Jan. 11, 1944. A. H. VOLZ 2,339,210

SCREW DRIVER TYPE TOOL

Filed June 27, 1942

FIG. 2

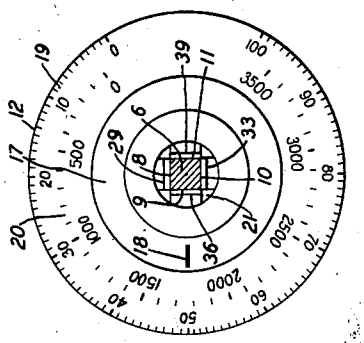


FIG. 4

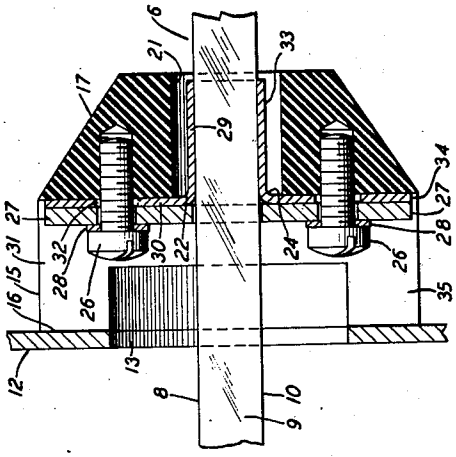


FIG. 3

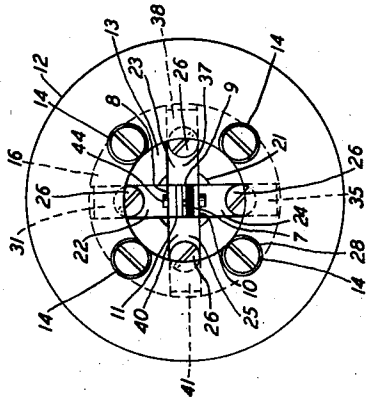
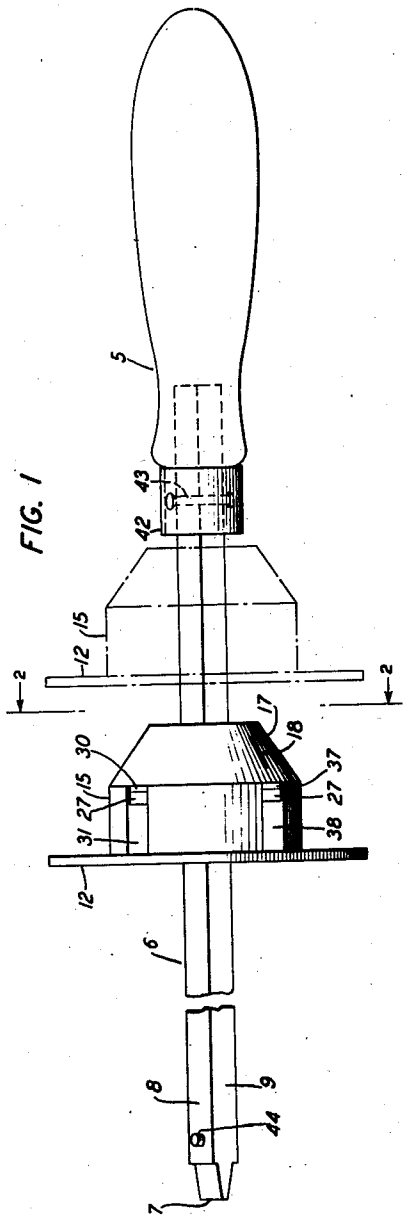


FIG. 1



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SCREW DRIVER TYPE TOOL

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5 Claims. (Cl. 81—3)

This invention relates to a screw-driver type hand tool suitable for use in rotating and determining the extent of rotation of a rotatable shaft.

The object of the invention is to provide improved means for rotating and determining the extent of rotation of a rotatable shaft not equipped with a turning knob or other hand hold.

A feature of the invention resides in the construction and arrangement of a dial and the means supporting the dial on the shank portion of the tool.

In the drawing:

Fig. 1 is a side view of the hand tool with the dial shown in two positions, one of the positions being shown in full line and the other in dot-dash lines;

Fig. 2 is a front face view of the dial and its supporting means taken on the line 2—2 in Fig. 1 and showing the shank in cross section and the tool slightly rotated relative to the showing in Fig. 1;

Fig. 3 is a rear view of the parts shown in Fig. 2 and shows also the blade end of the shank; and

Fig. 4 is an enlarged view partly in section of a portion of the shank of the tool and the dial and the means supporting the dial on the shank.

In some electrical systems involving potentiometers, variable condensers and other devices employing a rotatable shaft, it is found advisable to leave the usual turning knob off the shaft in order that the shaft may not be readily rotated by someone not authorized to change the setting of the device. The shaft in such cases is usually mounted in registry with an aperture in a panel and a kerf is formed in the outer end of the shaft to receive the blade end of a screw-driver. When rotation of the shaft is required a screw-driver type tool is inserted in the kerf in the shaft and the shaft is rotated by means of the tool. The extent of rotation required is sometimes quite critical and it is difficult to determine the extent of rotation if an ordinary screw-driver is used.

It is sometimes found necessary or advisable to replace a potentiometer or variable condenser in a system with another device of the same kind and to have the rotor of the new device rotated to the same extent as in the device replaced. There are also cases in which in making a duplicate of a system found satisfactory, it is of considerable advantage to be able to readily determine the setting of a rotor shaft in a potentiometer or variable condenser employed in the former set.

The present invention provides a screw-driver type tool suitable for use in rotating the rotor shaft of devices of the types above mentioned and for determining the extent of rotation of the rotor shaft.

The tool as shown in Fig. 1 comprises a handle 5 and a shank 6 supported in and extending from the handle 5, the shank 6 being formed at one end to provide a blade 7 suitable for inserting in a kerf provided in the end of a rotor shaft, not shown. The shank 6 is shown as being square in cross section but may be of different form except that there should be at least one flat surface extending longitudinally along the shank. In the form shown there are four flat surfaces 8, 9, 10 and 11 on the shank 6.

A dial 12 with a large central aperture 13 formed therein is provided on the tool to facilitate determination of the extent of rotation of the tool or a rotatable shaft to which the tool is applied. The dial 12 is fastened by means of screws 14 to the rear surface of a block 15 which is arranged to slide along the shank 6 of the tool. The block 15 is cup-shaped at the back and the dial 12 is secured to the rim portion 16 by means of the screws 14. The front portion 17 of the block 15 is frustoconical in form and a scratch mark 18 is made thereon to indicate how the dial 12 and the block 15 should be set relative to the run of the blade 7. The front face of the dial 12, as shown in Fig. 2, is provided with two annular sets of numbers. The outer set 19 of numbers may be compared with a mark on a panel of an instrument board, not shown, to determine the extent to which a rotor shaft of a potentiometer or other device has been rotated. The inner set 20 of numbers indicates the resistance in ohms of a particular potentiometer at various settings of the rotor shaft of the potentiometer. The dial 12 may be replaced by another dial differently marked but corresponding to another potentiometer, a variable condenser or other device it is desired to measure by means of the tool.

The block 15 is longitudinally bored at 21, as shown in Fig. 4, to receive the shank 6 and is supported on the shank 6 by means of four L-shaped springs 22, 23, 24 and 25 which may be formed of sheet metal or other flat sheet material found suitable for the purpose. Each L-shaped spring has a free leg portion extending into the bore 21 and in frictional engagement with the shank 6 and an apertured leg portion clamped within the block 15 by means of a screw 26, an apertured plate 27 and a washer 28 which may be a lock washer. The cup-shaped portion of the

block 15 is slotted to accommodate the secured leg portion of each L-shaped spring.

It will be seen by looking at Fig. 4 that the leg portion 29 of the L-shaped spring 22 is in flat face-to-face frictional engagement with the flat surface 8 on the shank 6, and that the apertured leg portion 30 of the L-shaped spring 22 is set in a slot 31 in the block 15 and is clamped against the inner surface of the base of the cup-shaped portion of the block 15 by means of the screw 26, the plate 27 and the lock washer 28. Also that the aperture 32 in the leg portion is larger in diameter than the threaded portion of the screw 26 so that the L-shaped spring 22 may be adjusted to such position that the leg portion 29 is in close face-to-face frictional engagement with the flat surface 8 on the shank 6. The L-shaped spring 24 is a duplicate of the L-shaped spring 22 and is adjusted so that one leg portion 33 is in close face-to-face frictional engagement with the flat surface 10 of the shank 6. The apertured leg portion 34 is set in a slot 35 in the block 15. As shown in Figs. 2 and 3 there are two more L-shaped springs 23 and 25 to support the block 15 on the shank 6. The springs 23 and 25 are constructed and supported like the spring 22, the spring 23 having a leg portion 36 in flat face-to-face frictional engagement with the flat surface 9 of the shank 6 and having its apertured leg portion 37 located in a slot 38 in the block 15. The spring 25 has a leg portion 39 in flat face-to-face frictional engagement with the flat surface 11 on the shank 6 and has its apertured leg portion 40 located in the slot 41 formed in the block 15.

It will be seen, therefore, that the block 15 is frictionally supported on the shank 6 by means of the L-shaped springs 22, 23, 24 and 25 and may be moved along the shank 6 to various positions. Also that the leg portions of the L-shaped springs 22, 23, 24 and 25 extending into the bore 21 of the block 15 cooperatively form a hollow square to closely fit and encompass the shank 6 and that when the L-shaped springs 22, 23, 24 and 25 are properly adjusted relative to the shank 6 the block 15 and the dial 12 supported thereon cannot be easily turned relative to the shank 6 and there can be no backlash between the block 15 and the shank 6. If an attempt is made to rotate the block 15 and the dial 12 relative to the shank 6, spring tension will be developed in the L-shaped springs 22, 23, 24 and 25 and this spring tension will bring the springs 22, 23, 24 and 25 into flat face-to-face frictional engagement with the flat surfaces on the shank 6 and make the block 15 and the dial 12 resume normal position when the relative turning movement applied to the parts is released.

The ferrule 42 on the handle 5 is secured by means of a pin 43 to the shank 6 and will limit movement of the block 15 along the shank 6 in one direction. Movement in the opposite direction is limited by a stop comprising a pin 44 provided on the shank 6 near the blade 7.

When the tool is to be applied to a rotatable shaft, having a kerf in the end thereof, the user of the tool may slide the block 15 along the shank 6 to the dot-dash line position shown in Fig. 1 so that he may readily see the blade 7 and the kerf in the end of the shaft to which the tool is being applied. With the tool is required position for rotating the shaft the user of the tool may then slide the block 15 along the shank 6 to bring the dial 12 relatively close to a panel, not shown, but apertured to accommodate the shaft. When the tool is turned to rotate the shaft the extent of rotation may be readily determined by observing the position of marks on the dial 12 relative to a scratch mark on the panel. If the dial 12 is marked in the manner indicated in Fig. 2 to show the resistance in ohms for a particular potentiometer at various rotated positions of the rotor shaft and the tool is applied to that particular type of potentiometer, the setting of the rotor shaft may be readily determined by observance of the position of the marks in the ring 20 relative to a scratch mark on the panel.

I am ware of the fact that it is not new in the art to provide a fixed dial on a screw-driver type tool and I do not broadly claim a tool of that construction. My screw-driver type tool is an improvement over the fixed dial type tool and is more readily usable for the purpose, since the dial is slidably supported on the shank and may be moved to various positions along the shank to enable a person to see the part to which the tool is being applied and to bring the dial relatively close to a panel after the tool is applied to the shaft.

What is claimed is:

1. In a screw-driver type tool comprising a shank to be rotated in rotating a shaft, a dial rotatable with said shank and mounted for movement along said shank, a flat surface formed on and extending along said shank, and means supporting said dial involving a spring mechanically connected to said dial and having a flat portion in flat face-to-face relation with and frictionally engaging said flat surface and said spring operating to frictionally hold said dial against undesired movement lengthwise of said shank and operating to spring-resist turning said dial relative to said shank.

2. In a screw-driver type tool comprising a shank to be rotated in rotating a shaft, a dial rotatable with said shank and mounted for movement along said shank, an apertured block supporting said dial, a flat surface formed on and extending along said shank, a spring of sheet material supported in said block and supporting said block on said shank, and a flat portion on said spring extending in close flat face-to-face engagement with said flat surface and operating to frictionally hold said block against undesired movement along said shank and said spring operating to spring-resist turning said block relative to said shank.

3. In a screw-driver type tool comprising a shank to be rotated in rotating a shaft, a dial rotatable with said shank and arranged for movement along said shank, an apertured block supporting said dial, a plurality of flat surfaces formed on and extending along said shank, and L-shaped springs supported in said block and having flat portions cooperatively forming an opening for said shank and extending in close flat face-to-face frictional engagement with said flat surfaces on said shank and said springs cooperating to slidably hold said block on said shank and spring-resist turning said block relative to said shank.

4. In a screw-driver type tool comprising a shank to be rotated in rotating a shaft, a plurality of flat surfaces formed on and extending along said shank and providing oppositely disposed flat sides on said shank, an apertured block arranged for movement along said shank, a plurality of L-shaped springs formed of sheet material and adjustably mounted in said block and adjustable radially of said shank, leg portions on

said springs arranged to cooperatively form a receptacle for said shank and extending in close flat face-to-face frictional engagement with said flat surfaces, said springs operating to frictionally support said block on said shank and spring-resist turning said block relative to said shank, and an apertured dial mounted on said block.

5. In a screw-driver type tool for rotating a shaft and comprising a shank formed on one end to fit into a kerf provided on an end of said shaft, four flat surfaces formed on and extending along said shank, an apertured block arranged for sliding along said shank, four L-shaped springs of sheet material adjustably supported in said block, means supporting said springs in said block, free leg portions on said springs extending into the aperture in said block, said leg portions being arranged to cooperatively form an opening for said shank and lying in flat face-to-face frictional engagement with said flat surfaces, said springs cooperating to frictionally support said block on said shank and operating to spring-resist turning said block relative to said shank, an apertured dial secured to said block, and stop means on said shank to limit movement of said block along said shank.

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