of a resilient rubber so that the wires 14 can be pressed an appreciable distance into the handle by the force applied by the link 21.

It will of course be evident that a clamping link or some other suitable clamping device should be provided at each side of the cage, although one of them could be of a construction which does not draw the wires toward one another but merely holds them in a given position. In Fig. 2 a second link 21 has been shown at the opposite side of the cage from the other link 21, the two links functioning in the same manner. Either link may be operated first to draw the associated ends 22 and 23 toward one another, after which the other link may be operated in like manner.

As previously mentioned, the links on the opposite sides of the cage need not be the same. The link 21 is preferred on the side which is closed last because of its simplicity and because its serrations 27 will permit it to lock at a variety of positions. This is not necessary for the link on the side which is closed first, however, and any of the links shown in Figs. 5 to 10 are especially suitable for that purpose, although they may of course be used for both links.

The link 31 of Figs. 5 and 6 comprises a single piece of wire bent to form a pivotal eyelet 32 and an inwardly-turned end 33 which may serve initially as a finger portion and subsequently as a lock, being slightly curved and hooking around one of the wires 14. As can be understood from a consideration of Figs. 5 and 6, the link is curved in such a manner that it will engage the end 23 while carrying on the clamping operation, to draw the cage portions together onto the handle. Due to the resiliency in the various parts, the handle portion may be sprung slightly when the link is in clamping position, to hook around a vertical wire in the cage.

In Figs. 7 and 8 the link 41 is pivoted to the

wire 14 indirectly, namely by a connecting link 42 which has a slot 43 therein in which the end 23 of the other wire 14 may be inserted. The link 41 has a cam portion 44 and a handle portion 46 which slants outwardly. As seen in Fig. 8, the extension link 42 is pivoted to the wire 14 to facilitate its removal from the wire end 23 and its application thereto. Although this link assembly is a little more complicated than the other links, it has the advantage of extreme ease in operation since the work of drawing the wires together may be spread over nearly an entire revolution of the link 41.

In Figs. 9 and 10 the link 51 is shown provided with two slots. The slot 52 is a pivotal slot engaging the peened end 22 of one wire 14, and the open slot 53 is adapted to engage the wire end 23. The slot 52 extends approximately circularly around the inner end of slot 53. The operation of this link is as follows: In order for the open end of slot 53 to reach the wire end 23 it will ordinarily be necessary to shift the link 51 toward the wire end 23, and in this shifting movement the wire end 22 slides to the right in slot 52 as seen in Fig. 10, or rather, the link 51 is slid to the left on the wire end 22 at the link slot 52. A clockwise twisting movement is applied to the link 51 through finger portions 54, and the shape of slot 53 thus draws the wire ends 23 and 22 toward one another. When the end of the slot 53 strikes wire end 23, such wire end 23 then acts as a pivot and the link 51 slides on wire end 22 so that it is finally at the end of the slot, as shown in Fig. 9. At this end of the slot 52 there may be a slight notch 56 to assist in retaining the link 51 in this position, should such assistance be necessary. With the link 51 in this position the slot 53 may curve slightly toward the wire end 22 so that the tension of wires 14 will hold the link 51 from pivoting about the wire end 22. Of course, slot 53 could be concentric with wire end 22 in this position, in which case friction would hold link 51 in its closed position, or slot 53 could be slightly notched. Whether because of such notches or because of the shape of the slots, it is evident that, with the link 51 in the position shown in Fig. 9, slot 52 curves from wire end 22 toward wire end 23 and slot 53 curves from wire end 23 toward wire end 22. In stating that the slot curves in this manner it is of course meant primarily that the functional outer surfaces of the slots curve in this direction. The exact curvature of the inner sides of the slots is unimportant.

From the foregoing it is seen that a plurality of simple constructions are provided, each of which is adapted to clamp the separable portions of a wire cage type of lamp guard around the handle or socket member without the use of tools and with the minimum effort and minimum consumption of time. Each of the clamping devices is self-locking or is locked readily by coaction between the clamping link and another part of the cage.

Although I have described my invention in its preferred embodiments, it is understood that I do not limit the invention thereby, but limit the same only by the scope of the appended claims.

I claim:

1. A wire-cage lamp guard including longitudinal wires, wire means extending circumferentially and secured to the longitudinal wires, said wire means being separable to permit the insertion of a holder within the cage, an outstanding wire portion formed on one wire of each separa-

ble part, and link means movable outside the confines of said cage for drawing said outstanding portions toward one another to clamp the cage firmly about the holder, said link means including two members, one of which is pivoted at one end on a first one of the outstanding portions and has an open slot therein for slidably engaging the other outstanding portion, and a second member pivoted at the other end of said first member and having a cam surface thereon operatively engageable with said other portion to move said other portion in said slot toward the first portion, with said link means being free of said other portion when said wire means are separated.

2. A wire-cage lamp guard including longitudinal wires, wire means extending circumferentially and secured to the longitudinal wires, said wire means being separable to permit the insertion of a holder within the cage, a circumferential frame member on each separable part having an integral lug extending outwardly from said cage, and a link pivoted on one of the lugs and normally free of the other of said lugs to open said separable parts, but rotatable to coast with said other lug to draw said lugs toward one another to uniformly engage the cage firmly about the holder, said link comprising a wire shaped at its pivoted end to include an eye for pivotally supporting said link on said one lug, an actuating cam portion for slidably engaging said other lug and drawing it toward the first lug in a substantially straight line movement, and an inwardly extending portion at the other end adapted to serve as a finger rest in operating the link, and as a lock means engaging another portion of the cage for locking the link in operated position.

3. A wire cage for securing to a holder for a portable lamp, including in combination a pair of separable parts, with said parts connected at one end, and each having a projection extending laterally and outwardly therefrom at the other end, means for drawing and releasably connecting said two parts about said holder movably mounted on the projection of one of said parts and movable with said one part away from the other part when said two parts are separated, said means extending substantially longitudinally of said holder and having a cavity opening from one edge thereof and a cam portion at said cavity movable into sliding engagement with said second projection when said two parts are positioned about said holder, said cam portion on movement of said connecting means operating on said second projection to draw said two parts together into pressed engagement about said holder, said means including a locking portion engageable with said other part to lock the pair of parts about said holder.

4. A wire cage for securing to a holder for a portable lamp, including in combination a pair of separable parts, with said parts connected at one end, a circumferential wire band on each of said parts at said other end, each of said bands having an integral lug at each end thereof extending outwardly from said cage, means movably mounted on a lug of one of said parts for drawing said two parts about said holder, said means extending substantially longitudinally of said holder and having a cavity opening from one edge thereof and a cam portion at said cavity movable into slidable engagement with a lug on said other part when said two parts are positioned about said holder, with said cam portion being normally free of said lug on said other part so that said two parts can be moved away from

each other for separation of the holder and cage, said cam portion on movement of said connecting means operating on said lug on said other part to draw said two parts together into pressed engagement about said holder, said means including a locking portion engageable with said other part to lock the pair of parts about said holder.

5. A wire cage for securing to a holder for a portable lamp, including in combination a pair of separable parts, with said parts connected at one end, and each having a projection extending laterally and outwardly therefrom at the other end, a lever of substantially C-shape pivoted at one end on the projection of one of said parts and normally having its opposite end extending toward but spaced from the projection on said other part so that said parts can be moved apart from each other, said lever being rotatable in an arc outside the confines of said cage, and having a cam-like surface on its inner side with a notch thereon near said pivoted end operatively engageable with the projection on said other part to lock said parts about said holder, said cam surface on pivotal movement of said lever in one direction operating on the projection on said other part to draw said parts together to tighten said parts about said holder, said parts being rigidly retained about said holder on engagement of said notch with the said projection on said other part.

6. A wire cage lamp guard including longitudinal wires, wire means extending circumferentially and secured to the longitudinal wires, said wire means being separable to permit the insertion of a holder within the cage, an outstanding wire portion formed on one wire of each separable part, and a link of substantially C-form pivoted at one end on one of the outstanding portions and normally free of said other outstanding portion, said link having a cam-like surface on its inner side with a notch thereon near said pivoted end engageable with said other outstanding portion to lock said separable parts together, said cam surface on pivotal movement of said lever in one direction operating on said other outstanding portion to draw said parts together into pressing engagement about said holder, said engagement being retained by the locking engagement of said other outstanding portion with said notch, with said lever on pivotal movement thereof in an opposite direction moving said cam surface out of engagement with said other outstanding portion to separate said parts for removal of said cage from said holder.

7. A wire cage for securing to a holder for a portable lamp, including in combination a pair of separable parts connected at one end, a projection on one part at the other end thereof, a combination part closing and locking member of substantially C-shape pivotally secured at one end to the second part at the other end of said second part, the other end of said member when said member is in its open position extending toward said projection but being spaced therefrom, so that said parts can be separated, said combination member having a cam-like surface on its inner side with a plurality of notches formed thereon near said pivoted end, said notches being selectively engageable with said projection to lock said parts about said holder, said member on movement to its closing position moving said cam surface into slidable engagement with said projection to draw said parts together into pressing engagement about said

holder and retaining said parts in the position to which they are drawn by locking engagement of one of said notches with said projection, said member on pivotal movement to its open position moving said cam surface out of engagement with said projection, said parts for removal of said cage from said holder, with each end of said member having an out-turned finger portion thereon for manual engagement in operating said member.

8. A wire cage for securing to a holder for a portable lamp, including in combination a pair of separable parts, with said parts connected at one end, and each having a projection extending laterally and outwardly therefrom at the other end, and a lever of substantially C-shape pivoted at one end on the projection of one of

5 said parts, said other end extending toward but being spaced from the projection on said other part so that said parts can be moved away from each other, said lever being rotatable in an arc outside the confines of said cage, and including a cam portion movable into slidable engagement with the projection on said other part when said two parts are positioned about said holder, said cam portion on pivotal movement of said lever 10 operating on the projection on said other part to draw said two parts together into pressing engagement about said holder, with said lever having a locking portion engageable with said other part to lock said two parts in said engaged 15 position.

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