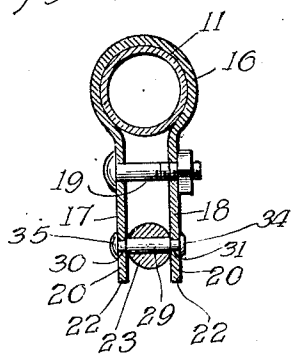
Nov. 6, 1928. 1,690,491

G. C. KNAUFF

PORTABLE ELECTRIC LAMP

Filed June 6, 1927

Fig. 3.



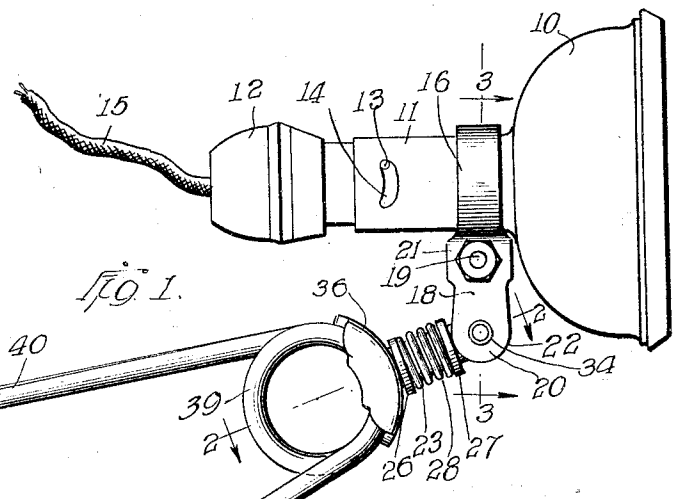


Fig. 1.

Fig. 2.

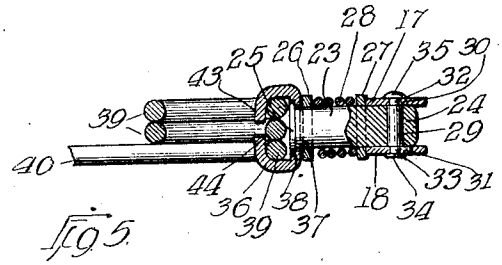


Fig. 4.

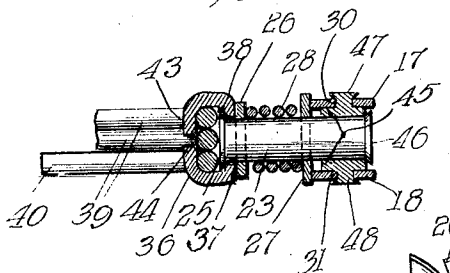
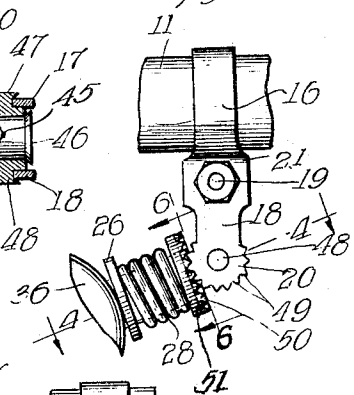


Fig. 5.



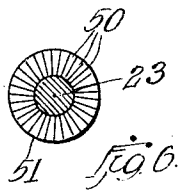
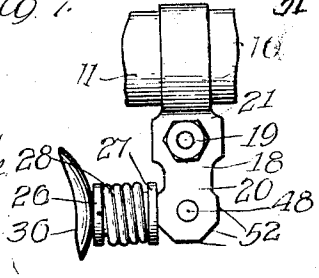


Fig. 6.

Fig. 7.



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Patented Nov. 6, 1928. 1,690,491

UNITED STATES PATENT OFFICE.

GEORGE C. KNAUFF, OF CHICAGO, ILLINOIS.

PORTABLE ELECTRIC LAMP.

Application filed June 6, 1927. Serial No. 196,717.

The invention relates to a portable electric lamp, and particularly that type of electric lamp which is called a trouble lamp, or a spot light, which may be moved in any direction desired, and is suitable for use in connection with automobiles, in garages, workshops, stores, homes and other places; in fact, in any place where such a lamp may be needed.

One of the objects of the invention is to provide an electric lamp which may be placed and firmly attached to any suitable part of an automobile while repairs, replacements or adjustments are being made.

The invention is also applicable for use in many other situations, as for instance, by a workman for various places on his work bench, in connection with machinery and interior parts of mechanism where light is needed and cannot otherwise be readily obtained.

A further object of the invention is to provide a trouble lamp which, when a source of power for the lamp is available, supersedes the ordinary flash light, because the lamp may be attached to any suitable support enabling the user to have free use of both hands while the light is illuminating the particular place or places where illumination is required.

An additional object of the invention is to provide the junction of the lamp and its clamp with features of construction which will enable the lamp to be moved or rotated to any position desired and then be firmly held in that position by the action of a compression spring interposed between the lamp and the clamp.

In addition, it is an object of the invention to form the joint between the lamp and its clamp in such a manner that the action of the compression spring between the lamp and the clamp will be supplemented in various ways in order to firmly hold the lamp in any desired position, including an annular trunnion arrangement, teeth and detent mechanism employing teeth meshing with a detent ring or washer, and angular faces which consecutively coincide with a ring surface.

The invention has these and other objects, all of which will be explained and more readily understood when read in conjunction with the accompanying drawings which illustrate various features of construction, it being obvious that further changes and modifications may be made without departing from the spirit of the appended claims forming a part hereof.

In the drawings:

Figure 1 is a side elevational view of the portable electric lamp, the clamp therefor and the connecting spring mechanism, showing the clip having plain rounded ends associated with the spring mechanism.

Figure 2 is a cross-sectional view on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a cross-sectional view on the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a view similar to Figure 2, but on the line 4—4 of Figure 5, looking in the direction of the arrows, and illustrates a modified construction of connection of the clip with the spring mechanism, showing a toothed edge of the clip meshing with a detent ring.

Figure 5 is a side elevation of the clip and spring mechanism, shown in section in Figure 4.

Figure 6 is a view of the detent ring on the line 6—6 of Figure 5, looking in the direction of the arrows, and

Figure 7 is a view similar to Figure 5, showing the clip and spring mechanism, the clip, however, being modified by having its ends which contact with the spring mechanism provided with angles.

Similar parts or elements in the various figures are designated by similar reference characters.

The portable electric lamp as shown, comprises the reflector 10 and the lamp socket 11 into which any suitable electric light bulb may be inserted. The lamp is provided with the operatitng insulated terminal bushing or plug 12 to which the stud 13, which reciprocates in the slot 14, is connected. Conductors 15 extend from the light socket 11 to the source of power for the light. A clip 16, provided with legs 17 and 18, is secured to the light socket 11. The clip 16, which encircles the light socket 11, is firmly held in position on the light socket by the bolt 19 which extends through the legs 17 and 18 and is provided with a securing nut. The bolt with its nut is placed intermediate the rounded end portions 20, 20 of the clip 16 and the portion of the

clip which encircles the light socket. The clip may be of any suitable design, and is shown with a reinforced portion 21 where the bolt extends through the legs. In Figure 1 the lower edges 22, 22 of the legs 17 and 18 are shown plain and without roughened surfaces.

The spring mechanism, which is cooperatively connected with the portable electric lamp fixture and the clamp, comprises the metallic pin or stud 23 provided near one end with the transverse aperture 24 and at the other end with an integral rim or flange 25. The spring mechanism is also provided with the two metallic rings 26 and 27 through the openings of which the pin or stud 23 is placed with the flat compression coil spring 28 interposed between the rings. A shaft or pivot pin 29 extends through the aperture 24 in the stud 23 into apertures 30 and 31 in the legs 17 and 18, respectively, of the clip 16. As shown in Figures 2 and 3, the main portion of the shaft or pivot pin 29 within the aperture 24 is enlarged and has the reduced portions 32 and 33 which extend through the apertures 30 and 31, respectively. The shaft or pivot pin 29 with its reduced portions 32 and 33 is held in place in the apertures in the legs 17 and 18 of the clip by being provided with the exterior flange 34 and the rivet head 35 which are formed in any suitable manner. The pin or stud 23 is fitted into the cap or connector 36 through the aperture 37 in one end thereof. The cap or connector is provided with the ledge, shoulder or seat 38 on which the rim or flange 25 of the pin or stud 23 is seated. The coils 39 of the spring clamp 40, having the rubber covered grips 41 and 42 adapted to clamp the light fixture to any portion of the automobile, furniture, fixtures, etc., are located within the cap or connector 36. After the pin or stud 23 has been placed in position with its rim or flange 25 seated against the shoulder 38, and the coils 39 of the clamp 40 have been located within the cap or connector 36, the projecting end portions 43 and 44 of the cap or connector are turned inwardly and pressed toward each other to embrace or clamp the coils 39.

In assembling the structure of the invention, the pin or stud 23 is passed through the aperture 37 of the cap or connector 36 and is frictionally held and rotated therein. The pin or stud is then seated against the shoulder 38, the coils 39 of the clamp 40 are arranged in position and the ends 43 and 44 of the connector are turned inwardly. The rings 26 and 27 are then placed in position on the stud 23, with the compression spring 28 between them. The shaft or pivot pin 29 is fitted into the aperture 24 and the legs 17 and 18 of the clip 16 are brought against the shaft and the reduced portions 32 and 33 thereof are placed into the apertures 30 and 31 while the ring 27 simultaneously compresses the spring 28 against the ring 26. Upon release of the spring 28 it compresses against the rings 26 and 27 drawing the rim or flange 25 against the shoulder 38, leaving a space between the coils 39 and the rim or flange 25 and compressing the ring 27 against the surfaces 22, 22 of the legs 17 and 18 of the clip 16, making a close friction fit.

When it is desired to rotate or turn the light fixture in a vertical direction, the rounded ends 20, 20 of the legs 17 and 18 are moved or rocked on their plain surfaces 22, 22 upon the upper surface of the ring 27. Because of the compression of the spring 28 against the rounded ends of the legs, the light fixture will be turned to and frictionally held in any desired position.

When it is desired to rotate or turn the light fixture in a horizontal direction, the legs 17 and 18 secured to the pin or stud 23 may be utilized to turn the light fixture, the spring 28 under compression, and the rings 26 and 27 above and below the spring, to any desired position.

It will thus be seen that because of the use of the compression spring 28, even though the ends of the legs 17 and 18 and the ring 27 should wear, the light fixture may always be turned to and frictionally held in any position desired without the possibility of getting out of that position, by its own weight, or by any movement weaker than the compression of the spring. This is not only true for the adjustments of the light fixture in the vertical direction, but also the adjustments of the light fixture in the horizontal direction.

In the modified form of structure shown in Figure 4, a sleeve or annular trunnion 45 is placed about the pin or stud 23, which is burred at one end at 46, to hold the annular trunnion on the pin. The reduced portions 47 and 48 of the annular trunnion are passed through the apertures 30 and 31 in the legs 17 and 18 of the clip. The reduced portions are then formed with an exterior flange and rivet head substantially similar to the flange and rivet head 34 and 35 respectively, shown in Figure 2. The spring 28 between the rings 26 and 27 is in compression against the ends of the legs 17 and 18 of the clip. The mode of operation of the structure of Figure 4 is substantially identical with the mode of operation of the structure shown in Figures 1, 2 and 3.

Figures 5 and 6 illustrate a construction having a more positive means for holding and positioning the light fixture in the position desired. This is accomplished by means of the plurality of teeth 49 arranged on the curved end portions 20, 20 of the legs 17 and 18 respectively, of the clip. The teeth mesh with the corresponding detents 50 in the detent washer or ring 51.

Another form of structure wherein positive holding and positioning of the light fixture

with relation to the clamp is accomplished, is shown in Figure 7. In this form, the end portions 20, 20 of the legs 17 and 18 respectively, are provided with a plurality of angles 52 each of which may be coincident with the surface of the ring 27 when the light fixture is turned vertically to any desired position with respect to the spring mechanism. Aside from the snap action caused by the construction of the angles of the end portions of the legs, the mode of operation of the structure in Figure 7 is identical with that shown in the other figures of the drawings.

Having thus described the invention, what I claim and desire to secure by Letters Patent is:

1. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin pivotally connected at one end in substantially parallel relation with said legs and secured at its other end to said clamp, and a spring on said pin pressing at one end against said clamp and at its other end against the edges of said legs.

2. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin pivotally connected at one end in substantially parallel relation with said legs and secured at its other end to said clamp, two flat rings loosely mounted on said pin, and a spring on said pin between said rings and pressing one of them against said clamp and the other of them against the edges of said legs.

3. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin, a spring on said pin, a ring at each end of said spring, one ring furnishing a rocking surface for the ends of the pair of legs of said clip, said pin having an aperture at one end, a shaft extending through said aperture, said shaft being provided with reduced portions adapted to fit in the ends of said legs, the spring between the ends of said legs and the clamp being at all times in compression.

4. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin, a spring on said pin, a support at one end of said spring and a connection at the other end with said legs of said clip, said support including a cap or connector, said cap or connector being provided with a shoulder, said pin being provided with a rim or flange adapted to be seated on said shoulder.

5. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin, a spring on said pin, a ring at each end of said spring, one ring furnishing a rocking surface for the ends of the pair of legs of said clip, said pin having an annular trunnion at one end, said trunnion having reduced portions which fit in apertures in the ends of said legs, the spring between the ends of said legs and the clamp being at all times in compression.

6. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, said legs having rounded ends, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin pivotally connected at one end in substantially parallel relation with said legs and secured at its other end to said clamp, two flat rings loosely mounted on said pin, and a spring on said pin between said rings and pressing one of them against said clamp and the other of them against the edges of said legs, said other ring constituting a frictional retaining member through its engagement with said legs tending to hold said pin in any desired angular relation relatively to said legs.

7. In a portable electric light fixture, the combination of a light socket, a clamp for holding the fixture, a clip secured to said light socket, said clip being provided with a pair of legs, said legs having a plurality of angles at their free ends, spring mechanism intermediate said clip and clamp, said spring mechanism comprising a pin, a spring on said pin, a ring at each end of said spring, one ring furnishing a surface with which each of the angles at the ends of said legs may be consecutively coincident when the pair of legs are rotated with relation to said ring surface, the spring between the ends of said legs and the clamp being at all times in compression.

In witness whereof, I hereunto subscribe my name this 26th day of May, A. D. 1927.

GEORGE C. KNAUFF.