

Filed April 21, 1944

3 Sheets-Sheet 1

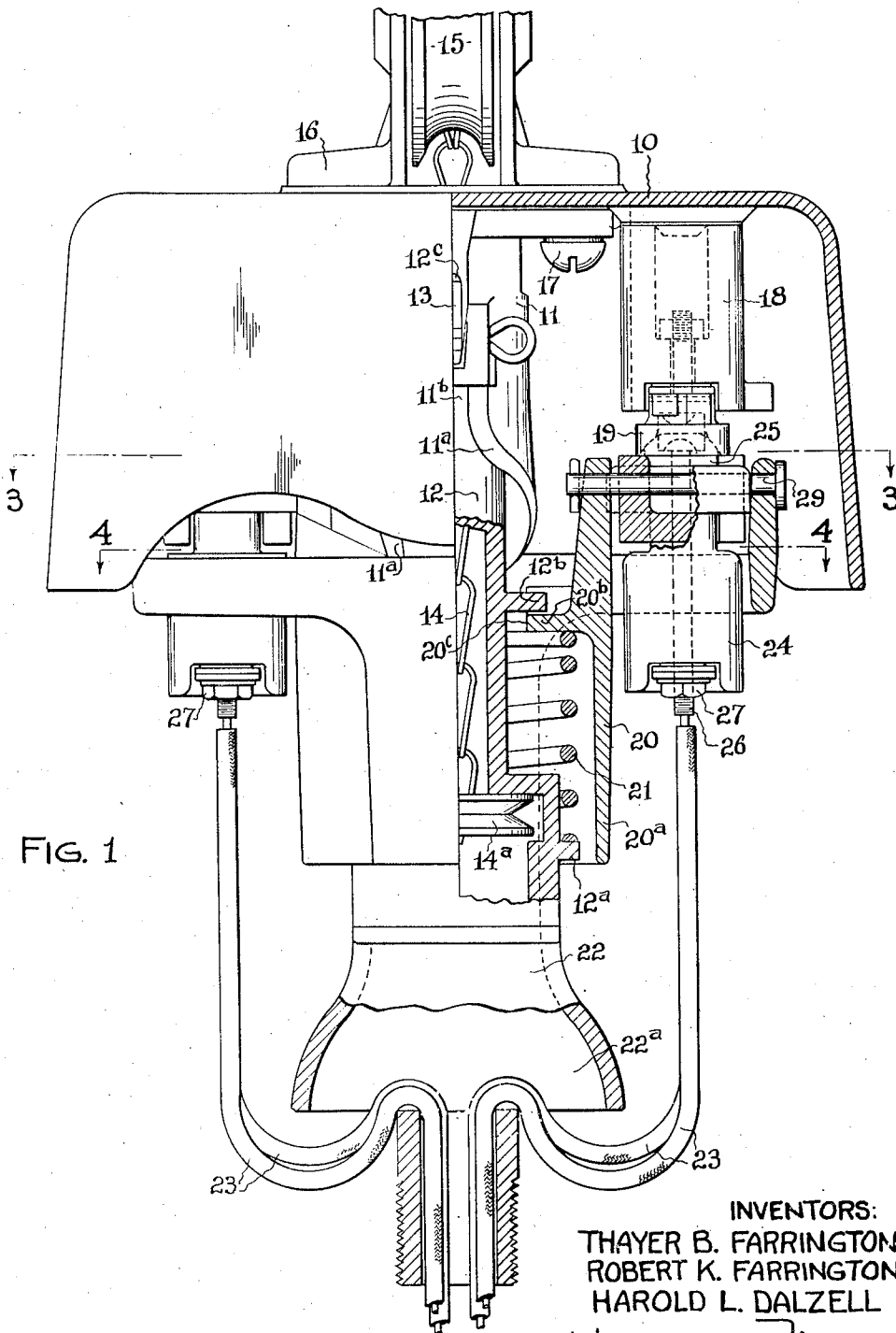


FIG. 1

INVENTORS:
THAYER B. FARRINGTON
ROBERT K. FARRINGTON
HAROLD L. DALZELL

BY *Hyde and Meyer*
ATTORNEYS.

2,377,872

MULTIPLE CONTACT LAMP HANGER

Filed April 21, 1944

3 Sheets-Sheet 2

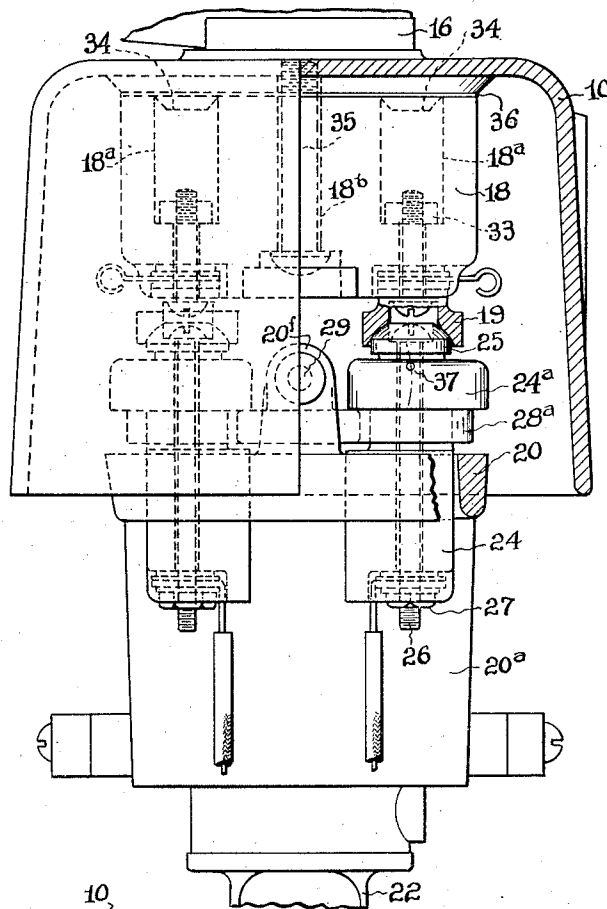


FIG. 2

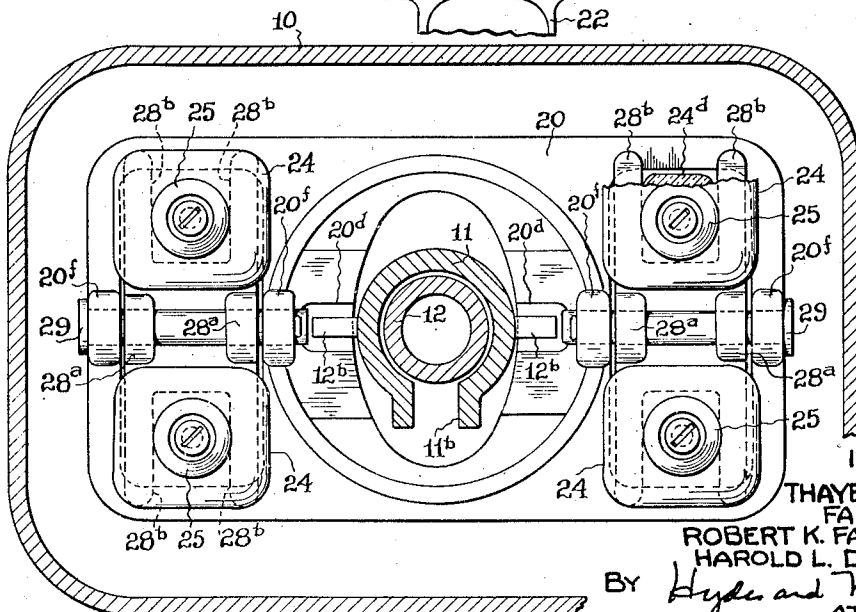


FIG. 3

INVENTORS:

THAYER B.

FARRINGTON
ROBERT K FARRINGTON

HAROLD L. DALZELL

BY *Hyder and Meyer*
ATTORNEYS.

June 12, 1945.

T. B. FARRINGTON ET AL

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MULTIPLE CONTACT LAMP HANGER

Filed April 21, 1944

3 Sheets-Sheet 3

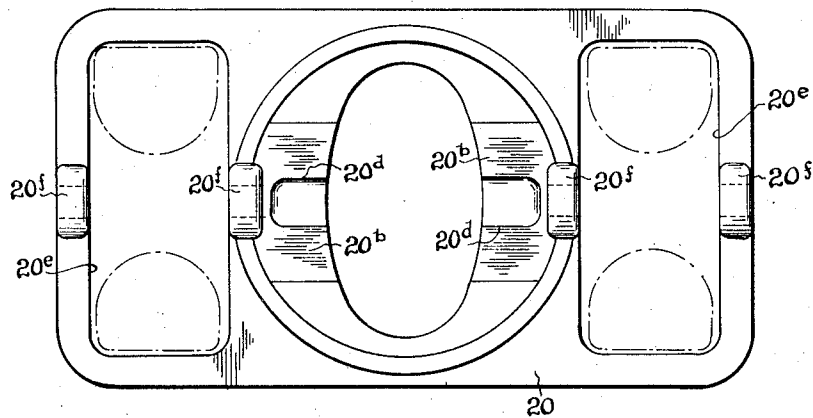


FIG. 4

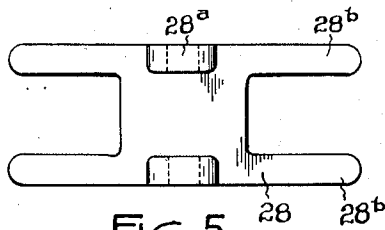


FIG. 5

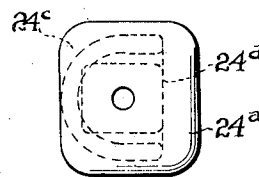


FIG. 7

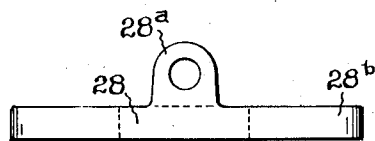


FIG. 6

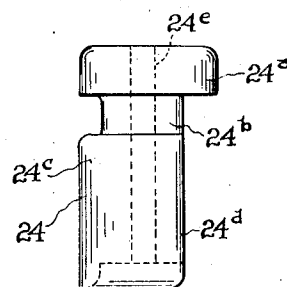


FIG. 8

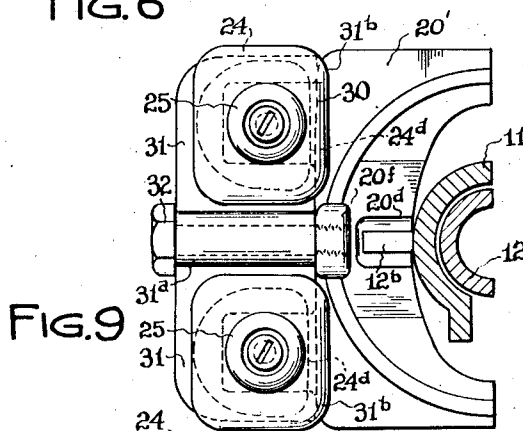


FIG. 9

INVENTORS:
THAYER B. FARRINGTON
ROBERT K. FARRINGTON
HAROLD L. DALZELL

BY *Hyde and Meyer*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,377.872

MULTIPLE CONTACT LAMP HANGER

Thayer B. Farrington and Robert K. Farrington,
Cleveland Heights, and Harold L. Dalzell,
Cleveland, Ohio, assignors to The Thompson
Electric Company, Cleveland, Ohio, a corpora-
tion of Ohio

Application April 21, 1944, Serial No. 532,117

4 Claims. (Cl. 248—319)

This invention relates to improvements in an electrical device having multiple contacts which are separable and particularly to the application of such a device in a lowering lamp hanger.

An object of the present invention is to provide means for supporting separable contacts in a simple but efficient manner providing for the necessary adjustment of the coacting pairs of contacts when making and breaking the circuit.

The details of our invention are clearly disclosed in the accompanying drawings and essential features thereof will be set forth in the appended claims.

In the drawings

Fig. 1 is a side elevational view partly broken away in section and illustrating one form of our device;

Fig. 2 is an end elevational view of the device of Fig. 1 partly broken away in section to more clearly illustrate the construction;

Figs. 3 and 4 are transverse sectional views taken along similarly numbered lines of Figures 1, Fig. 4 showing the bracket only, for clearness;

Figs. 5 and 6 are top plan and side elevational views respectively of a contact-supporting bar forming part of the device shown in Figs. 1 to 3;

Figs. 7 and 8 are top plan and side elevational views respectively of an insulator block for the movable contacts; while

Fig. 9 is half a top plan view taken in a position similar to Fig. 3 and showing a modified form of equalizer bar arrangement.

Our device performs a function similar to that disclosed in U. S. Patent No. 2,290,143, granted July 14, 1942, to Thayer B. Farrington, although the present device utilizes differently constructed parts the advantages of which will be hereinafter pointed out.

As in the above-mentioned Farrington patent, we have shown our device as applied to coacting lamp hanger members wherein the fixed member comprises a canopy 10 for supporting certain of the parts and for protecting the separable contacts from the weather. Rigidly secured with the canopy is a tubular guide 11 adapted to receive within its hollow interior a stem 12 which carries the lamp which is lowered. When the lamp is held in its raised position, the stem 12 is latched in the guide 11 by means of a latchdog 13 which is more clearly described in the abovementioned Farrington patent. A chain or other flexible tension member 14 has its end 14a secured in the stem 12. The chain passes upwardly through the hollow stem and around a pulley 15 which is rotatably supported in a bracket 16, screws 17 unit-

ing the bracket, canopy, and guide in a rigid assembly. It will be understood that the chain 14 passes from pulley 15 to a remote point from which the lamp is manipulated. Two insulator blocks 18, one seen at the right of Fig. 1 and one in similar position at the left hand side not shown, are fixedly secured to the canopy 10. A contact 19 of cup-shape opening downwardly is secured to each of the insulator blocks 18. Electrical conductors not shown are connected between the contacts 19 and a source of current.

Our improvement is embodied in the separable contacts which coact with the contacts 19 and which are carried by the lowering hanger member connected with the stem 12. A bracket 20 is provided with the centrally located downwardly extending cylindrical spring housing 20a. A spring 21 is held in compression between the flange 12a on the stem 12 and the flange 20b on the bracket. Just above the flange on opposite sides of the opening 20c are provided notched recesses 20d to receive projections 12b of the stem when the parts are in latched position as shown in Figs. 1 and 3. An adapter 22 is threaded into the lower end of stem 12 and in turn carries a lamp or other electrical device supplied with current through the conductors 23 which lead downwardly from the movable contacts and enter through suitable openings 22a of the adapter.

When the parts are in the operative position of Fig. 1, the lowering hanger member is released by pulling on the chain 14, compressing spring 21 until latchdog 13 is released, whereupon the stem 12 carrying with it the bracket 20 with its associated contacts and the adapter 22, lamp, etc., may be lowered to any desired point. When it is again desired to elevate the lamp or other electrical device, the chain 14 is pulled until the stem 12 enters the guide 11. The parts are always caused to re-engage in a definitely oriented position by means of a fin 12c which rides on one or the other of cam surfaces 11a until the fin enters a slot at 11b, all as described in the abovementioned Farrington patent to which further reference may be had for details of this orienting mechanism.

The upper and outer portions of bracket 20 are arranged to support a plurality of electrical contacts for equalized engagement with the contacts 19 when the parts are in the latched position shown in Figs. 1 and 2. For purposes of illustration, we have shown four contacts 19 with four coacting movable contacts although other arrangements of our device are possible as suggested in the above-mentioned Farrington patent.

One place where a four-contact device is useful is where standard incandescent lamps and mercury-arc lamps are supported in the same fixture attached to adapter 22. In such a case, different voltage is necessary for the two lamps, and, in the present instance, we have shown two contacts for each voltage or a total of four.

The upper portion of bracket 20 is clearly shown in plan view in Fig. 4. This portion of the bracket is generally rectangular in shape and has two openings 20e extending entirely through the bracket at each end thereof on opposite sides of the spring housing 20a. Each of these openings is generally rectangular in shape and is adapted to receive a pair of insulator blocks 24, each of which in turn supports a movable electrical contact 25. The insulator blocks are best seen in Figs. 7 and 8. Each block has a substantially square neck 24b below which is a skirt 24c which has a curved outer surface toward the left-hand side as viewed in Figs. 7 and 8 and a flat surface 24d on the right-hand side. A central opening 24e through the block serves to receive a bolt 25 which secures the contact 25 in place. It will be noticed that the top surface of the contact 25 is arcuately formed so that each contact will tend to center itself with the coacting fixed contact 19. A conductor 23 is electrically connected with each bolt 25 by means of a nut 27.

The purpose of the special construction of the insulator blocks 24 just described is to enable them to coact with a supporting bar 28 and with the bracket 20. There are two of these supporting bars, each pivotally supported intermediate its ends above one of the openings 20e. For this purpose, upstanding ears 28a on each bar are provided with openings which register with similar openings in ears 20f which extend upwardly from bracket 20 on both sides of each opening 20e. Pins 29 pass through these registering openings so as to provide a pivotal mounting for each bar 28 intermediate its ends. On opposite sides of its pivot, each bar is bifurcated providing parallel arms 28b. These arms are so spaced that they are received in the grooves on opposite sides of the square neck 24b of the insulator blocks. Thus, a pair of blocks 24 may be slid into position entering at the open space between a pair of arms 28b. Each block is thus held on bar 28 for oscillating movement about pin 29 and for limited lateral sliding movement on the arms 28b. In assembling the parts, the blocks 24 are first placed in position on the arms 28b and then bar 28 is moved into position to receive pin 29. When this pin is in place, the blocks 24 cannot escape from the supporting bar 28 because the flat side 24d of each block is adjacent a fixed portion of bracket 28 as clearly seen in Fig. 3 at the upper right-hand corner, and in dot-dash lines in Fig. 4.

It results from the above construction that when the lowering hanger member is raised into position, the bracket 20 may tilt in the plane of the paper as viewed in Fig. 1 due to its resilient mounting on spring 21. Therefore, the two contacts 25 at one end of bracket 20 have an opportunity to equalize contact pressure with the other pair of contacts 25 at the opposite end of the bracket. At the same time the two contacts 25 at one end of the bracket, say at the right-hand end as viewed in Figs. 2 and 3, have an opportunity to equalize contact pressure by oscillation of bar 28 about the pivot 29. All four pairs of coacting contacts thus equalize their contacting pressure and are all held in resilient engagement by spring 21 as shown in Fig. 1. The device is

thus very efficient for its intended purpose and comprises but a few parts which are easily constructed and readily assembled.

In Fig. 9 we have shown a modified form of equalizer bar, it being understood that Fig. 9 is taken in a position similar to Fig. 3 with the canopy 10 omitted. Since this device is symmetrical about the center line, the right-hand half of the view has been omitted. Here the bracket 20' is exactly like the bracket 20 previously described except for certain differences which will now be pointed out. Instead of forming the opening 20e in the bracket as described in connection with our first form, the bracket is cut off at each end along the line 30. There is only one ear 20f for supporting the equalizer bar at each end of the bracket. Here equalizer bar 31 is provided with a centrally-located upstanding ear 31a through which extends a shoulder bolt 32 which is threaded into the ear 20f. This provides a centrally-located pivot for the bar 31. Each end of the bar is bifurcated but here the bifurcations extend parallel to the pivot bolt 32 as distinguished from the previously described bifurcations of the bar 28 which extended at right angles to the pivot pin 29. One arm of each bifurcation is indicated at 31b, the other arm being provided by the central portion of bar 31. The opening in each bifurcated arm is adapted to slidably receive the neck 24b of insulator blocks 24 which are similar to those previously described. These insulator blocks have a flat side 24d which is adjacent the end edge 30 of the bracket 20'. Each insulator block carries a contact 25 for engagement with the contacts 19 shown in Figs. 1 and 2. This form of our device is assembled by sliding the insulator blocks 24 into the bifurcations of bar 31 after which bolt 32 is passed through ear 31a and screwed into ear 20f. Each insulator block is then slidably mounted on bar 31 and prevented from sliding off by the edge 30 of bracket 20'. The device of Fig. 9 is mounted on stem 12 and will operate exactly like the first described form of our device.

It is necessary that the fixed contacts 19 be accurately positioned so as to properly cooperate with the movable contacts 25. To this end each fixed insulator block 18, as best seen in Fig. 2, is provided with two recesses 18a which are square in cross-section to receive the nut 33 and hold it from turning. This nut secures the contact 19 to the block 18. Nibs 34 are cast on the canopy 10 in the form of a frustum of a cone. It results from this construction that when bolt 35 is passed through a suitable centrally located opening 18b in block 18 and threaded into canopy 10, the square recesses 18a ride on the sloping sides of the nibs 34 to accurately position the block 18 so as to insure perfect alignment of contacts 19 and 25. Preferably a thin gasket 36 of paper or the like is inserted between each block 18 and the canopy 10 to cushion the compression exerted by bolt 35.

It will be noted in Fig. 2 that the upper face of contact 25 is arcuately formed about center 37 and this center lies substantially in the same horizontal plane as pivot 29. It results from this construction that quite a large variation in the vertical position of the mating contacts 19 and 25 may take place with only a small horizontal movement of contact 25 along its supporting bar 28. In the modification of Fig. 9 there is a loose fit between the insulator blocks 24 and the supporting bar 31 sufficient to permit this

necessary lateral movement of contacts 25 at right angles to bolt 32.

What we claim is:

1. Lamp hanger electrical contact supporting means comprising bracket means, a contact support having recesses for receiving contact members, a pair of contact members mounted in spaced relation on said support in said recesses and laterally movable therein, there being a fixed portion of said bracket means adjacent the open ends of said recesses holding said contact members in said recesses, and pivot means operatively connecting said support to said bracket means and located between said contact members.

2. Lamp hanger electrical contact supporting means comprising bracket means, supporting means for said bracket means permitting the latter to oscillate about its central portion, contact supporting bars one on each side of the central portion of said bracket means, pivot means operatively connecting each of said supporting bars intermediate its ends to said bracket means, each of said bars being provided with recesses on opposite sides of its pivot means, a contact member in each of said recesses, and there being fixed portions of said bracket means adjacent the open ends of said recesses holding said contact members therein, whereby when engaging mating contacts the contact members on each bar may

equalize pressure about the associated pivot means and the contact members on the two bars equalize pressure by oscillation of said bracket.

3. Lamp hanger electrical contact supporting means comprising bracket means having an opening therein, a contact support having spaced open-end recesses for receiving contact members, pivot means adjacent said opening connecting said support between said recesses with said bracket means, a contact member slidable into each recess at its open end only, and there being a fixed portion of said bracket means forming a part of the perimeter of said opening and positioned adjacent the open ends of said recesses for holding said contact members therein.

4. Lamp hanger electrical contact supporting means comprising bracket means, a contact support at one side of said bracket means, pivot means connecting said support intermediate its ends with said bracket means, there being recesses in said support one on each side of said pivot means, each recess opening at the side toward said bracket means only, a contact member slidable into each recess at its open end only, and said bracket means being located sufficiently close to the open ends of said recesses to hold said contact members therein.

THAYER B. FARRINGTON.
ROBERT K. FARRINGTON.
HAROLD L. DALZELL.