

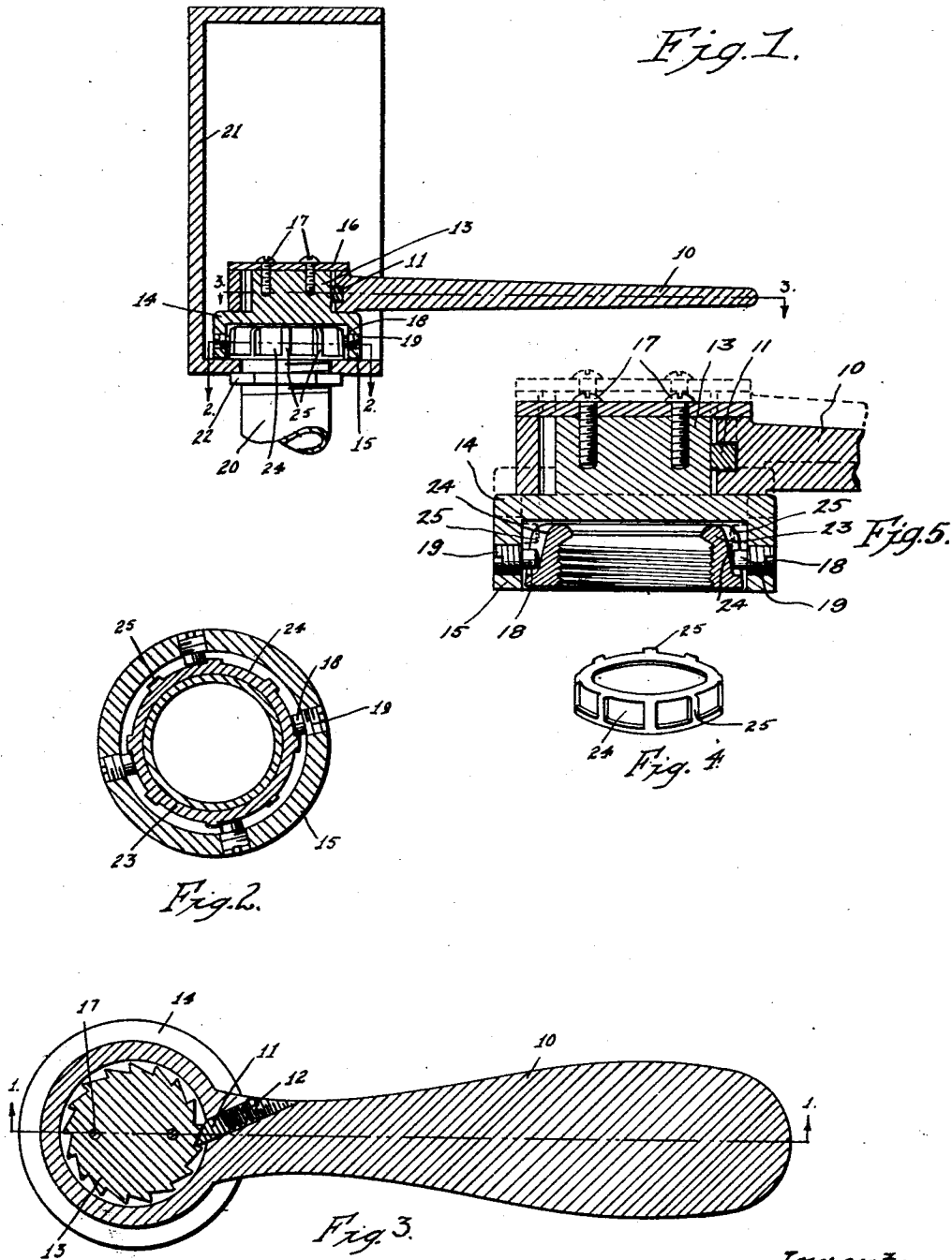
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C. E. MORSE

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WRENCH

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Inventor.
Calvin E. Morse.
by Orwig & Hague Attorneys.

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CALVIN E. MORSE, OF DES MOINES, IOWA

WRENCH

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In connection with the installation of electrical wiring in buildings, it is now customary to embed in the walls and ceiling a metal conduit for the wires, and at intervals throughout the length of the metal conduits there are metal switch boxes, which switch boxes are enclosed on all sides except one through which access is had to the switch, and which open surface is usually placed flush with the surface of the wall or ceiling. The metal conduits lead through one end of the switch box and are connected with the switch box by two nuts screwed on the metal conduit and engage opposite sides of the opening in the switch box through which the conduits are projected. The nuts that are usually employed on the interior of the box are usually formed of a circular rim with peripheral ribs thereon, which may be conveniently grasped by an operator's hand or by a pair of pliers. However, the space within the fuse box in which these nuts must be placed is very limited and it is extremely difficult to place the nut in position on the metal conduit, and it is very difficult to screw the nut on tightly with a pair of pliers.

The object of my invention is to provide a wrench of simple, durable and inexpensive construction into which the nut may be placed and temporarily held, and then the wrench with the nut held in place on it may be readily and easily inserted into the narrow space within the switch box and the nut may be accurately held to proper position relative to the screw threaded end of the conduit and readily and quickly turned to position for screwing the nut tightly in place.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a sectional view of a portion of a fuse box and my improved wrench in position within the fuse box, and in engagement with a nut and in position for turning the nut. In this view the metal conduit and the nuts thereon are shown in side elevation.

Figure 2 shows a sectional view on the line 2—2 of Figure 1.

Figure 3 shows a sectional view on the line 3—3 of Figure 1.

Figure 4 shows a perspective view of a nut of the kind ordinarily employed in connection with metal conduits in buildings; and

Figure 5 shows a sectional view of the nut and a sectional view of the adjacent portion of my improved wrench applied thereto. The dotted lines show the wrench moved upwardly relative to the nut to illustrate the position of the lugs when out of contact with the body of the nut.

Referring to the accompanying drawings, my improved wrench is seen to comprise a handle member 10 having a central opening through one end. Projected into this central opening is a spring actuated ratchet device 11 normally forced inwardly by a spring 12. Within this opening in the handle there is mounted a cylindrical ratchet toothed body portion 13, the ratchet teeth thereon being designed to co-operate with the ratchet device 11. At one end of the body portion 13 there is a circular flange 14 designed to engage, and project outwardly beyond, one face of the handle member surrounding the opening therein, and at the outer end of this flange there is formed a thin cylindrical rim 15 open at its outer end. On the side of the handle member opposite from the flange 14 is a circular plate 16 detachably held in position on the body portion 13 by the screws 17, and whereby the handle is rotatively supported in position on the body portion 13, and between the flange 14 and the plate 16.

Mounted in the rim 15 is a series of jaws 18 equally spaced apart and preferably adjustably connected with the rim 15 by having their outer portions screw threaded at 19 to enter screw threaded openings in the rim 15. The inner ends of these teeth 18 are shaped and designed to engage certain portions of a nut and the sides of the teeth 18 are shaped and designed to engage ribs on a nut as will hereinafter appear.

The usual metal conduit employed in electrical wiring in buildings comprises a metal conduit 20 and a number of switch boxes.

These switch boxes are made of sheet metal and are indicated generally by the numeral 21, and are formed with round openings through their ends through which the conduits 20 may be loosely extended, and the boxes are enclosed on all sides except the side adjacent to the surface of the ceiling or wall on which they are placed. In order to secure the metal conduit to the switch box there is provided a nut 22 of ordinary form, preferably having a hexagonal outer surface, and which nut is designed to lie against the outer face of the switch box. It is, however, not convenient or practicable to use a nut of this character on the interior of the box for the reason that there is not room enough in which to operate an ordinary wrench, and hence there is now usually employed for this purpose a nut of the character illustrated in Figures 4 and 5, which consists of a circular rib body portion 23 screw threaded on its interior and having its outer surface slightly tapered at 24 toward that end of the nut which is placed nearest the center of the switch box, and on the periphery of the nut there is formed a series of lugs 25 equally spaced apart and raised above the surface 24, so that the nut may be conveniently grasped and turned by hand, and may be also readily turned with a pair of pliers which is the instrument usually employed by electricians for this work.

In practical use with my improvement, and when it is desired to apply one of the nuts to the metal conduit on the interior of a switch box, the operator places the nut in the wrench far enough so that the inner ends of the teeth 18 will engage the tapered surfaces 24 between the ribs 25 in such a manner that the nut is firmly held in this position. Then the wrench with the nut accurately centered in it is placed in the fuse box with the threads of the nut adjacent to the threaded end of the metal conduit. In this manner the nut threads can be readily and easily started upon the conduit. As soon as the threads are in operative engagement, then the operator simply reciprocates the handle member, and by means of the ratchet device firmly screws the nut on the metal conduit. During this movement the teeth 18 engage the ribs 25 so that the wrench will not slip relative to the nut. In my device, the teeth 18 are so positioned relative to each other that when the handle is moved in one direction, one edge of each tooth will be in positive engagement with one of the ribs 25 on the nut, so that the pressure of these teeth upon the ribs is equally distributed. During the time the nut is being screwed upon the metal conduit, the nut will move outwardly relative to the rim 15, and the teeth 18 are at all times free to slide longitudinally against the sides of the ribs 25 without becoming disengaged from

them. Hence, when the nut has been screwed tightly into position, the wrench can be easily removed.

I claim as my invention:

1. A wrench for use in connection with nuts of the class that have substantially cylindrical tapered outer surfaces and outwardly extended longitudinal ribs on their outer surfaces, said wrench comprising a body, means for rotating the body, a substantially cylindrical flange projected from one end of the body, the body and flange being shaped to receive a nut with the flange completely enclosing it but spaced apart from it, and with the nut resting against the adjacent end of the body, a series of teeth adjustably mounted in the flange projected inwardly toward the center of the flange and spaced apart from the body said teeth being adapted to engage and frictionally hold a nut inserted within the flange and against the end of the body and also to engage the ribs on the nut, said parts being so shaped and proportioned that as the wrench is being turned to screw the nut against an article to be clamped thereby the edge of the flange will engage said article and force the wrench away from the nut, to thereby loosen the inner ends of said teeth from frictional engagement with the tapered sides of the nut, and at the same time permitting the sides of the teeth to continue in engagement with the ribs on the nut.

2. A wrench for use in connection with nuts of the class that have substantially cylindrical outer surfaces and outwardly extended longitudinal ribs on their outer surfaces, said wrench comprising a body, means for rotating the body, a substantially cylindrical flange projected from one end of the body, the body and flange being shaped to receive a nut with the flange completely enclosing it but spaced apart from it and with the nut resting against the adjacent end of the body, a series of teeth adjustably mounted in the flange projected inwardly toward the center of the flange and spaced apart from the body, said teeth being adapted to engage and frictionally hold a nut inserted within the flange and against the end of the body and also to engage the ribs on the nut, said parts being so shaped and proportioned that as the wrench is being turned to screw the nut against an article to be clamped thereby, the edge of the flange will engage said article and force the wrench away from the nut, and at the same time permitting the sides of the teeth to continue in engagement with the ribs on the nut.

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