Feb. 5, 1952 E. M. CAFERRO 2,584,545

MANIPULATOR FOR STARTER-PLUGS

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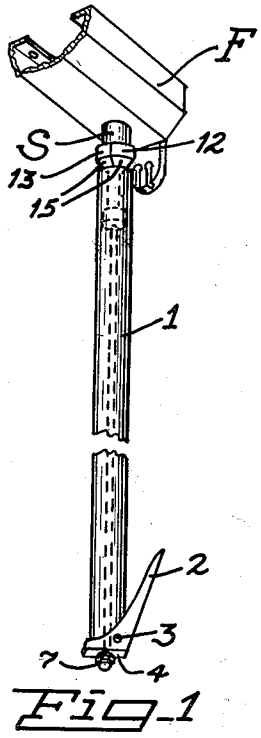


Fig. 1

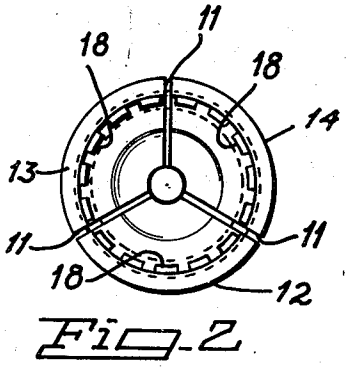


Fig. 2

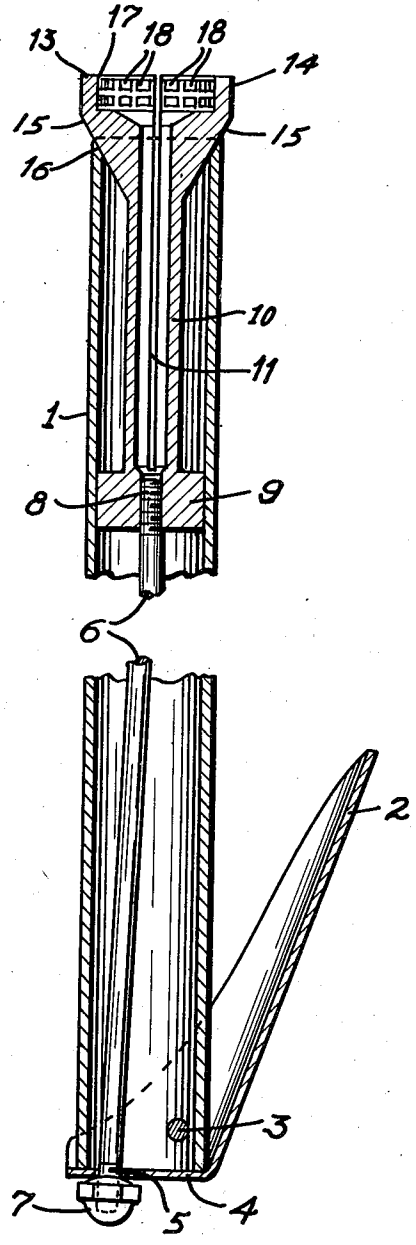


Fig. 3

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MANIPULATOR FOR STARTER PLUGS

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1 Claim. (Cl. 294—100)

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The present invention relates to the general class of portable handling appliances, and more specifically to an improved manipulator for starter-plugs employed in the equipment of fluorescent lighting fixtures of the ceiling or overhead type. The primary purpose of the invention is the provision of a light-weight and easily manipulated hand tool especially designed for use in affixing, removing, and replacing the starter plugs of the fixtures; and by means of a resiliently opened and positively closed grasper or holder, the starter plug may quickly and rigidly be grasped, then manipulated for attachment, or for detachment, and finally the holder or grasper may be released from the starter plug.

The novel device of my invention includes a minimum number of parts that may with facility be manufactured at low cost of production and the parts may be assembled with convenience to insure a durable and efficient hand tool that may be manipulated with ease and a minimum expenditure of time and labor. The invention consists in certain novel features of construction and combinations and arrangements of parts as will hereinafter be described and more particularly set forth in the appended claim.

In the accompanying drawings I have illustrated a complete example of a physical embodiment of my invention in which the parts are combined and arranged in accord with one mode I have devised for the practical application of the principles of my invention. It will however be understood that changes and alterations are contemplated and may be made in these exemplifying drawings and mechanical structures, within the scope of my claims, without departing from the principles of the invention.

Figure 1 is a perspective view of the manipulator, partly broken away for convenience of illustration, in position for use in attaching a starter plug to, or for detaching it from the lighting fixture.

Figure 2 is an enlarged top plan view of the manipulator; and Figure 3 is a broken longitudinal sectional view of the appliance.

In order that the general arrangement and utility of the manipulator may readily be understood, in Fig. 1 a portion of a fixture F for fluorescent lighting is indicated with its starter-plug S in the grasp of the manipulator, which includes a light-weight tubular bar or pole 1 of suitable length and appropriate material. The lower open end of the bar or pole is equipped with an exterior operating lever or handle 2, preferably of channel shape in cross section, and pivoted at 3.

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The lever is fashioned with a flat round arm 4, and this angular arm is flanged to fit around and close against the open end of the tubular pole or bar.

Near the end of the lever arm a hole 5 is provided to accommodate the lower threaded end of an operating rod 6, that is confined within the tubular pole with its projecting end equipped with an exterior fastening nut 7 bearing against the bottom face of the lever arm.

The upper end 8 of the operating rod is threaded in the central bore of a solid cylindrical slide block or head of a split resilient grasper or holder for the starter plug, which grasper includes a tubular stem 10 that is slitted or slotted longitudinally, as at 11, and the three segments of the resilient stem terminate in three jaws 12, 13, and 14, each having an exterior cam face 15.

The integral grasper including the slide head, tubular stem, and the three radially arranged jaws, are reciprocable in the upper open end of the tubular pole or bar, and the open end of the pole is provided with an annular beveled edge 16 for coaction with the cam faces of the jaws. The upper ends of the jaws are depressed to form an annular socket as 17, and the inner walls of the jaws forming the sockets are fashioned with two annular rows of lugs or raised gripping members or pads 18 for frictional engagement with the exterior surface of the starter-plug.

By means of the exterior threaded end of the operating rod, and the nut 7 which fastens the rod to the arm of the operating lever, and the threaded end 8 which fastens the operating rod to the slide head, the lever-action may be controlled and the reciprocable movement of the grasper within the tubular pole may be correctly adjusted for manipulating the starter-plug.

For affixing the jaws to the starter-plug, the lever 2 is first swung outwardly from the tubular pole to elevate the grasper, and due to the resiliency of the split stem, the jaws are spread outwardly as the jaws emerge from the upper end of the tubular pole. Then the lever is pressed inwardly toward the tubular pole, and as the operating rod pulls or draws the grasper within the upper end of the tubular pole, the jaws are contracted and made to grasp the starter-plug.

If the grasped starter-plug is to be detached from its fixture, the holding device is bodily turned or twisted by hand to release the plug; then by releasing the jaws with an outward movement or swing of the operating lever, the plug may be removed from its socket. If the detached plug is to be replaced, a fresh plug is inserted in

the open jaws, the lever is pressed inwardly to clamp the jaws on the plug, the new plug or replacement is attached to the fixture, and then the lever is swung outwardly to release the jaws from the fixed plug.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

In a starter-plug manipulator, the combination with a tubular pole having an upper bevel-end forming a cam-seat, an operating lever pivoted on the exterior of the pole, and an arm of the lever closing the lower end of the pole, a split tubular grasper having a solid inner head and slidable in the tubular pole, said tubular grasper terminating in radially arranged resil-

iently opened clamp jaws, said jaws having exterior cam faces for coaction with the cam seat in closing the jaws, and an operating rod within the tubular pole connecting the slide head with said lever arm.

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