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HAND TOOL

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2 Claims. (Cl. 294—100)

This invention relates to hand tools and more specifically to a hand tool used, for example, for inserting and extracting lamps from their switchboard sockets.

5 The present invention is an improvement over the lamp extractors heretofore used for this purpose. In such devices a lamp extractor member is shown which comprises two short tubular sections, one of an interior diameter slightly less than the larger lamp bulb and the other less than the smaller lamp bulb. Each tubular section is longitudinally slit to enable it to be placed over a bulb to grasp it with sufficient force so that it can be drawn out from its socket upon the removal of the lamp extractor therefrom. In the use of such a tool, however, it has been found that the difference in the outside diameter of the lamps was much greater than the difference of the inside diameters of the two tubular sections of the tool with the result that the smaller size tubular section has no gripping effect on the lamps of sizes smaller than the small section is designed to grasp and that the larger tubular section could be inserted on lamps of sizes larger than it is designed to grasp only upon the application of a considerable pressure on the tool which resulted in the damaging of the tool due to its elastic limit and this often caused the breakage of the lamps. Furthermore, in telephone switchboards a new lamp is now used which except for a small distance from its front end is coated with white enamel throughout its cylindrical portion, which makes objectionable the use of a tool which depends upon its being forced onto the lamp to be inserted or removed from its socket since the rubbing effect of the tubing sections results in scraping off the enamel coating from the lamps.

40 The object of the invention is to provide a lamp extractor device which will be simple, convenient in use and in which a unit clamping device is adapted to receive and have removed therefrom lamps of various sizes without damaging them.

In the drawing, Fig. 1 is an assembly view of the tool shown in perspective;

Fig. 2 is a view showing the jaw members in position on a lamp of the larger size;

50 Fig. 3 is a side view showing the tool in position on a lamp in its socket which is shown in section and the tool shown with portions cut away; and

Fig. 4 is another side view showing the tool in position on a lamp of the smaller size and the

jaw actuating lever member in the operated position.

In the drawing as shown in Figs. 3 and 4, the type of incandescent lamps 1 which may be inserted and removed from their sockets by the use of the tool of the invention are cylindrical, enamel coated at their peripheries, and slidable into cylindrical sockets 2. Contacts 3 are fused to opposite sides of the bulb for conducting the current to the filament therein through the terminals 4 and 5 secured to the mounting 6 of insulating material, the cylindrical sockets for the lamp being each of such an internal size to form in cooperation with the cylindrical portion of the bulb an annular space for permitting the insertion of the tool therein onto the lamp it is desired to insert and remove from its socket.

The tool of the invention consists of a handle 10 made of wood or other suitable insulating material. This handle is formed with a reduced portion or core 11 at one end serving for readily locating two independent steel-tempered jaw members 12 and 13 in centered relation to each other. Jaw members 12 and 13 are of segmental cross-section and are secured onto the core 11 by a ferrule 14 and a pin 15, this pin having one end engaging holes in the ferrule 14, in the jaw members 12 and 13, and across the reduced portion or core 11 of handle 10.

A manually operable resilient lever member 16 is provided at one of its ends with an opening OP1 for loosely engaging the jaw members 12 and 13. This manually operable member is provided at its middle portion with an opening OP2 loosely engaging the portion of pin 15 which extends upwardly from the ferrule 14 so as to be guided thereby when flexed as to cause in turn the flexing movement of jaw members 12 and 13, while a pin 17 extending across the core portion 11 of handle 10 and between the opposite edges of the segment-shaped jaw members 12 and 13 adjacent the front edge of ferrule 14 serves to limit the flexing of the jaw members from their free ends to this point. The core 11 extends into the segmental portions 12 and 13 so as to limit, through its abutments with the end of the lamp, the clamping engagement of the portions 12 and 13 on such a lamp.

In a typical use of the tool of the invention, for example, for inserting a switchboard lamp in its socket, the lamp 1 as shown in Fig. 2 is placed between the jaw members 12 and 13 which are normally open sufficiently to permit the insertion of the larger sized lamp therebetween without rubbing against the jaw members as to avoid removing the enamel coating from the lamp. 55

The manually operable resilient lever member 16 is then moved by flexing it from the position shown in Figs. 1, 2 and 3 to the position shown in Fig. 4 to impart a camming action on the jaw members 12 and 13 to close them on the cylindrical portion of the lamp. The end-to-end abutting relation of the core 11 with the lamp 1 determines the extent of the clamping surface of the jaw members on the lamp which is then inserted in a socket in the position shown in Fig. 3 when the operable lever member 16 is released by the operator to permit its return to normal position through the medium of its own resiliency, thus freeing the lamp from the jaw members which also return to normal position through the medium of their own resiliency when the tool is removed from the lamp socket.

Similarly in the removal of one of the lamps 1 from its socket, the manually operable lever member 16 and the jaw members 12 and 13 being in their normal non-flexed position, these jaw members are inserted in the socket of the lamp to a point wherein the end of the core 11 abuts against the front end of lamp 1, after which the manually operable lever member 16 is moved from the position shown in Figs. 1, 2 and 3 in the position shown in Fig. 4, that is, against the handle 10 so as to cause this member to impart a camming action on the jaw members 12 and 13 for closing them on the lamp, the lever member and the jaw members actuated thereby being held in the operated position during the removal of the tool and the lamp secured thereto from the socket.

In the use of this tool, it is to be noted that the stiffness of the operable member 16 is so related to the stiffness of the jaw members 12 and 13 that when these jaw members engage the lamp with sufficient clamping pressure as to permit its removal from its socket, the manually operable member is caused to flex the remaining of its flexing distance toward the handle without substantially increasing the clamping action of the jaw members on the lamp which may be of the larger or the smaller size, thereby avoiding the breaking of lamps of the larger sizes as would be due to uncontrolled camming action on the jaw members.

What is claimed is:

1. A lamp extractor device comprising a handle having a reduced cylindrical portion projecting from one end thereof, a pair of independent

jaw members mounted in centered relation on said reduced portion and projecting beyond the ends thereof, a ferrule engaging the other end of said jaw members for securing them on said reduced portion, a pin passing across said reduced portion adjacent the front end of said ferrule and protruding beyond the edges of said jaw members for limiting their flexing action from their free ends to the front edge of said ferrule, a manually operable resilient lever member having an opening for engaging said jaw members, and another pin having one end engaging said ferrule and said jaw members for securing them collectively against rotary movement on said reduced portion, said pin having its other end engaging a second opening in said lever member for guiding it relative to the flexing movement of said jaw members upon its flexing movement toward said handle for gripping the lamp as effected by the camming action of said lever member on said jaw members.

2. A lamp extractor device comprising a handle having a reduced cylindrical portion projecting from one end thereof, a pair of normally open independent jaw members of arcuate cross-section mounted in centered relation on said reduced portion and projecting beyond the ends thereof, a ferrule engaging the other end of said jaw members for securing them on said reduced portion, a pin passing across said reduced portion adjacent the front end of said ferrule and protruding beyond the edges of said jaw members for limiting their flexing action from their free ends to the front edge of said ferrule, a manually operable resilient lever member having an opening for engaging said jaw members, and another pin having one end engaging said ferrule and said jaw members for securing them collectively against rotary movement on said reduced portion, said pin having its other end engaging a second opening in said lever member for guiding it relative to the flexing movement of said jaw members upon its flexing movement toward said handle for gripping the lamp as effected by the camming action of said lever member on said jaw members, said lever member being adapted to flex in abutment against said handle upon the application of a force thereon greater than the force required to clamp said lamp between said jaw members.

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