Jan. 20, 1942. K. BERGER 2,270,497

SWIVEL HARP

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Fig. 1

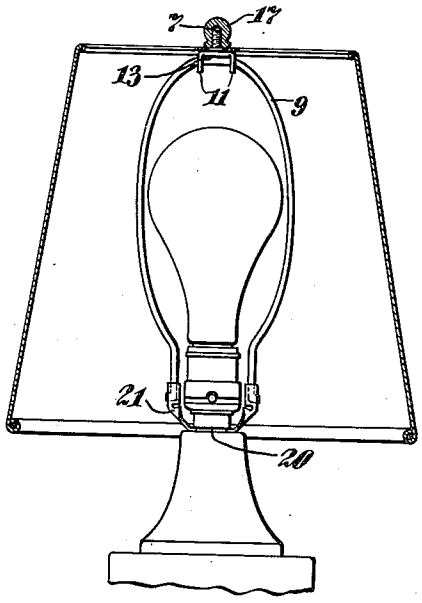


Fig. 4

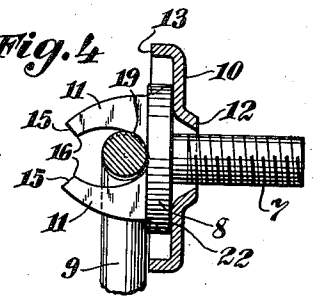


Fig. 5

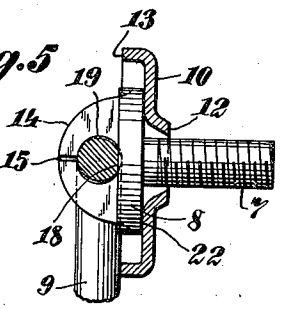


Fig. 2

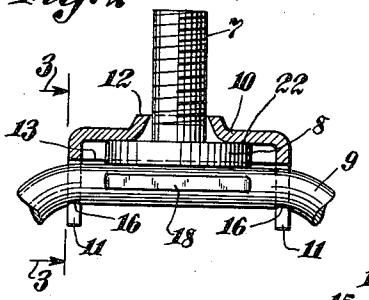


Fig. 6

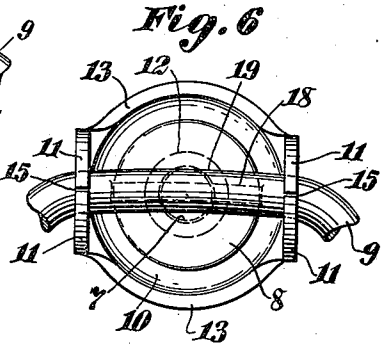
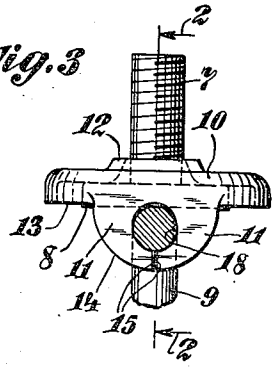


Fig. 3



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Fig. 7

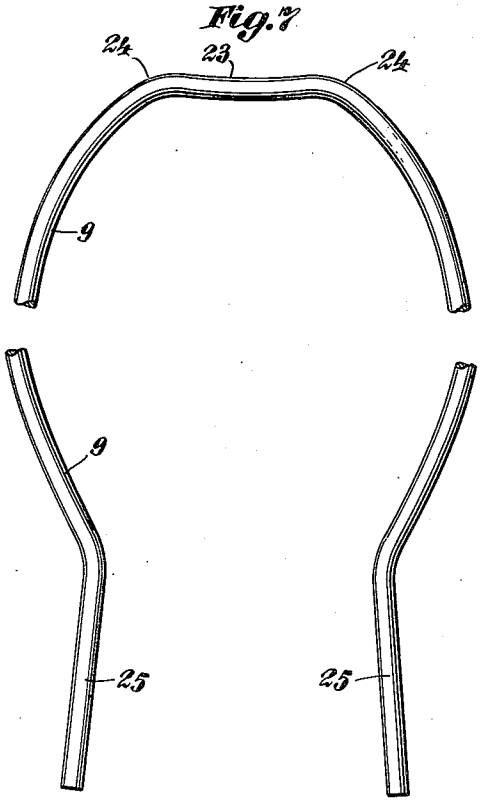


Fig. 8

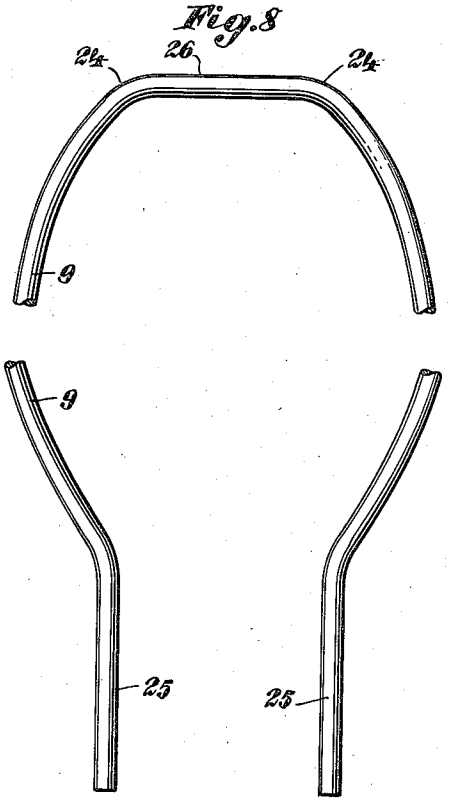


Fig. 9

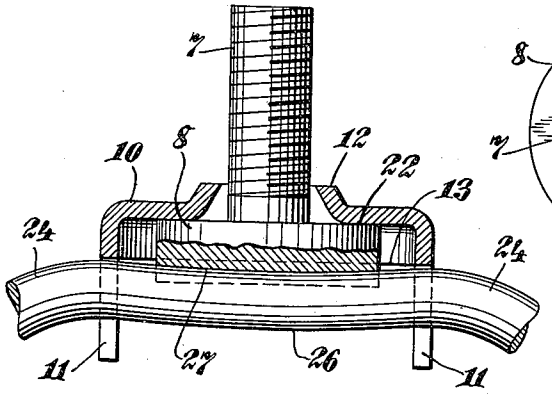


Fig. 11

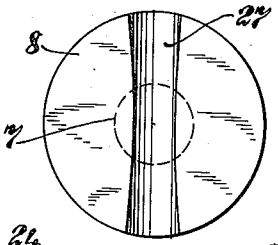
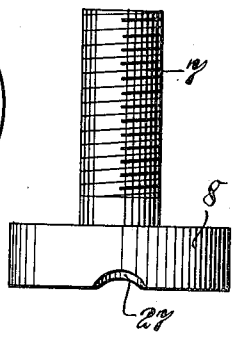


Fig. 10



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SWIVEL HARP

Kornel Berger, Brooklyn, N. Y.

Application December 12, 1940, Serial No. 369,732

5 Claims. (Cl. 240—148)

The invention here disclosed relates to the construction of swivel harps.

One of the important objects of the invention is to facilitate the mounting of the swivel fixture on the harp frame.

Another important object is to eliminate the need for any springs or any special spring materials in the swivel fixture, such as have heretofore been generally considered essential to provide a desirable yielding holding engagement of the shade supporting fixture on the harp frame.

Other objects of the invention are to reduce the number of parts, to reduce the size and in general, to improve and provide a more satisfactory form of swivel structure.

Additional objects and the novel features of construction, combination and relation of parts by which the purposes of the invention are attained will appear and are set forth in the following specification.

In the drawings accompanying and forming part of the specification, there are illustrated different practical commercial embodiments of the invention. The actual structure however may be further modified and changed all within the true intent and broad scope of the invention as will appear from the description and definition of the invention in the following specification and claims.

Fig. 1 is a broken part sectional view illustrating the invention applied and in use, adjustably supporting a shade on a lamp.

Fig. 2 is an enlarged vertical sectional view of the swivel, as taken on the line 2—2 of Fig. 3.

Fig. 3 is a side view of the fixture with the wire of the harp broken and appearing in section as on the plane of line 3—3 of Fig. 2.

Fig. 4 is a broken sectional view illustrating application of the fixture to the side of the harp with the wire encircling talons or fingers of the yoke open to engage over the wire of the frame.

Fig. 5 is a similar view showing the talons closed about the wire and the side of the wire flattened against the head of the stud by the pressure exerted in closing the talons.

Fig. 6 is a view looking at the inside or underface of the fixture as applied over the side of the wire.

Figs. 7 and 8 are enlarged broken detail views of the wire of the harp frame showing it formed with an indentation in the top which will straighten out as the ends of the wire are brought together in securing them to the harp base.

Fig. 9 is a further enlarged broken and part sectional view showing in an exaggerated way how the rigid cap may be applied with sufficient pressure to cause the stud to actually bend the wire slightly, thus to utilize the resiliency of the wire for spring tension purposes.

Figs. 10 and 11 are side and end views respectively of the lamp shade stud modified as in Fig. 9 with a transversely convex wire receiving groove.

Figs. 1, 2 and 3, show the basic structure of the fixture as simply two parts, the screw stud 7, having a flat head 8, bearing on the wire 9 of the harp, and the yoke, cap or washer 10, engaged over the head of the stud and having dependent pairs of lugs, hooks, fingers or talons 11, closed about the wire at opposite sides of the head.

The cap or washer is shown perforated and bossed up about the center at 12, and as having a dependent annular flange or skirt 13, in which the wire clasping talons are rooted. This combination of features stiffens and strengthens the cap, rendering it sufficiently rigid to permit of the special assembling method to be described and for it to hold its shape permanently.

Fig. 4 shows how the cap is blanked out and formed up with the fingers 11, of each pair open, separated so that they will pass readily over the wire of the frame. This view also shows how these fingers are of inwardly curving tapered shape, so that as they are closed about the wire to the Fig. 5 condition, they will conform to and grip substantially the full circumference of the wire at the inside and will merge into a smoothly curved arch formation 14, at the outside. The ends of the opposed wire gripping fingers are angled as indicated at 15, Fig. 4, so as to come into closely related opposition, Fig. 5, and so as to provide at the inside the relatively sharp corners 16, which, in the closing of the fingers and in subsequent rotation of the fixture, may to some extent actually "bite" into the wire of the frame.

Figs. 4, 5 and 6 illustrate a further feature of the invention, namely the applying of the fixture over the side, instead of in the normal position, over the top of the wire, and the application with such force as to flatten the face of the wire to make it serve as a cam for tightening the fixture as it is turned up into the normal position of use. The forceful closing of the fingers about the wire accomplishes the further purpose of forming an impression across the head of the stud which aids in preventing that stud turning when the shade is applied and the finial 17, Fig. 1, is turned down tight over the stud.

To force the head of the stud against the wire and to close the fingers about the wire with sufficient pressure to form a "flat" on the side of the wire and more or less of a "line" impression in the head of the stud, a special closing die is employed. In Figs. 5 and 6, the flat cam impression on the side of the wire is indicated at 18.

Fig. 2 also shows how this flat 18, may appear in the side of the wire after the fixture has been turned up into its normal position of use.

In addition to the combined cam and frictional holding engagement of the parts, a further holding effect, may result from a slight upward arching at the center of the loop of wire at the top of the frame, as represented at 19, in Fig. 6. When the ends of the loop of wire are brought toward each other to secure them in the base 20 of the harp, Fig. 1, the bending of the ends of the wire toward each other has a tendency to bulge the wire upwardly at the top. This slight arch 19, so imparted to the wire, serves as a cam, yielding under the head of the stud as it is rocked upwardly over the same from the Fig. 5 to the Fig. 2 position.

With this invention, no spring materials are required in the construction of the fixture. The one-piece cap may be flat basic steel and the screw stud just an ordinary steel suited to screw purposes. The fingers or claws of the cap may be just short enough to that the ends will not touch when they are squeezed together about the wire, so that the full holding and gripping effect possible will be applied. In the basic cold rolled steel, the claws or fingers hold their shape and thus provide a permanent yielding frictional engagement between the parts. The double cam action resulting from turning the fixture after it is tightened on the side of the wire, up over the slightly flattened side and the somewhat arched top of the wire further assures the desired lasting non-rotating frictional engagement of the stud on the wire. The cutting or biting of the sharp inner corners 16, of the fingers provides additional frictional engagement and also serves to locate and confine the fixture on the top of the frame, preventing it from shifting laterally in either direction. The harps can be made up complete and the swivels be attached at any time since all that is required to mount the swivels is a closing die to bend the claws of the cap together or toward each other about the wire. The fixture, because of the flattened cam produced in applying it, will hold to the side of the wire as in Fig. 5, until it is turned up into the upright position, which may be desirable for certain shipping purposes. Also, if desired, the fixture may be turned down to an inverted position inside the frame. The cam holding effect however, comes into action any time the fixture is turned up over the wire into its position of normal use. In the position of ordinary use, the swivel will swing through an angle of all possible shade utilization and will frictionally hold yieldingly in all selected positions of angular adjustment. In all such positions, the screw stud will be held against rotating about its axis, because of the wide frictional interlock of the flat head of the stud, over the top portion of the wire and the engagement of the cap with the outer rim portion of the head, as at 22, Fig. 2. The non-springy character of the cap material enables the claws or what might be considered open forks, to be closed about the wire and to permanently hold their closed shape, constituting in combination, the effect of perforated lugs or hooks embracing the wire.

In the modified form of the invention illustrated in Figs. 7 to 11, the wire 9, of the harp frame, in being formed up is given a slight indentation 23, in the top between the downwardly angled bends 24, for the sides 25, of the arch, so that as such sides are brought together into substantial parallelism as in Fig. 8, for fastening in the harp base, the top will flatten out in a substantially straight span 26.

The material may be an inexpensive ordinary basic steel wire, since this has enough inherent resiliency to provide all the spring desirable for the yielding frictional holding of the stud on the wire.

Fig. 9 shows possibly to an exaggerated extent, how when the cap is closed down over the wire at the opposite sides of the head 8, the intermediate span of the wire 26, between the gripping portions 11, will be slightly bowed or sprung inwardly by the head of the stud and will thus be tensioned or made to apply a yielding spring pressure to the head of the stud. The cap being substantially rigid, maintains the harp wire in this tensioned relation, to thus serve as a means for yieldingly retaining the fixture stud in any desired position of angular adjustment.

In this special combination of yielding somewhat resilient harp wire and rigid cap retaining the stud engaged with the wire under pressure, the fixture may be rotated to carry it within the outline of a harp and it will be yieldingly held in all such positions, throughout the 360° of rotational movement.

To provide more extended engagement between the head of the stud and the wire, the stud may be grooved at 27, substantially to the cross-sectional curvature of the wire and in furtherance of such purpose, this transverse groove may be slightly convexly curved, longitudinally substantially as indicated in Fig. 9, to approximately the normal bend of the wire under the pressure of the stud.

The transverse grooving of the head to fit the wire, particularly when the groove is straight, instead of bowed as indicated in Fig. 9, may avoid forming a "flat" or other impression in the side of the wire when the cap is applied under pressure.

In all forms of the invention disclosed, the need for any spring parts or special spring materials is avoided by utilizing inherent spring characteristics in the wire of the harp frame and by using a substantially rigid cap to hold the stud against the wire under pressure sufficient to impose a certain tension on the wire. Only two parts are required in addition to the harp frame. The head of the stud directly engages the wire of the harp and the cap directly engages the head. The harps can be made up complete and the swivel studs added at any time by simply closing the claws of the caps over the wire at opposite sides of the heads of the studs. While the head of the stud is shown as of fairly large diameter, it will be appreciated it may be made of smaller diameter so as to bear on the wire more nearly at the center between the two pairs of claws and in which event it may be actually bent or impart more of a bend to the wire.

The rigid holding member 10, while shown as resembling a hollow cap, may be simply a flat stiff washer of sufficient rigidity to maintain the desired frictional grip on the frame.

What is claimed is:

1. In combination, a wire harp frame, a lamp shade stud having a head bearing on the wire of the harp frame and a cap bearing on the head of said stud and having pairs of opposed claws closed about the wire at opposite sides of said head, said claws having sharp cornered ends impressed in the wire to confine the cap to a definite swivelling position on the wire.

2. A swivel harp having a wire harp frame and in which resiliency inherent in the wire of the frame is utilized for yieldingly retaining the swivel structure in adjusted relation without use of springs or special spring materials and comprising in combination with said wire harp frame, a lamp shade stud having a head bearing on the wire of said frame and a rigid cap of non-springy material engaged over the head of said stud and having pairs of dependent integral claws wrapped about the wire of the frame at opposite sides of and spaced away from the rim of the head, the claws of each pair being closed toward each other from opposite sides of the wire and under pressure sufficient to cause the head to impose a permanent bending strain on the span of wire between the opposed pairs of claws, said claws because of their integrality with the non-springy material of the rigid cap being rigid and non-yielding thus wrapped about opposite sides of the wire and frictionally holding the stud when swivelled over the wire in either direction.

3. A swivel harp having a wire harp frame and in which resiliency inherent in the wire of the frame is utilized for yieldingly retaining the swivel structure in adjusted relation without recourse to springs or special spring materials and comprising in combination with said wire frame, a lamp shade stud having a head bearing on the wire of said harp frame, said wire having the impression of said head in one side of the same and forming a cam with which said head may cooperate in swivelling adjustments over the wire and a rigid cap of non-springy material engaged over said head and having dependent integral claws wrapped about opposite sides of the wire at opposite sides of said head under pressure causing the head to impose a bending strain on the span of wire between said claws at opposite sides of the same.

4. A swivel harp having a wire harp frame and in which resiliency inherent in the wire of the frame is utilized for yieldingly retaining the swivel structure in adjusted relation without recourse to springs or special spring materials and comprising in combination with said wire frame, a lamp shade stud having a head bearing on the wire of said harp frame and a rigid cap of non-springy material engaged over said head and having dependent integral claws wrapped about opposite sides of the wire at opposite sides of said head under pressure causing said head to impose a bending strain on the span of wire between said claws, said frame wire being bent into arched formation and with an indentation in the top of the arch and said frame further including a base part securing the sides of the arch together with the indented top in substantially straight condition and the head of the stud bearing on said straightened top portion of the arched wire.

5. The method of manufacturing harp swivels, which includes forcing the head of a lamp shade stud against the side of a harp wire with sufficient pressure to form a cam flat in the side of the wire and effecting the swivelling engagement of a stud securing member about the wire at opposite sides of said head, while the stud is so held under pressure.

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