Sept. 16, 1952 J. D. SHAKER 2,610,659

SCREW DRIVER FOR OPERATING ON POLE SHOES

Filed March 5, 1948

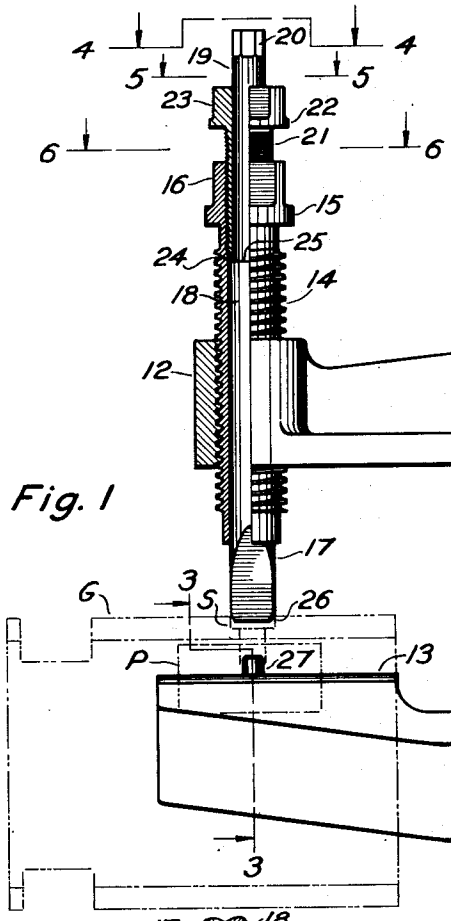


Fig. 1

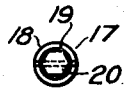


Fig. 4

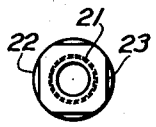


Fig. 5

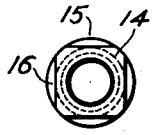


Fig. 6

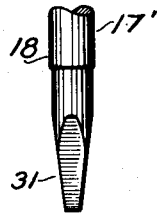


Fig. 7

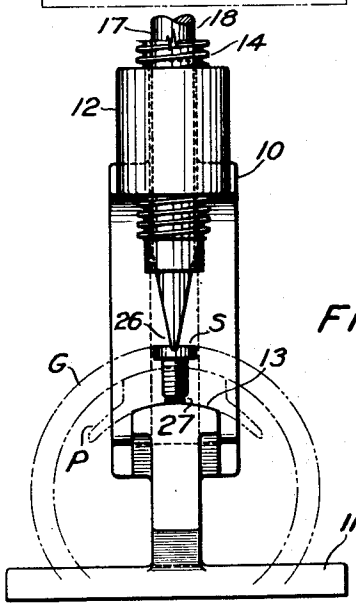


Fig. 2

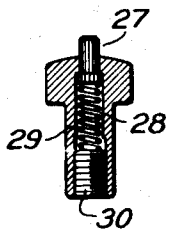


Fig. 3

Inventor

JOHN D. SHAKER

By

Oswald H. Milmore

Attorney

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SCREW DRIVER FOR OPERATING ON POLE SHOES

John D. Shaker, Oakland, Calif.

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2 Claims. (Cl. 144—32)

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This invention relates to equipment adapted to the assembly of small motors and generators, such as are used in the automotive industry, and more particularly to devices known as pole shoe tools.

An object of the invention is the provision of a device as described, having aligning means whereby the pole shoe screw is brought into positive alignment with the screw driving member.

A further object of the invention is the provision of a pole shoe tool, having a screw driving member which can be manipulated from a position exterior of the frame of the device.

A still further object of the invention is the provision of a device as described, wherein the screw driving member is fitted with relatively coarse and relatively fine adjusting means.

Tools of the type of the invention, in current use, are fitted with cradles in which a generator shell is laid, and the pole shoe screw hole is aligned with the driving member by rotating and longitudinally adjusting the shell as necessary. The turning bit is also operated by a lever which swings within the throat of the tool frame, restricting free movement of the operator, and limiting the length of the lever that can be used. Still other types depend upon a hand operated lever to hold the screw driving member in engagement with the screw to be turned. This leaves the operator with only one hand free to do the actual work.

How the present invention overcomes the disadvantages of the tools presently in use, will become apparent during the course of the following description, taken in connection with the accompanying drawing, forming a part hereof, and in which:

Figure 1 is a side elevation, partly in section, of a preferred embodiment of the device.

Figure 2 is a front view of the device.

Figure 3 is a section through the screw aligning dowel taken on line 3—3 of Figure 1.

Figure 4 is a plan view of the screw driver as viewed from line 4—4 of Figure 1.

Figure 5 is a plan view of the fine adjustment screw as seen from line 5—5 of Figure 1.

Figure 6 is a plan view of the coarse adjustment screw as seen from line 6—6 of Figure 1.

Figure 7 is a fragmentary elevation of a different type of screwdriver.

Referring to the drawing in detail, the frame of the device comprises a substantially U-shaped casting 10, provided with a base 11, and being open at its front ends. The arms of the casting 10 extend forwardly in a substantially horizontal plane, the upper one terminating in a vertically

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disposed boss 12 having a tapped hole bored through. The lower arm of the casting 10 is formed with an anvil 13 which extends in a horizontal plane forwardly and rearwardly of the axis of the boss 12. Transversely, the upper surface of the anvil 13 is of convex arcuate formation, with its center of curvature on the axis of the boss 12 and symmetrical thereto. Holes 11a permit the base to be bolted to a work bench.

Adapted to engage the tapped hole of the boss 12 is a coarse adjustment screw 14, formed at its upper end with a collar 15 and a wrench engaging square section 16. The screw 14 is bored concentrically for its entire length, and forms a constraining element for the screwdriver 17 which comprises a rod having a larger lower portion 18, and an upper smaller concentric portion 19, formed at its top end with a wrench engaging hexagon portion 20. Portion 18 of the screwdriver 17 is adapted to slide and turn within the bore of the screw 14.

The bore of the screw 14 is threaded for a portion of its length, at its upper end, and engages a hollow, relatively shorter and finer threaded screw 21 having a head, comprising a collar 22, and a wrench engaging square section 23 similar to 15 and 16 respectively of screw 14. The screw 21 is adapted to turn on the portion 19 of the screwdriver 17, and has a thrust collar 24 which engages the shoulder 25 formed by the step from the greater to the less diameter of the screwdriver.

It will be obvious that the screwdriver 17 can move downwardly, unhindered, until the point 26 is contacted, but that the movement upward is governed by the position of the collar 24 of the screw 21. It will also be apparent that the location of the collar 24 can be changed by either rotating screw 14, screw 21, or both. The screw 14, which has a thread of the acme type, is of relatively coarse pitch, while screw 21 has a fine thread. This provides a double adjustment, whereby the initial position of the collar 24 can be quickly established, and then further adjustment is made by utilizing the fine threaded screw.

Protruding upwardly from the anvil 13, in axial alignment with the screwdriver 17, is a dowel 27 which is installed in a counterbored hole 28 through the lower arm of the casting 10. A compression spring 29, held in place by a safety headed set screw 30 urges the dowel 27 upwardly, into a normal position as shown on Figure 3.

By reference to Figures 1 and 2, it will be noted that a generator shell G, with pole shoe P, has been indicated in phantom, while the pole shoe screw S is shown in solid lines on Figure 2. The

shoe is simply aligned by merely placing it over the dowel 27. The screw S is started and the screwdriver 17 is lowered into engagement therewith. Adjustment is made by means of the screws 14 and 21, and by means of this adjustment, the point 26 of the screwdriver 17 is kept in contact with the screw S as it is tightened in place. Slipping of the screwdriver is thus obviated.

As the screw S is forced downwardly, the dowel 27 cannot interfere with its progress, but is merely forced down against the action of the spring 29.

Figure 7 shows a screwdriver 17' having a modified point 31 of tapered square section.

Torque is applied to hexagon section of the screwdriver 17 by means of a wrench, which in this position allows free and unimpeded movements of the operator.

While I have disclosed a preferred embodiment of my device, it should be understood that modification may be made within the spirit and scope of the appended claims.

I claim:

1. A screw driving device for servicing motors and generators of the type involving a substantially cylindrical casing and pole shoes screwed to the inner wall thereof by externally applied screws; comprising a frame of substantially U-shape having substantially parallel arms and including a base for supporting said arms in substantially horizontal positions to provide an upper arm and a lower arm, said lower arm including an anvil and being of sufficiently small cross section and of sufficient length to permit of a casing and pole shoes being slipped thereover to be supported thereon with said anvil in engagement with a pole shoe; means carried by said upper arm for holding a screwdriver in engagement with such pole shoe affixing screw while said pole shoe is in engagement with said anvil, said means comprising a vertically positioned adjusting screw having a longitudinal passage therethrough to slidably receive a screwdriver having an upper portion of reduced section to form a shoulder, a screwdriver in said passage, a second adjusting screw threadedly receivable into the upper end of said first adjusting screw to engage said shoulder; and means for locating such pole shoe on said anvil with its screw opening in line with such screwdriver.

2. A screw driving device for servicing motors and generators of the type involving a substantially cylindrical casing and pole shoes screwed to the inner wall thereof by externally applied screws; comprising a frame of substantially U-shape having substantially parallel arms and including a base for supporting said arms in substantially horizontal positions to provide an upper arm and a lower arm, said lower arm including an anvil and being of sufficiently small cross section and of sufficient length to permit of a casing and pole shoes being slipped thereover to be supported thereon with said anvil in engagement with a pole shoe; means carried by said upper arm for holding a screwdriver in engagement with such pole shoe affixing screw while said pole shoe is in engagement with said anvil, said means comprising a vertically positioned adjusting screw having a longitudinal passage therethrough to slidably receive a screwdriver having an upper portion of reduced section to form a shoulder, a second adjusting screw threadedly receivable into the upper end of said first adjusting screw to engage said shoulder; a screwdriver in said holding means and means for locating such pole shoe on said anvil with its screw opening in line with such screwdriver, said means involving a spring pressed dowel in said anvil and adapted to fit the screw opening in said pole shoe.

JOHN D. SHAKER.

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