Jan. 29, 1946. C. L. BEARD 2,393,880

LIGHT TOOL

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FIG. 1.

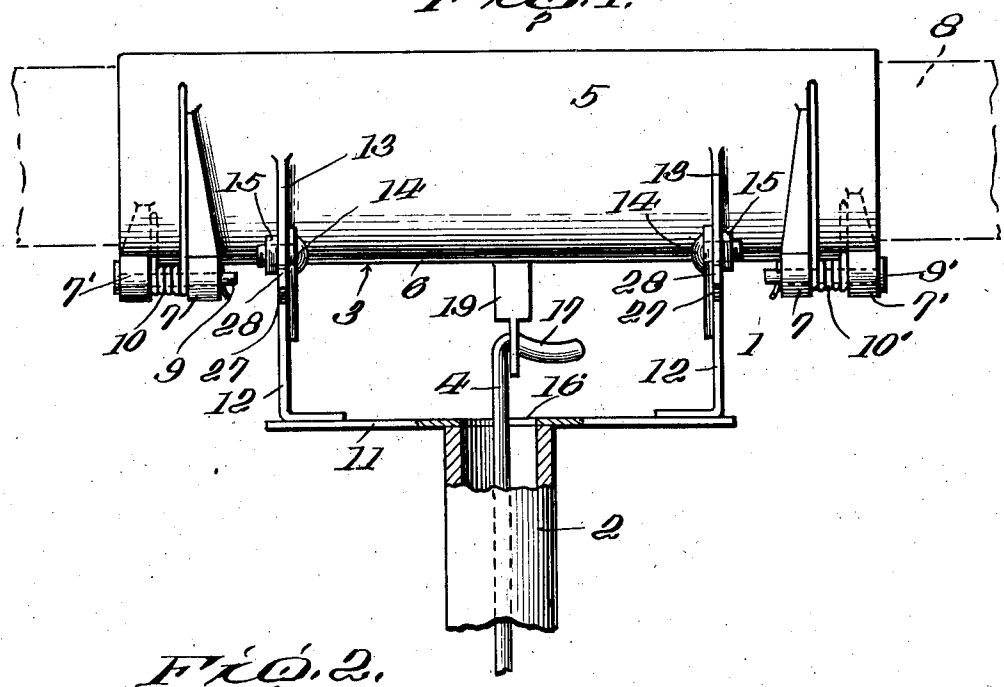
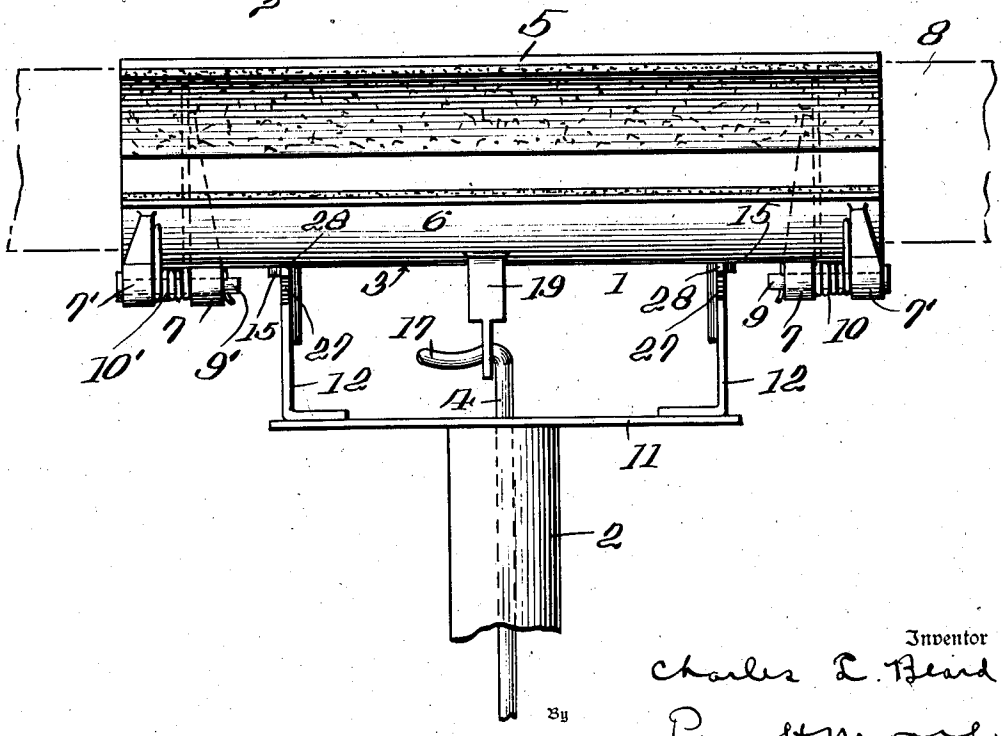


FIG. 2.



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FIG. 3.

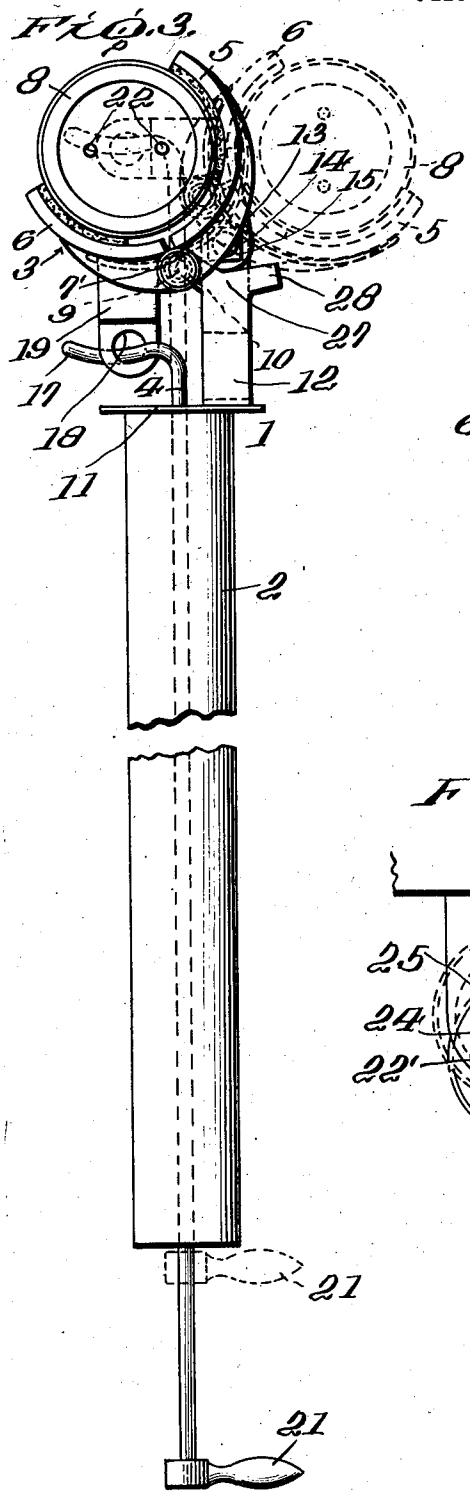


FIG. 4.

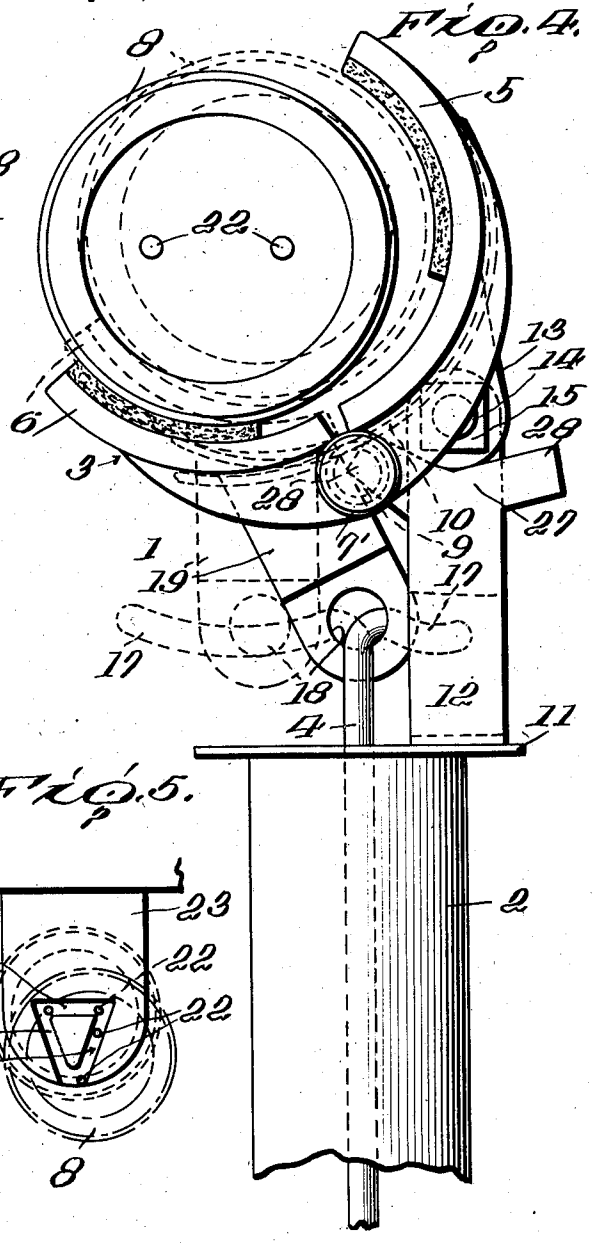


FIG. 5.

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UNITED STATES PATENT OFFICE

2,393,880

LIGHT TOOL

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Application July 27, 1944, Serial No. 546,875

5 Claims. (Cl. 294—21)

My invention relates to improvements in tools and more particularly to such as are especially adaptable in installing new and in replacing old or damaged fluorescent light tubes.

It is well known that light tubes are very frequently supported by and locked in brackets suspended from ceilings and other places beyond the reach of a person standing on the floor.

One of the principal objects of the present invention is to provide a tool by means of which the user can grasp a light tube, located at a considerable height, and turn the tube about its horizontal axis to unlock the same and otherwise facilitate removal of the tube, without the necessity of employing a step ladder or similar precarious elevated support.

Another object of the invention is to provide a tool comprising a pair of elongated curved gripping jaws pivotally connected together at their adjacent longitudinal edges for gripping and releasing a light tube, both of the jaws being pivotally movable simultaneously by means of a remote control, to partially rotate the gripped tube about its longitudinal axis.

Other objects and advantages of the tool will be understood as the description is considered with the accompanying drawings, in which:

Figure 1 is a front or side view showing the jaws in the position illustrated in full lines in Figure 3;

Figure 2 is a view of the opposite side of the tool to that shown in Figure 1;

Figure 3 is an end view showing in full lines the jaws in forwardly tilted position with a light tube grasped between the jaws and in dotted lines showing the jaws swung rearwardly into the position assumed when locked in the supporting brackets;

Figure 4 is an end view showing in full lines the front jaw in open position with a light tube inserted, and in dotted lines showing the front jaw in closed position with the light tube gripped by both jaws; and

Figure 5 is a detail view of the supporting brackets.

Referring more particularly to the drawings 1 denotes my improved tool comprising an elongated hollow support or handle 2, a two part clamp 3 mounted upon one end of the handle, and an actuating member or rod 4, extending loosely through the hollow handle and operatively connected to one member of the clamp 3, for a purpose hereinafter described.

The gripping or clamping member 3 is composed of two elongated horizontally disposed jaws 5 and 6, arcuate in cross section and having their side edges hingedly connected together adjacent the opposite ends thereof, for relative movement with respect to each other, by means of hinge members 7 on opposite ends of the jaw 5, cooperating with members 7' on opposite ends of the jaw 6, for the reception of pintles 9 and 9'. The jaws 5 and 6 are curved to snugly seat and grip a conventional light tube 8. Coil springs 10 and 10', coiled upon the pintles 9 and 9', between the hinge members 7—7', of each pair, normally maintain the jaws 5 and 6 in closed or gripping position. They can only be opened against the tension of the coil springs.

A bracket 11 suitably secured to the upper end of the hollow handle 2, is formed with oppositely disposed upstanding arms 12 which are pivotally secured, at their upper ends, to a pair of arms or flanges 13, in turn integrally formed with or suitably secured to and depending from the jaw 5. Threaded pivot pins 14 and nuts 15 are employed to pivotally connect the two pairs of arms 12 and 13 so that the jaws 5 and 6, and the fluorescent tube 8 clamped therebetween, may be bodily rocked or tilted about the pins 14, as an axis, by means of the actuating rod 4, in a manner presently described. The rod extends upwardly through the bore of hollow handle 2 and the registering aperture 16, in the bracket 11, and terminates in a laterally bent or offset portion 17 which loosely engages an eye 18 formed in a lug 19 fixed to and depending from the jaw 6. Thus, when the offset portion 17 is pulled downwardly, by means of a hand grip 21, secured to the lower end of the rod, the jaws 5 and 6 will be bodily rocked on the pivot pins 14, to the forwardly projecting full line position shown in Figure 3. During this operation the resistance of coil springs 10—10' is sufficient to prevent a continuation of the normal downward pull from opening jaw 6. If the rod 4 is now rotated, with sufficient turning pressure, in an anti-clockwise direction the offset end 17 thereof will exert sufficient downward and rearward pressure against the lug 19 to rock the jaw 6 forwardly on the hinges 7—7', against the tension of springs 10—10', and into open position for receiving or releasing a tube 8, as shown in Fig. 4 full line position. When the turning pressure exerted by the operator against the hand grip 21 is relaxed the springs 10—10' automatically return the jaw 5 to closed position. If the rod is now elevated the jaws and the light tube clamped therein will be bodily rocked on the threaded pivot pins 14 in a clockwise direction, back to Figure 3 dotted line position, or in proper

position for removing or placing a tube in a pair of wall or ceiling brackets 23.

Conventional fluorescent light tubes, such as the one shown in the drawings, are provided with a pair of pins 22 at each end which are adapted to seat in the substantially triangular slots 22' formed in the brackets 23. When the jaws are in Figure 3 dotted line position, the pins are aligned more or less vertically and will pass up through one of the substantially vertical portions 24 of these slots and thence forwardly into the substantially horizontal portions 25 thereof where they become automatically locked against displacement. This is accomplished by elevating the tool and the tube carried thereby into position in which the pins will enter the slots. And after the uppermost pins of each pair reach the horizontally disposed portions 25 of the slots 22', the tube is tilted or rotated slightly to Figure 3 full line position to place both the pins of each pair in the portion 25, this rotary movement being effected by pulling the actuating rod downwardly through the hollow handle 2, a sufficient distance to rock the tube slightly on the pivot pins 14, and to locked position. To remove or release the tool it is merely necessary to now turn the rod 4 slightly in an anti-clockwise direction in the manner previously described, thus rocking the jaw 6 downwardly and forwardly to open position.

The rocking movement of the clamping jaws, caused by forcing the rod 4 in either an upward or downward direction, is limited by substantially V-shaped stop members 27 integrally formed on or otherwise suitably secured to the upstanding arms 12. The arms 28 of these stop members are engaged, in an obvious manner, by the side edges of the arms 13, depending from the clamping jaw 5, thus effectively supporting the jaws at the end of their rocking movements.

Having thus described my invention, what I claim is:

1. A tool for handling fluorescent light tubes comprising a handle, a pair of elongated clamping jaws arcuate in cross section, hinges connecting the jaws together, spring means for normally maintaining the jaws in closed position, a handle member, means for pivotally connecting the jaws to the handle, an actuating rod associated with said handle and connected to one of said jaws whereby when said rod is elevated or lowered with respect to said handle, said jaws will be simultaneously rocked on their pivots and when said rod is rotated said last mentioned jaw will be rocked on said hinges to open position, with respect to the other of said jaws, against the tension of said spring means.

2. A tool for handling light tubes comprising a handle, a pair of elongated clamping jaws arcuate in cross section, hinges connecting the jaws together, spring means for normally maintaining the jaws in closed position, a hollow handle member, means for pivotally connecting the jaws to the handle, a member connected to and depending from one of said jaws, an actuating rod loosely mounted in said handle and having means cooperating with said depending member whereby when said rod is elevated or lowered with respect to said handle, said jaws will be simultaneously rocked on their pivots and when said rod is rotated said last mentioned jaw will be moved on said hinges, with respect to the other of said jaws, against the tension of said spring means, and means for limiting the extent of the simultaneous rocking movement of said jaws.

3. A tool for handling light tubes comprising a hollow handle, a bracket supported on one end of said handle and having a pair of spaced upstanding arms, a pair of elongated clamping jaws arcuate in cross section hingedly connected together at adjacent longitudinal edges, one of said jaws having a pair of spaced depending arms pivotally connected to said upstanding arms, the other of said jaws having a lug member fixed thereto, means for normally maintaining said jaws in closed position, an actuating rod loosely connected to said lug member whereby when said rod is moved longitudinally with respect to said handle said jaws will be rocked about the pivot of said arms, and means on said rod cooperating with said lug member for relatively moving said jaws on their hinges when said rod is rotated with respect to the handle.

4. A tool for handling fluorescent light tubes comprising a handle, a pair of elongated clamping jaws arcuate in cross section, hinges connecting the jaws together, spring means for normally maintaining the jaws in closed position, a hollow handle member, means for pivotally connecting the jaws to the handle, an apertured member secured to and depending from one of said jaws, an actuating rod loosely mounted in said handle and having an offset loosely received in the aperture of said depending member, whereby when said rod is elevated or lowered with respect to said handle, said jaws will be simultaneously rocked on their pivots and when said rod is rotated said last mentioned jaw will be rocked on said hinges to open position, with respect to the other of said jaws, against the tension of said spring means.

5. A tool for handling fluorescent light tubes comprising a handle, a pair of clamping jaws substantially arcuate in cross section, hinges connecting the jaws together, spring means for normally maintaining the jaws in closed position, a handle member, means for pivotally connecting the jaws to the handle, a single means associated with said handle and connected to one of said jaws whereby when said single means is elevated or lowered with respect to said handle, said jaws will be simultaneously rocked on their pivots and when said single means is rotated said last mentioned jaw will be rocked on said hinges to open position, with respect to the other of said jaws, against the tension of said spring means.

CHARLES L. BEARD.