Aug. 29, 1944. H. D. GRINNELL 2,357,104

UNIVERSAL SCREW TYPE LAMP REPLACER

Filed June 19, 1943 2 Sheets-Sheet 1

Fig. 1.

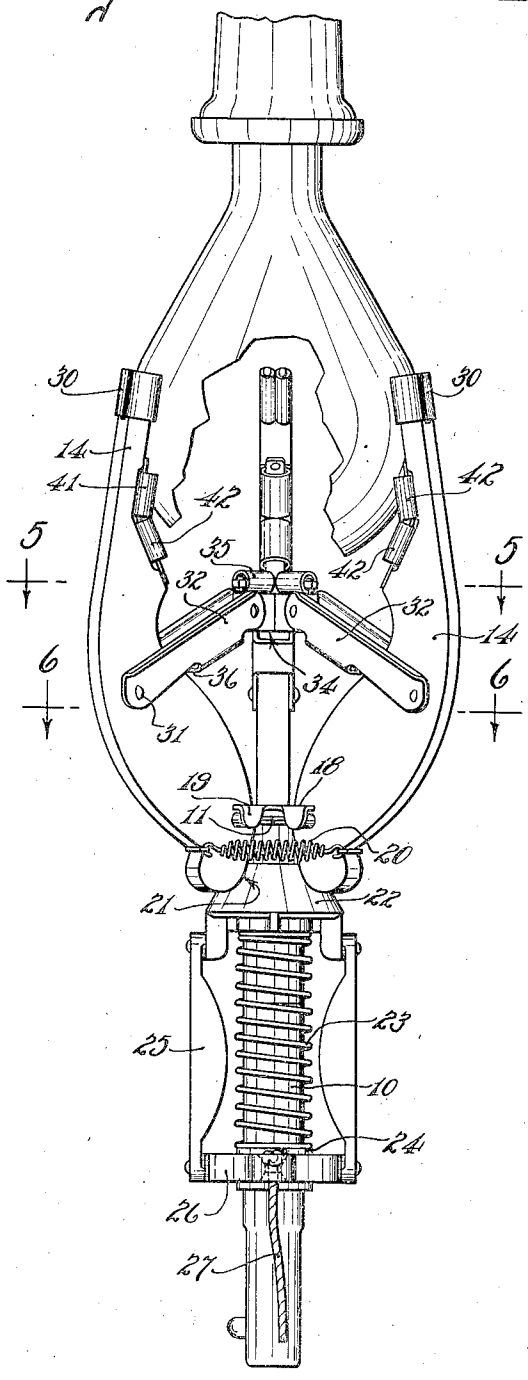

Fig. 2.

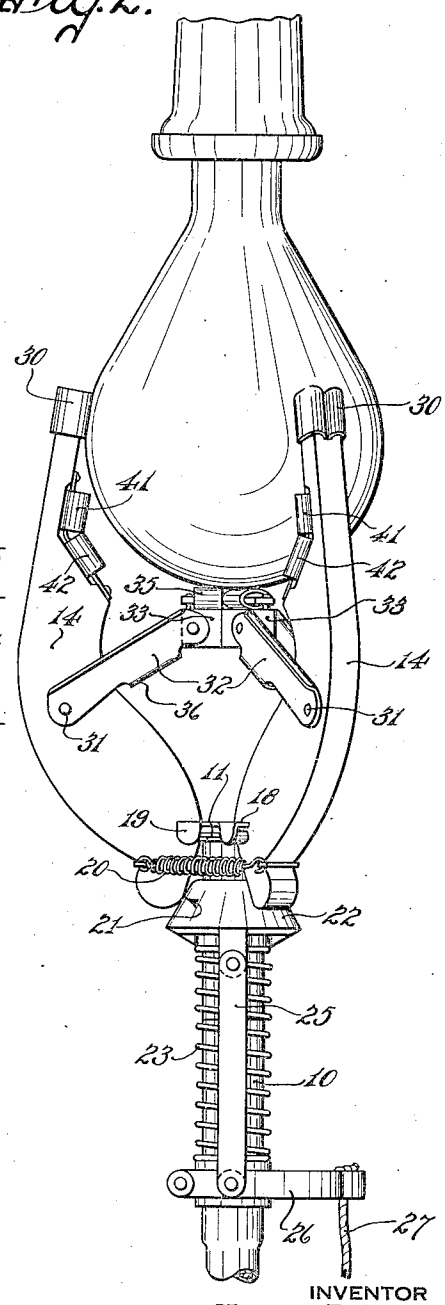

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Fig. 3.

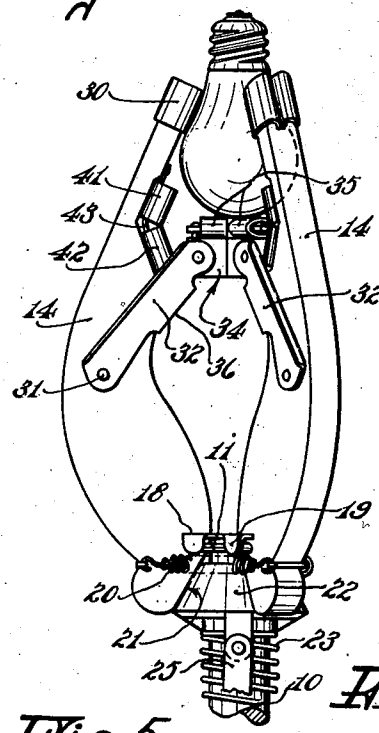


Fig. 4

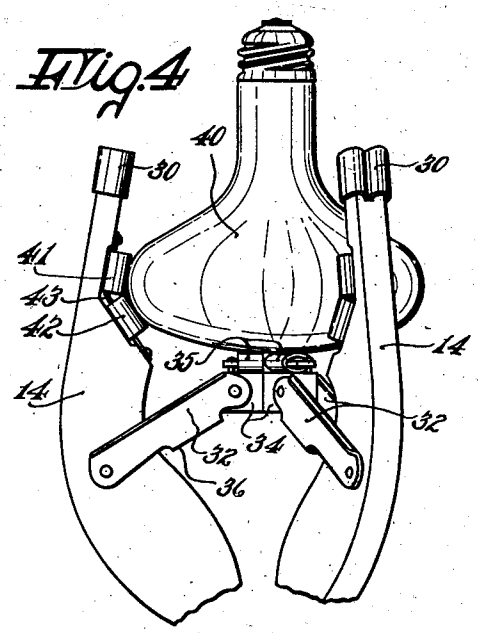


Fig. 5.

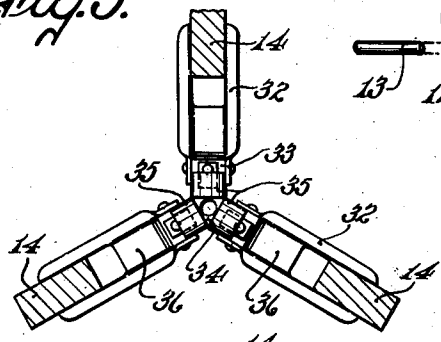


Fig. 6.

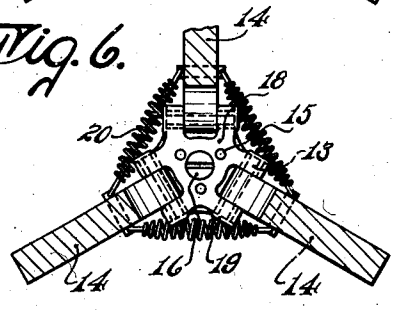


Fig. 7.

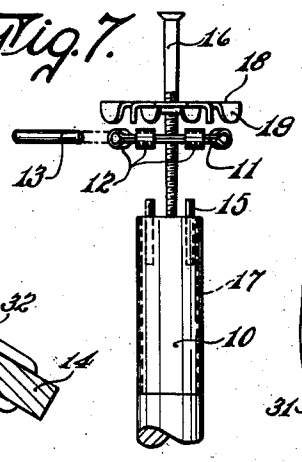
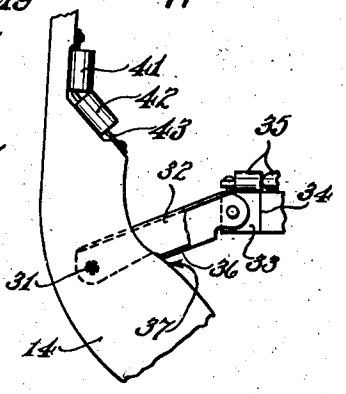


Fig. 8.



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UNITED STATES PATENT OFFICE

2,357,104

UNIVERSAL SCREW TYPE LAMP REPLACER

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Application June 19, 1943, Serial No. 491,426

7 Claims. (Cl. 294—20)

This invention relates to lamp replacers intended for use where a lamp is to be removed or replaced by rotation. The object of the invention is to provide a jaw construction capable of grasping firmly lamp bulbs of widely differing sizes and shapes. This is accomplished by providing a plurality of jaws (preferably three in number) which are pivoted to approach or recede from the sides of the lamp and which have grasping pads positioned to contact with the lamp bulb beyond its zone of maximum diameter; and in addition a jaw having a contact pad movable with the other jaws but in a direction along the axis of the lamp. As the lateral jaws close, the axial jaw shifts towards the end of the lamp bulb, changing the relative positions of the replacer and the bulb until the latter is firmly grasped between all four pads.

The manner in which this is accomplished will best appear by reference to the accompanying drawings, in which

Fig. 1 is an elevation of a replacer engaging a lamp bulb of relatively large size, the bulb being broken away to show a jaw at the rear;

Fig. 2 is a similar view looking from the left in Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing the replacer in engagement with a bulb of small size;

Fig. 4 is a similar view showing the replacer in engagement with a bulb of mushroom shape;

Fig. 5 is a section on line 5—5 of Fig. 1;

Fig. 6 is a section on line 6—6 of Fig. 1;

Fig. 7 is a detail illustrating the manner of assembly of the jaw pivots; and

Fig. 8 is a detail showing one jaw in fully opened position.

The replacer is carried on a base 10 adapted, as is common in structures of this type, to be mounted in a holder at the end of a long jointed handle. To the top of the base is secured a journal member 11 having pairs of spaced bearings 12 to receive pivot pins 13 on which the jaws 14 are mounted. The jaws may be of wood or sheet metal, or of aluminum castings. The journal member fits upon dowel pins 15 and is held in place by a screw 16 extending into a wooden plug 17 in the end of the base. Over the journal member, and also held by the dowel pins and screw, is a cap member 18 having lugs 19 extending over the ends of the pivot pins to retain them in position. This construction is described in more detail and is claimed in my copending application Serial No. 491,427 filed concurrently herewith.

The jaws 14 in rotating on their pivot pins 13 are drawn by springs 20 in a direction to throw their upper ends outwardly, and at the same time move abutments 21 inwardly so as to bear against a wedge cone 22 slidable on the upper end of the base 10. The cone rests on a spring 23 compressible between it and a shoulder 24, and may be drawn down against the force of the spring by links 25 connected to a yoke 26 pivoted at one end to the base and having at the other end a cord 27 by which the replacer may be actuated. As the cord is drawn down the cone 22 is lowered, permitting the jaws to be swung outwardly by the springs 20. On release of the cord the spring 23 will elevate the cone 22 and cause the jaws to be swung inwardly.

Each jaw carries, at a point beyond the zone of greatest diameter of the largest lamp to be handled, a pad 30 of some soft material like rubber or plastic. Pivoted to each jaw at 31 is a channel shaped link 32 having its end central portion cut away to embrace at one end the jaw and at the other a boss 33 on a vertically movable platform 34. This platform carries one or more pads 35 which contact the end of the lamp bulb. Due to the linkage connection with the jaws, the links always being kept on a slant above the horizontal by contact between the end of the central portion 36 of the link channel and a part 37 of the jaw acting as an abutment (Fig. 8) the platform 34 rises as the jaws close. Whatever the size of the lamp being gripped, therefore, it will be raised in the jaws until it is in proper position to be held. This is clearly brought out by a comparison of Figs. 2 and 3. The replacer will handle all sizes of lamps from a 15 watt bulb to larger bulbs 5 or 6 inches in diameter.

To handle bulbs of different shape, such as the mushroom bulb 40 shown in Fig. 4, the jaws are provided with intermediate pads 41 and 42 which may be made of rubber tubing strung on a bent metal strip 43. These pads are so positioned as to make contact with the bulb on opposite sides of its zone of maximum diameter.

What I claim is:

1. A lamp replacer comprising a plurality of jaws movable towards and away from the sides of a lamp bulb and having contact surfaces to engage the sides of the bulb above its zone of maximum diameter, a pad mounted for movement towards and away from the end of the bulb, and means for moving the pad towards the end of the bulb as the jaws approach each other.

2. A lamp replacer comprising a base, a plurality of jaws pivoted to the base to swing towards and from a lamp bulb and having contact surfaces to engage the sides of the bulb above its zone of maximum diameter, a pad, links connected between the several jaws and the pad and slanting from the jaws towards the end of the lamp, and means for opening and closing the jaws.

3. A lamp replacer comprising a base, three jaws pivoted to the base to swing towards each other and bowed outwardly to receive a lamp between them, three links each pivoted to one of the jaws and to a platform located between the jaws at a point between the end of the jaws and the pivotal connection of the links thereto, lamp contact pads located on said platform and on the ends of the jaws, said latter pads being located beyond the zone of maximum diameter of the lamps to be held, and means for opening and closing the jaws, whereby the platform will move towards the end of the jaws as the jaws are closed and will maintain in proper relation to the jaws lamps of all sizes within the range of the device.

4. A lamp replacer comprising a plurality of jaws movable towards and away from the sides of a lamp bulb and having contact surfaces to engage the sides of the bulb above its zone of maximum diameter, a pad mounted for movement towards and away from the end of the bulb, means for moving the pad towards the end of the bulb as the jaws approach each other, and additional contact surfaces carried by the jaws between the first-named contact surfaces and the pad to grasp lamp bulbs of mushroom shape.

5. A lamp replacer of the type having a plurality of jaws pivotally mounted in a cluster for radial movement characterized by a pad located between the jaws and linkage connecting the pad and the jaws to move said pad towards the end of the jaws as the latter close, said jaws having lamp contact surfaces positioned both beyond the zone of maximum diameter of a pear-shaped bulb and adjacent the zone of maximum diameter of a mushroom-shaped bulb.

6. A lamp replacer of the type having a plurality of jaws pivotally mounted in a cluster for radial movement characterized by a pad located between the jaws and linkage connecting the pad and the jaws to move said pad towards the ends of the jaws as the latter close, said jaws having lamp contact surfaces positioned beyond the zone of maximum diameter of a pear-shaped bulb.

7. A lamp replacer comprising a base, three jaws pivoted to the base to swing towards each other and bowed outwardly to receive a lamp between them, three links each pivoted to one of the jaws and to a platform located between the jaws at a point between the end of the jaws and the pivotal connection of the links thereto, lamp contact pads located on said platform and on the others of the jaws, said latter pads being located beyond the zone of maximum diameter of the lamps to be held, means for opening and closing the jaws whereby the platform will move towards the end of the jaws as the jaws are closed and will maintain in proper relation to the jaws lamps of all sizes within the range of the device, and contact pads on the jaws intermediate said pads on the jaw ends and said pads on the platform to engage the zone of maximum diameter of lamp bulbs of mushroom shape.

HAROLD D. GRINNELL.