R. T. HARVEY.

IMPLEMENT FOR HANDLING INCANDESCENT LAMPS.

APPLICATION FILED FEB. 15, 1915.

1,193,685. Patented Aug. 8, 1916.

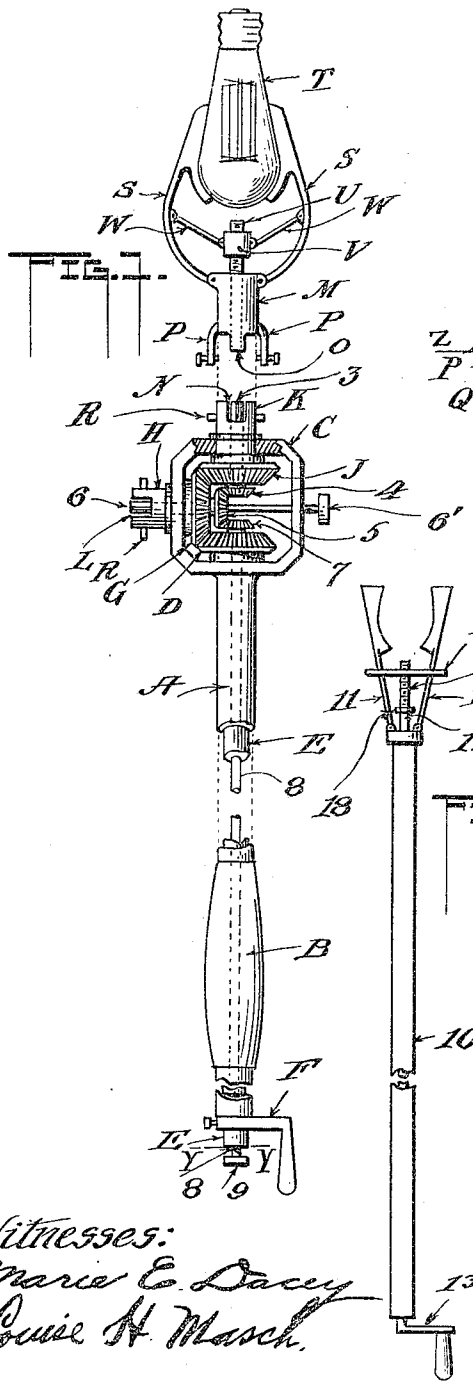


FIG. 1.

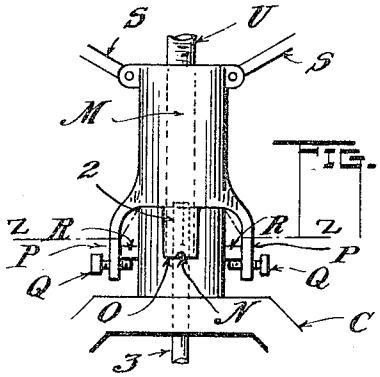


FIG. 2.

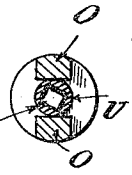


FIG. 3.

FIG. 5.

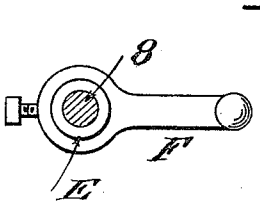


FIG. 4.

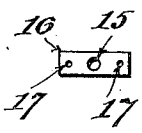


FIG. 6.

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IMPLEMENT FOR HANDLING INCANDESCENT LAMPS.

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To all whom it may concern:

Be it known that I, ROBERT T. HARVEY, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Implements for Handling Incandescent Lamps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a tool or implement for use in removing and replacing electric lamp bulbs in elevated signs or when used in interior lighting where the lamps are not readily accessible.

The invention relates to an implement having a long handle and that will be light in weight and easily manipulated, the same including a lamp grasping device which may be operated from the lower end of the handle after which, by rotating the said grasping device, the bulb may be screwed into place or removed as occasion requires.

To the end that the invention may be understood, I have provided the accompanying drawing wherein—

Figure 1 is an elevation of one of the forms of my device. Fig. 2 is a similar view, much enlarged, of a portion of the same. Fig. 3 is a plan of a portion of what is shown in Fig. 2 showing portions in cross section on line Z Z Fig. 2. Fig. 4 is a cross section of certain portions shown in Fig. 1 taken on line Y Y Fig. 1. Fig. 5 is an elevation of a modified form of the device; and, Fig. 6 is a plan of a portion of the same.

A represents a tube or pipe of any desired length by means of which lamps at a considerable elevation can be reached. It is provided with a handle B within which the tube may turn and its upper end carries a suitable frame C for carrying a gear nest of which D is a bevel gear mounted upon the upper end of a shaft E rotatable within the tube or pipe A, its lower end being provided with a crank F by which it may be rotated.

G is a similar bevel gear meshing with the gear D and rotatably mounted in an upright portion of the frame C upon a stub shaft H. Meshing with the gear G is a similar gear J also rotatably mounted in the frame C on a stub shaft K. The stub shaft H in use rotates on a substantially horizontal axis and is notched at L to receive a companion portion M. The stub shaft K is likewise provided with notches N similar to the notches L, and the said companion portion M is provided with projections O, see Fig. 3, to engage the notches L or N of either stub shaft. In addition, said member M is provided with oppositely disposed depending arms P which, as shown in Fig. 2, are provided with set screws Q, for example, to engage beneath oppositely disposed lugs R on both said stub shafts H, K by which said member may be positively secured in position.

Pivoted to the opposite end of the member M at diametrically opposite sides are arms S, the upper end of each of which is suitably shaped to receive and grasp a lamp bulb indicated at T.

U is a thread bar rotatable within the member M and having a threaded sleeve V thereon and pivoted at opposite ends to the sleeve and to the arms S are toggle arms W. The lower end of the thread bar U is provided with a socket as indicated by broken lines 2 in Fig. 2, and in Fig. 3, to receive a short shaft 3 rotatable within the stub shaft K and the gear J, the socket 2 and the end of the short shaft being suitably formed so that one will rotate the other. The end of the short shaft 3 within the gear J receives a bevel pinion 4 which meshes with a similar pinion 5 carried by a short shaft 6 rotatable within the stub shaft H, described. This shaft 6 extends through the opposite side of the frame C and is provided with a suitable finger piece 6′ for turning it.

7 is a bevel pinion mounted upon the end of a shaft 8 which is rotatable in and extends down through the shaft E, its lower end exposed below the latter being provided with a suitable finger piece 9 by which said shaft may be turned. Any means may be employed for fixing the thread bar U relative to the other parts when the lamp has been properly clamped, if such is found desirable.

Where the member M is attached to the stub shaft K a depending lamp, or a lamp hanging downward can be manipulated in the following manner: Upon turning the finger piece 9 the pinions 7, 5 and 4 are rotated thereby rotating the short shaft 3 and the thread bar U. When thus rotated the arms S are clamped upon the lamp. Now, by rotating the crank F in the proper direc-

tion to rotate the member M and its clamping arms in the proper direction the clamp thus provided will screw the lamp out of its socket. In replacing the lamp naturally the opposite direction of rotation accomplishes the desired end.

The finger piece 6′ is provided at the gear nest in order that the arms S may be adjusted from that position when the operator wishes to secure the lamp upon the device for elevating it to its position. If it so happens that lamps to be adjusted extend from a vertical surface such as a sign, the member M is then attached to the stub shaft H, the same action as before being obtained from that member.

Fig. 5 shows a modified form of device in which 10 is a tube or pipe to be held and turned in the hands to remove a lamp from or screw it into its socket. It is provided at its upper end with two oppositely disposed pivoted arms 11 corresponding to the arms S S described. 12 is a shaft extending through the tube or pipe and provided with a crank at its lower end for rotating it. The upper end of the shaft is provided with screw threads indicated at 14 which engage in a threaded hole 15 in a plate 16 provided at opposite ends with holes 17 through which the arms 11 extend. Rotation of the crank 13 will separate the arms 11 or move them in the direction of one another to clamp them upon the lamp and then by turning the pipe 10 in the hands the lamp may be turned in either direction.

18 is a finger piece on the shaft 12 for adjusting the arms 11 by hand at that end of the device.

I do not, of course, wish to be confined to the exact construction described and shown, I having merely illustrated forms by which the objects of my invention may be accomplished.

The shaft 8 may preferably have end play so that the pinion 7 may normally be free of the pinion 5. When adjustment of the clamping arm S is to be made, however, it can be pushed into mesh and afterward be permitted to disengage. By this arrangement there will be less chance for the said clamping arms to be accidentally moved when holding the lamp due to the movement of the pinions which control them.

Having thus described my invention, I claim:—

1. In an implement for applying and removing incandescent light bulbs, the combination of a handle including an open frame at one end, a shaft extending through the handle and one side of said frame and having a bevel gear fixed relative to it within said frame, a second bevel gear journaled in the frame and including a shaft extension projecting outside the frame, a third bevel gear journaled in the frame and meshing with the second described gear and also having a shaft extension, a lamp carrying portion including a pair of clamping arms adapted to engage a lamp, said portion adapted for engaging either of the said shaft extensions, there being interengaging portions on the said shaft extensions and the said lamp carrying portion whereby the latter will positively turn with the said gears, a thread bar rotatably mounted in the said lamp carrying portion, a threaded sleeve engaging it, toggle arms pivoted to the sleeve and the described clamping arms, a shaft independently rotatable within each of the described shaft extensions and adapted to have driving engagement with the said thread bar, a shaft extending through the handle and terminating with the described frame and operatively engaging both independently rotatable shafts.

2. In an implement for applying and removing incandescent light bulbs, the combination of a handle including an open frame at one end, a shaft extending through the handle and one side of the frame, two shafts each carried by the frame, one of them lying substantially perpendicular to the first shaft and the other in substantially the same axial line with said first shaft and both having operative connection with the same, a lamp carrying portion including a pair of clamping arms adapted to engage a lamp, said portion adapted to be attached to either of the two second described shafts, there being interengaging portions on the said shafts and the lamp carrying portion whereby the latter will be positively turned with said shafts, a thread bar rotatably mounted in the said lamp carrying portion, a threaded sleeve engaging the same, toggle arms pivoted to the sleeve and the said clamping arms, a shaft independently rotatable in each of the two said second described shafts and adapted to have driving engagement with the thread bar, and a second shaft extending through the handle and operatively engaging both the independently rotatable shafts.

3. In an implement for applying and removing incandescent light bulbs, the combination of a handle including an open frame at one end, a shaft extending through the handle and one side of the frame, two shafts each carried by the frame, one of them lying substantially perpendicular to the first shaft and the other in substantially the same axial line with said first shaft and both having operative connection with the same, a lamp carrying portion including a pair of clamping arms adapted to engage a lamp, said portion adapted to be attached to either of the two second described shafts, there being interengaging portions on the said shafts and the lamp carrying portion whereby the latter will be positively turned with said

shafts, a thread bar rotatably mounted in the said lamp carrying portion, a threaded sleeve engaging the same, toggle arms pivoted to the sleeve and the said clamping arms, a shaft independently rotatable in each of the two said second described shafts and adapted to have driving engagement with the thread bar, a second shaft extending through the handle and operatively engaging both the independently rotatable shafts, and an extension including a finger piece extending from one of the said independently rotatable shafts.

4. In an implement for applying and removing incandescent light bulbs, the combination of a handle including a frame at one end, a shaft extending through the handle, a short shaft mounted in the frame at an angle to and operatively engaging the first and rotated by it, a second shaft within the handle, a shaft independently rotatable within the said short shaft and operatively engaging the said second shaft, a lamp carrying portion comprising a member adapted for attachment to said short shaft, a thread bar rotatable therein and adapted for driving engagement with said independently rotatable shaft, a sleeve engaging the thread bar, lamp clamping arms mounted on the member, and toggle arms pivoted at one of their ends thereto and at their other ends to said sleeve.

5. In an implement for applying and removing incandescent light bulbs, the combination of a handle including a frame at one end, a shaft extending through the handle and provided with a bevel gear at its end within the frame, a second bevel gear journaled in the said frame and having a shaft extension projecting outside said frame, said gear meshing with the first, a second shaft independently rotatable within the first and having a gear fixed relative to it, a shaft independently rotatable within the shaft extension of the second named bevel gear and including a gear in mesh with that of the said second shaft, and a lamp carrying portion including a member adapted to have driving connection with the said shaft extension, and means rotatable within the said member adapted to have driving engagement with and operated by the said independently rotatable shaft, and clamping arms operated by said means adapted to engage a lamp.

6. In an implement for applying and removing incandescent light bulbs, the combination of a handle and a frame portion at one end, a shaft within said handle, a bevel gear within the frame rotatable with said shaft, a second shaft within the first and having a bevel gear rotatable therewith, a bevel gear having its bearing in the described frame including a shaft extension, said gear meshing with the first described gear, a shaft independently rotatable within the said shaft extension and having a gear thereon in mesh with that of the second described shaft within the handle, a lamp carrying portion, means to secure it to the shaft extension of the second described bevel gear, a part rotatable within said lamp carrying portion and adapted to have driving engagement with the said independently rotatable shaft, and means operated by the said part to engage and clamp a lamp.

7. In an implement for the purposes set forth, a handle portion adapted in use to have a substantially upright position, a part rotatable relative to, and operable from the lower end of said handle, two bevel gears rotatably mounted in the handle and operatively engaging the said part, the axis of revolution of one of said gears lying substantially at right angles to the longest measurement of the said handle portion, the axis of the second lying at right angles to the first, a mechanism including a clamping device detachably secured to one of the two said rotatable portions and adapted for attachment to either, means carried by the member for adjusting the clamping device, and a means on the handle portion to operatively engage the first said means in either position of adjustment of said member.

In testimony whereof I affix my signature, in presence of two witnesses.

ROBERT T. HARVEY.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."