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CLEANING TOOL

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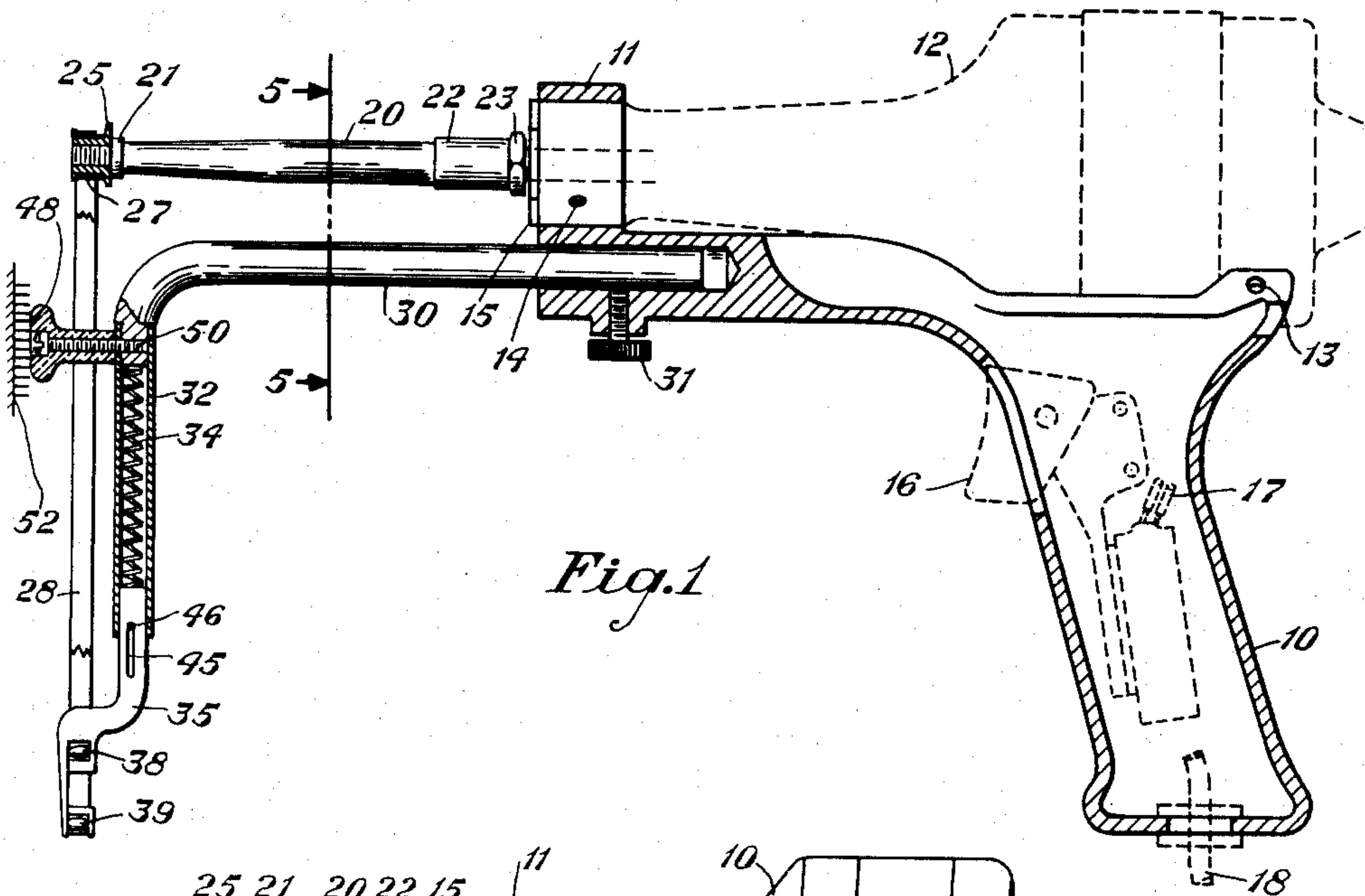


Fig. 1

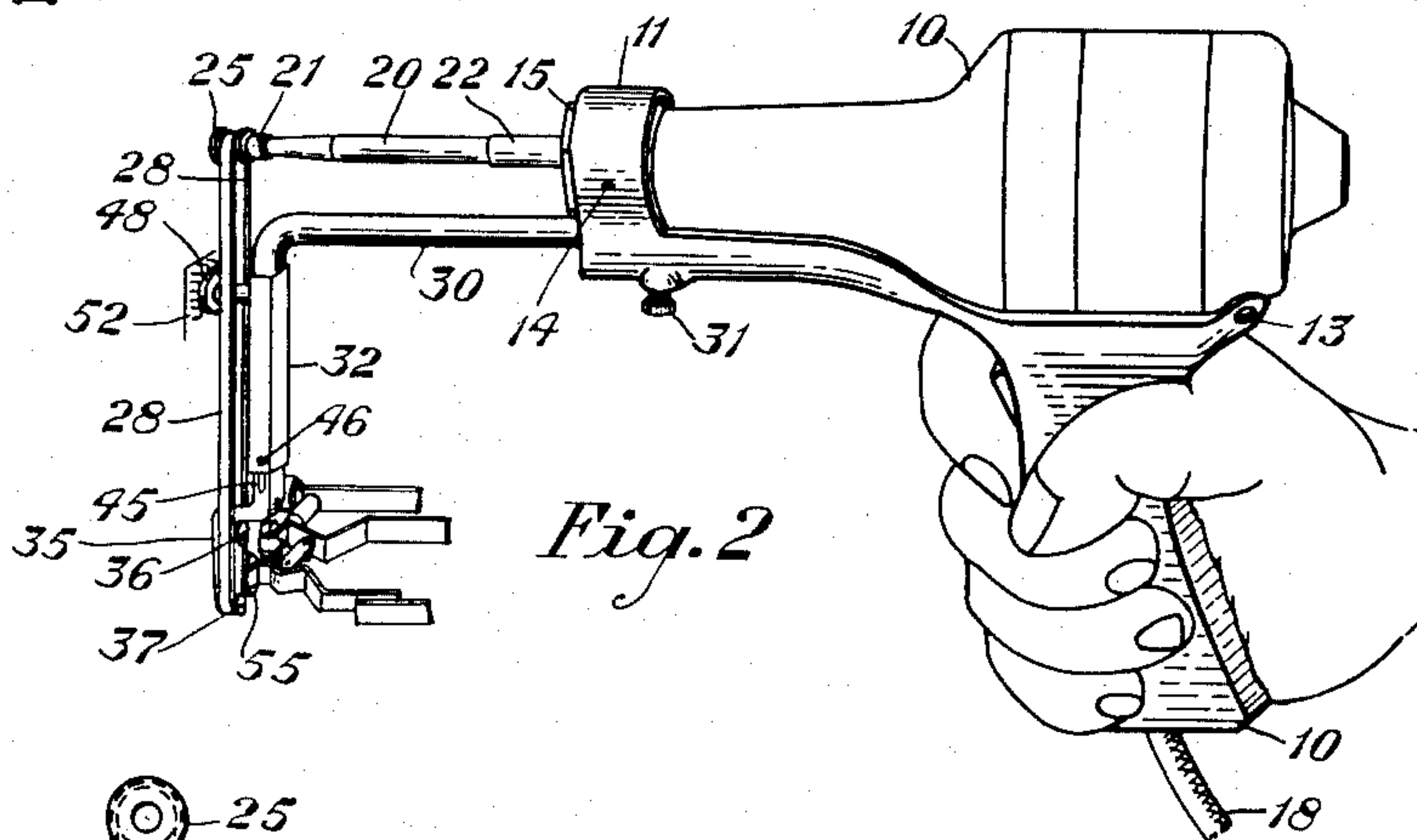


Fig. 2

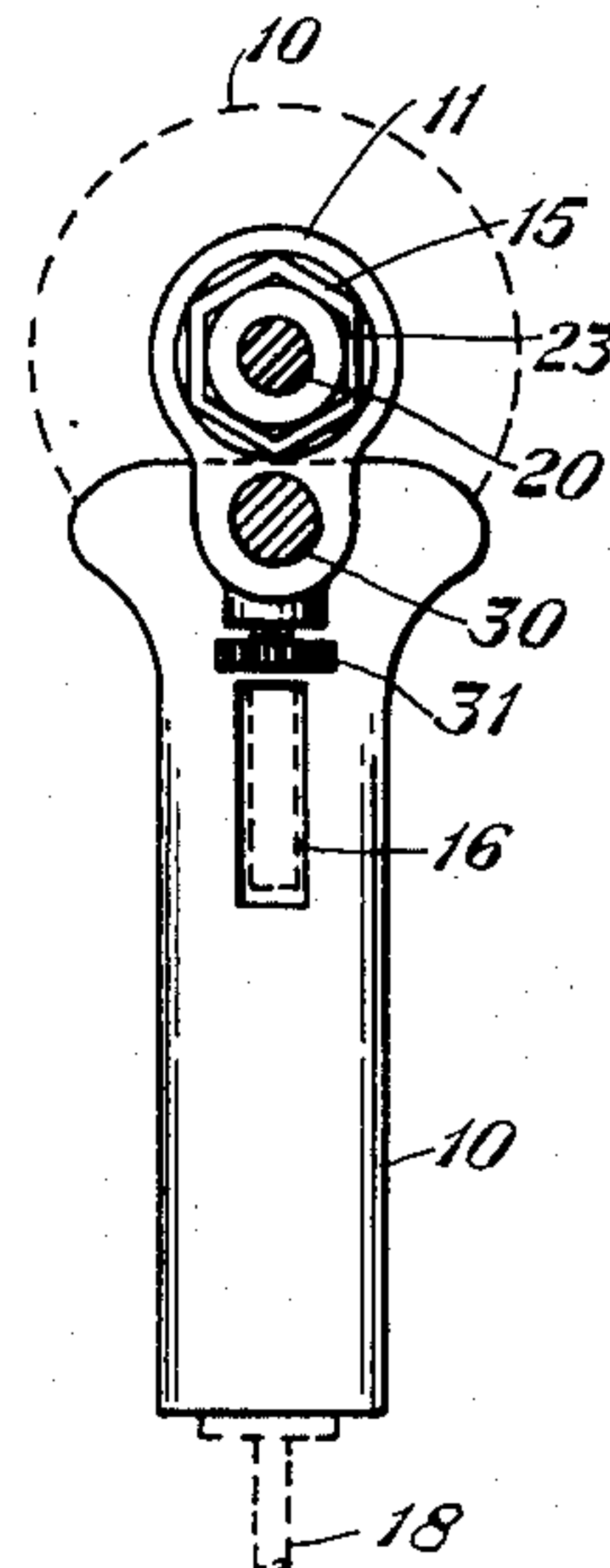


Fig. 5

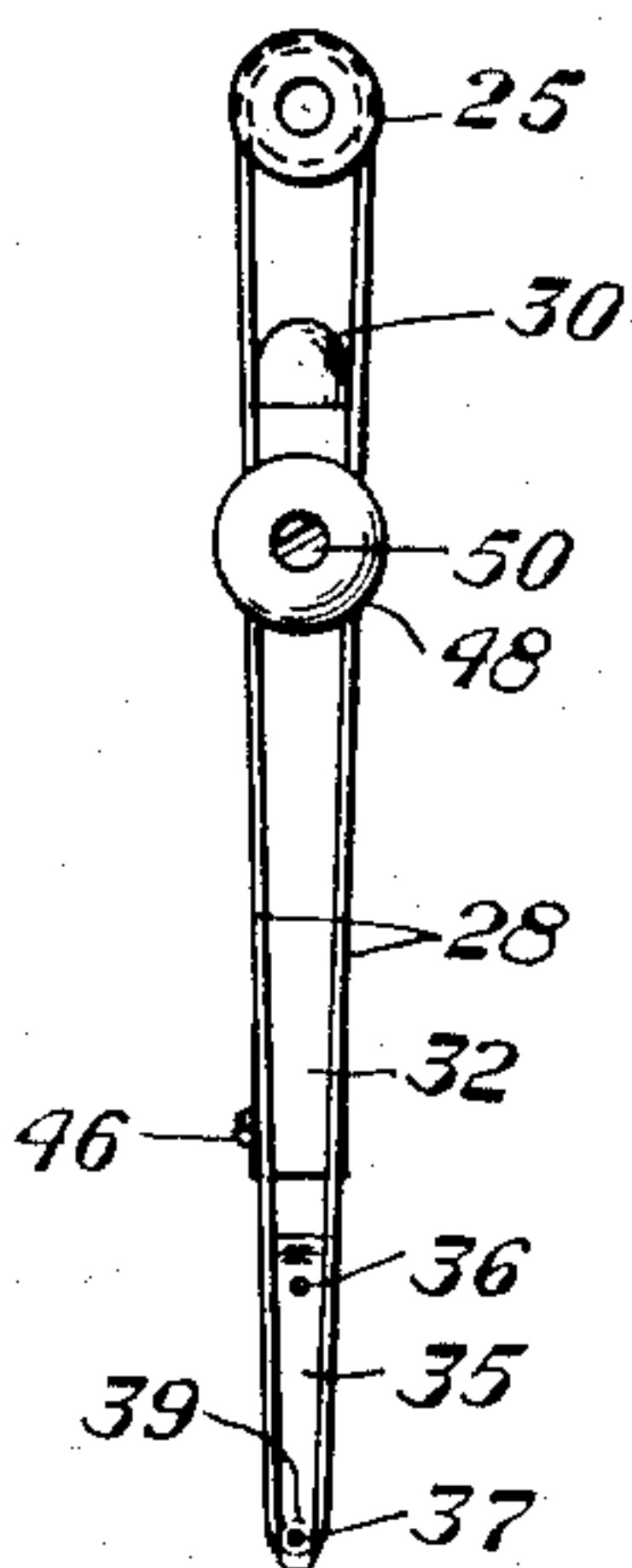


Fig. 3

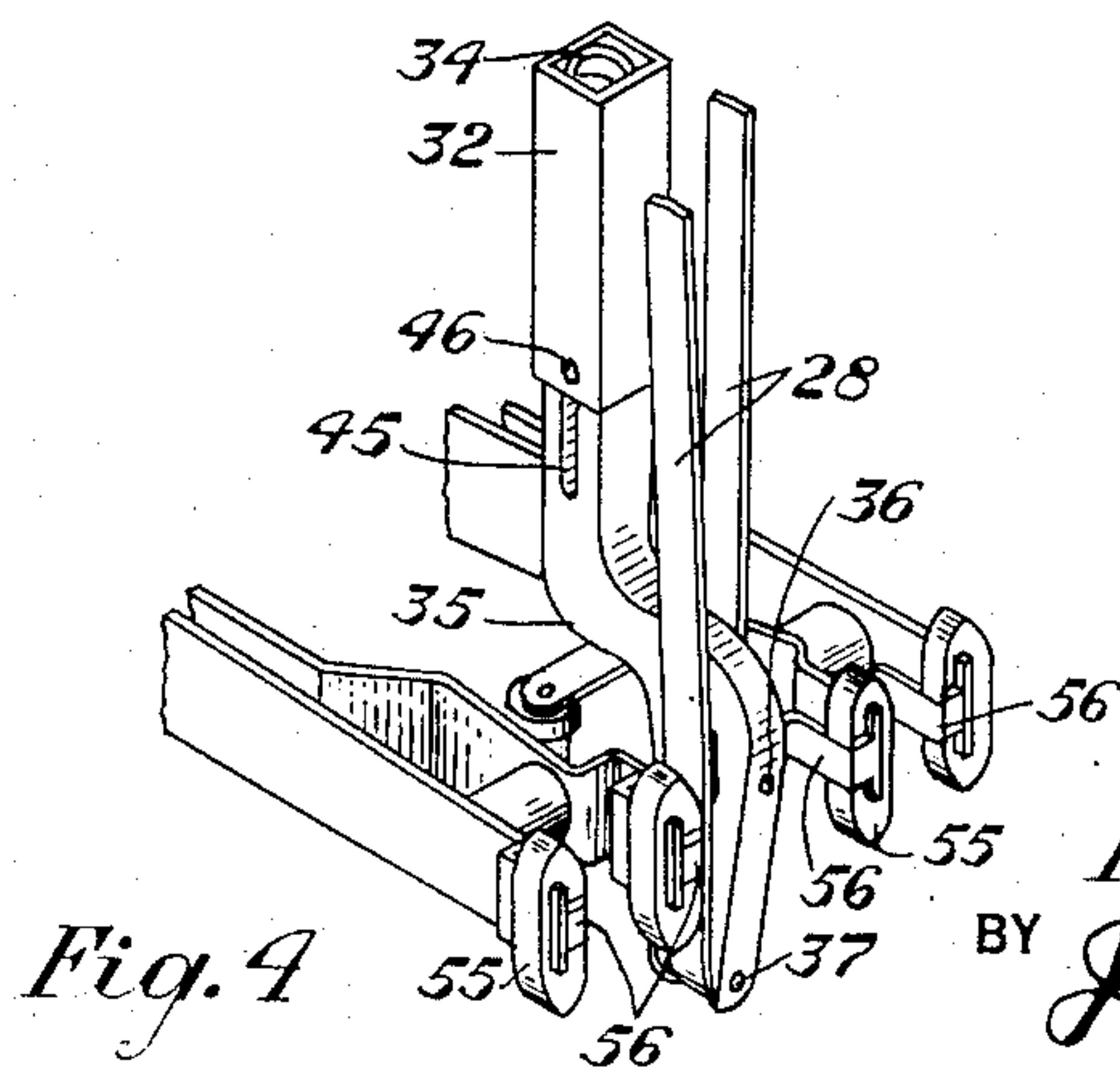


Fig. 4

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CLEANING TOOL

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4 Claims. (Cl. 51-170)

This invention relates to tools, and more particularly to a type of tool for use in abrading the surfaces of electrical contacts or the like.

In telephone offices, particularly those of the panel dial type, there are a great many multiple brush contacts that become "snagged" or otherwise deteriorated. This deterioration at the brush contacts reduces their efficiency and at times interferes with telephone service. It has heretofore been the practice to replace such brush contacts after they have become sufficiently deteriorated.

In accordance with this invention a power driven tool has been devised for the abrasive cleaning of these brush contacts in telephone offices. The tool consists of a small motor set into a pistol grip having a trigger control. A small pulley is mounted on the end of the motor shaft, and this pulley is connected to another pulley (or pulleys) by an endless belt coated with abrasive material, the latter pulley (or pulleys) being mounted on an auxiliary shaft (or shafts). The auxiliary pulleys are held against the belt under pressure, thereby maintaining the belt taut at all times throughout its operation.

The tool of this invention is composed of many small parts, and its narrow belt and auxiliary pulleys are so small as to be readily inserted into the narrow spaces between different brush contacts. When placed into position the trigger may be manipulated to rotate the pulleys and transmit the belt and thereby cause the switch contacts to become abraded and repaired in a very brief period of time.

This invention will be better understood from the more detailed description hereinafter following when read in connection with the accompanying drawing in which Figure 1 represents a longitudinal sectional view of the tool of this invention; Fig. 2 is a side view of the tool of this invention inserted between switch contacts to be abraded; Fig. 3 shows a front view of the pulley and belt portions of the tool; Fig. 4 shows an enlarged view of the auxiliary pulleys in place between switch contacts; and Fig. 5 illustrates a view along the line 5, 5 of Fig. 1. Throughout the drawing like reference characters will be employed to designate like parts.

Referring to the drawing, the reference character 10 designates the butt of the gun-shaped tool of this invention. The butt 10 has a barrel-shaped portion 11 in which may be inserted the end of a removable motor 12, the motor 12 being fastened to the butt at 13 and to the barrel portion at 14. A nut 15 is employed to hold the out-

board bearing of the motor 12 in place. The movable trigger 16 is positioned in the butt 10 under the control of the operator, as shown in Fig. 2. The trigger 16 may be manipulated to close contacts 17 for completing a circuit to the motor 12 from a power source (not shown) connected to the conductors 18.

The main drive shaft extension 20 having shoulders 21 and 22 is mechanically coupled by a screw-threaded member to the armature shaft of the motor 12, and this coupling may be controlled by a nut 23. The end portion of the main drive shaft 20 is screw-threaded and supports a pulley 25 which is similarly screw-threaded, so that upon rotation of the drive shaft 20 the pulley 25 will be similarly rotated. The pulley 25 carries a collar 27 formed of rubber or other like material which acts to reduce slippage between the pulley 25 and a belt 28 during its travel. The collar 27 is crown-shaped in a well-known manner. The belt 28 is coated on its outer surface with any well-known abrasive material as, for example, carborundum, or any compound thereof.

The butt 10 and collar 11 of the gun-shaped tool are supplied with a support 30 which is inserted in an opening as shown, support 30 being retained by a thumb screw member 31. The support 30 carries a housing 32 for a compression spring 34, which is enclosed within the housing 32. The upper end of the spring 34 is immovable while its lower end, which is in contact with a slidable tension member 35, moves with and applies pressure to the tension member 35, as will be explained. Two shafts 36 and 37 are mounted in the tension member 35 and auxiliary pulleys 38 and 39, respectively, revolve about these shafts. The endless belt 28 passes over the pulleys 25 and 39 and at the same time engages the opposite rounded surfaces of the intermediate pulley 38.

The tension member 35 is slotted at 45, and within the slot there is positioned a pin 46 which is permanently fastened to the spring housing 32. The spring 34 within the housing 32 applies continuous pressure against the tension member 35 tending to move the tension member in a downward direction, that is, away from the upper pulley 25. The pin 46 limits the downward travel of the member 35. The upper end of member 35 is square-shaped so as to freely traverse the opening in the housing 32. At the same time the tension member 35 acts so as to continuously urge the pulley 39 against the belt 28, thereby maintaining the belt 28 under tension at all times during its transmission. This tension member

facilitates the use with the tool of commercial belts which vary in length without modifying the structure of the tool. The member 35 also prevents over-strain of the belt and facilitates the installation of the belt.

A flat-headed spacer 48 is held against the housing 32 and is fastened to support 30 by means of a screw member 50. The member 50 traverses an opening in housing 32 and engages a threaded opening in the end of support 30. The spacer 48 is preferably made of some good insulating material, as, for example, Bakelite or hard rubber. The flat-headed portion of spacer 48 is employed to act, not alone as a spacer but also as a rest when brought against a bank of terminals such as 52. The central portion of the spacer 48 is intermediate of the two sides of the belt 28, as will be more clearly seen in Figs. 2 and 3. The spring housing 32 is of square cross-section, while the support 30 may be of circular cross-section but square-ended to properly fit into the opening of the housing 32.

The auxiliary pulleys 38 and 39 are also crown-shaped and of such small dimensions that they may be inserted within the very limited spaces provided by the multiple brush contacts 55—56 shown in enlarged scale in Fig. 4. When brought into position the pulleys 38 and 39 will be in continuous contact with the belt member 28. After the trigger 16 is manipulated to operate the mechanism, the surface of any one of the contacts 55—56 will be abraded within but a few seconds, thereby eliminating the snagging surface of the contact.

By employing two pulleys such as 38 and 39 as shown, the lateral displacement of the belt 28 intermediate these pulleys will be reduced to a very small extent. In other words, the opposite sides of belt 28 will be maintained at a uniform spacing throughout the abrading operations.

While this invention has been shown and described in certain particular arrangements merely for the purpose of illustration, it will be understood that the general principles of this invention will be applied to other and widely varied organizations without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. A trigger-controlled power driven portable tool comprising a support, a motor carried by said support and having a main shaft, a pulley

mounted on said main shaft, two auxiliary pulleys, means for mounting both of said auxiliary pulleys on said support so that the shafts of all the pulleys are in linear alinement, an endless belt of abrasive material passing over all of said pulleys, whereby that portion of the belt which becomes interposed between the two auxiliary pulleys may be used for abrading operations.

2. A trigger-controlled power driven portable tool comprising a main support, a motor carried by said support, a pulley mechanically coupled to the armature of the motor, two auxiliary pulleys mounted on said support so that their shafts are in linear alinement with the pulley coupled to the motor, an endless belt having an outer abrasive surface which passes over all of said pulleys, and means for urging said two auxiliary pulleys against said belt, whereby the abrasive surface of the belt intermediate the auxiliary pulleys may be employed for abrading operations.

3. A hand-controlled gun-shaped power driven portable tool, comprising a support, a motor carried by said support, a first pulley coupled to the motor, a second pulley mounted on said support, an endless belt passing over both pulleys, the outer surface of said belt being formed of an abrasive material, means for longitudinally urging said second pulley against said belt, means including a device interposed intermediate of said first and second pulleys and in contact with both inner sides of said belt for preventing any substantial lateral displacement of said belt throughout its abrading operations, and a trigger mounted on said support for controlling the operation of said motor.

4. A hand-controlled gun-shaped power driven portable tool comprising a support, a motor mounted on said support, an endless abrasive belt, two devices for carrying the belt, one of said devices being coupled to the motor to rotate therewith and drive the belt, the other of said devices being mounted on said support, means carried by said support for continuously urging said devices against said belt, means including a roller interposed intermediate of said devices and in contact with both inner sides of said belt for preventing any substantial lateral displacement of said belt throughout its abrading operations, and a trigger mounted on said support for controlling the operation of said motor.

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