

Oct. 22, 1957

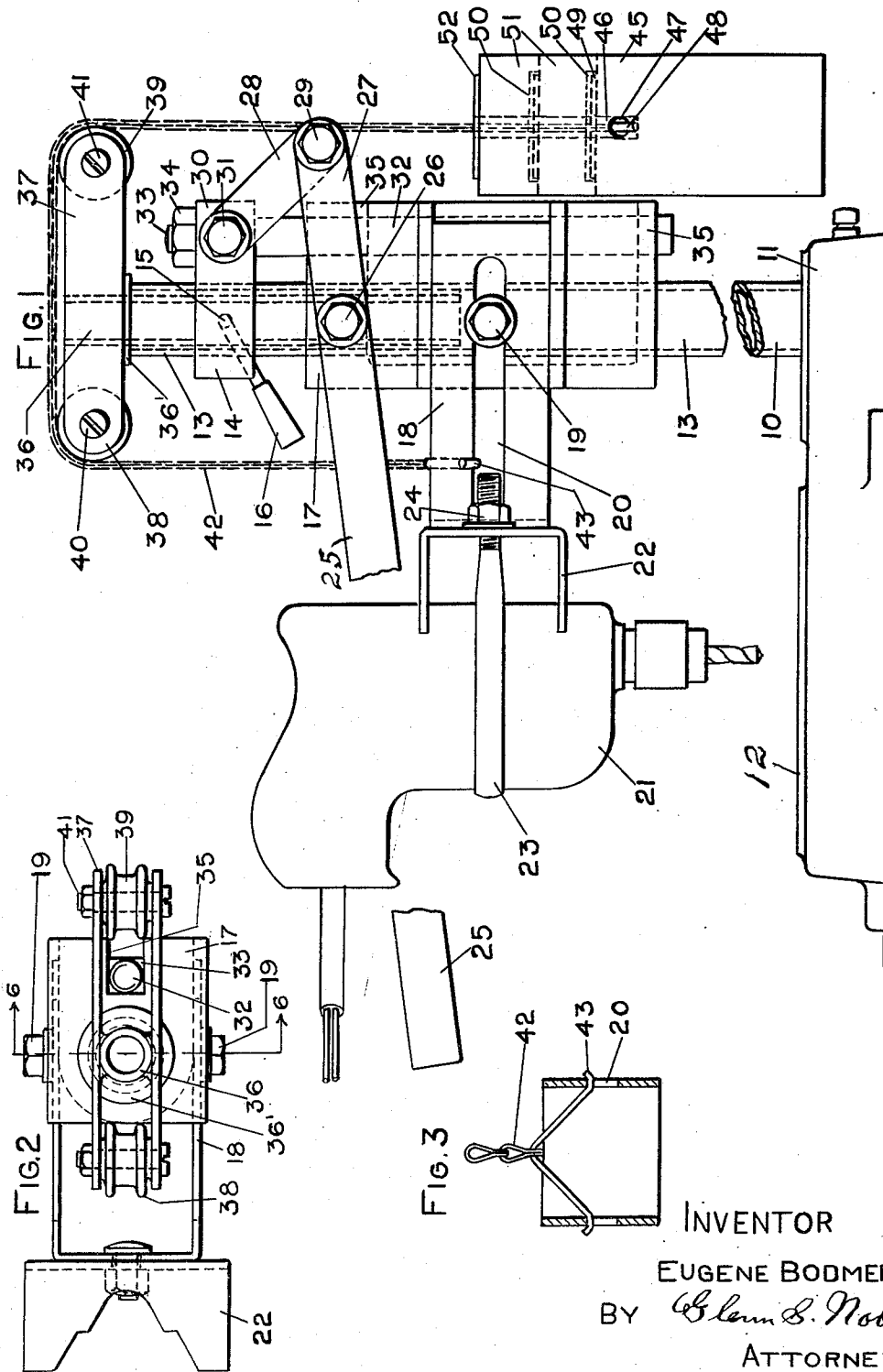
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ELECTRIC TOOL AND STAND

Filed April 19, 1954

2 Sheets-Sheet 1



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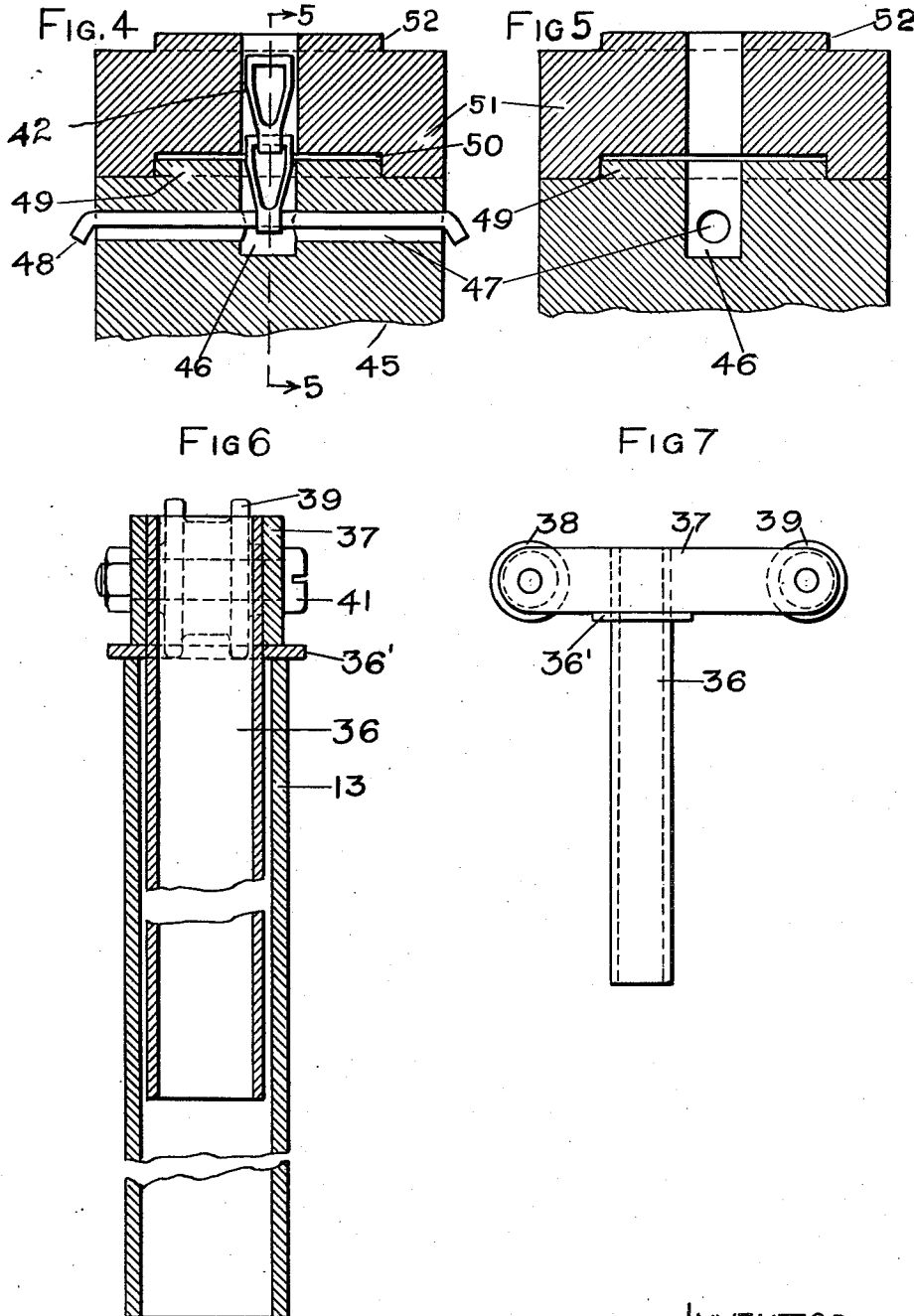
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ELECTRIC TOOL AND STAND

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Application April 19, 1954, Serial No. 424,122

3 Claims. (Cl. 77—19)

This invention relates to electric driven tools such as electric hand drills, grinders, buffers, or the like, and is particularly directed to a novel stand for supporting the drill in operative position whereby it may be manipulated in a manner similar to standard or larger drills.

Stands have heretofore been proposed and used for such purposes but they have been subject to various objections, one of the principal objections being that compression springs have been utilized for raising the drill or returning it to inoperative position, the arrangement being such that the spring provides a variable tension which must be overcome by the operator in using the drill, and also makes the operation of the drill more unsatisfactory or critical as it requires pressure to overcome the spring as well as feed the drill.

The objects of this invention are to provide a novel stand for supporting electric drills, or the like, in which the drill is counter-balanced by means of an adjustable weight; to provide means for holding the drill in substantially full floating suspension whereby it may be readily manipulated for the drilling operation; to provide a stand for an electric hand drill with manual operated means for pressing the drill into the work piece; and to provide such other novel features and improved operating characteristics as will be described more fully hereinafter.

In the accompanying drawings illustrating this invention,

Fig. 1 is a side view showing my improved stand with a hand drill carried thereby and operative means including a weight for counter-balancing the drill.

Fig. 2 is a plan view of a cord or chain guide and other parts as shown in Fig. 1.

Fig. 3 is a detail of the anchor for anchoring the chain to the drill supporting fork or arm.

Fig. 4 is an enlarged detail of the adjustable weight and chain, parts being broken away.

Fig. 5 is a longitudinal sectional view taken substantially on the line 5—5 of Fig. 4.

Fig. 6 is a longitudinal sectional view taken substantially on the line 6—6 of Fig. 2; and

Fig. 7 is a detail of the chain support and guide.

As shown in these drawings, the stand 10 has a base 11 with a smooth area 12 for supporting the workpiece and is provided with a tubular column 13 upon which the drill supporting mechanism is mounted. A collar 14 is slidably mounted on the column and may be held in adjusted positions by means of a set screw 15 having an elongated operating handle 16. A second block or elongated collar 17 is slidably mounted on the column below the collar 14. A U-shaped arm 18 embraces the block 17 and is held in adjusted positions by means of set screws 19 which pass through slots 20 in the sides of the arm. The hand operated drill 21 is secured to the arm 18 in any desired manner and is shown as being held in the cradle 22 which is adjustably secured to the end of the arm 18 by means of a U-bolt 23 and nuts 24.

The operating lever 25 for raising and lowering the drill and feeding it into the workpiece is pivoted at 26

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to the block 17 and extends to the rear of the stand where it is connected at 27 to a short link 28 by means of a pivot 29. The upper end of the link 28 is pivotally connected to a projection 30 on the collar 14 by means of a pivot or screw 31. This lever and linkage arrangement is so proportioned as to properly operate the drill for its different movements.

A rectangular rod 32 is secured to the lug or projection 30 by means of a threaded portion 33 and nut 34 as shown in Fig. 1. This rod extends downwardly through rectangular shaped bearings 35 in the block 17 and serves to prevent the drill head from twisting around the center line of the column 13 and serves as a guide rod for the block.

The counter-balancing or weighted arrangement for the drill which forms one of the principal and most important features of the present invention and which distinguishes it from the prior stands is shown in Fig. 1 and other details. A tubular stem or pipe 36 fits in the top of the column 13 and extends a sufficient distance to give a good bearing for the weight support. The stem 36 carries a pair of spaced apart arms 37 which may be secured to the stem in any desired manner and also secured to a washer 36' as by welding or the like. Wheels or pulleys 38 and 39 are rotatably mounted between the ends of the plates on bolts or axes 40, 41. A link chain 42 as shown in Fig. 4 is connected to the arm 18 by means of a bent pin or wire yoke 43 as shown in Fig. 3, the ends of the pin extending through the slots 20 in the sides of the arm and the center of the pin passing through a hole in the chain as shown.

The chain passes up and over the pulleys 38 and 39 and down to the weights 45, as shown in Fig. 1. The main weight 45 has a vertical opening 46 for the chain to pass through and a transverse opening 47 through which a pin or wire 48 extends and is connected with the end of the chain. The ends of the wire are preferably bent down to prevent disengagement with the weight. The main weight 45 has an annular projection 49 as shown in Fig. 5 which engages with a recess 50 in an auxiliary weight 51 which in turn is provided with an annular projection 52 for another of a series of weights which may be added or taken away from the main weight in order to properly balance the parts.

It will be noted that the arms or cross plates 37 are of sufficient length so that the chain will have sufficient clearance from the other parts of the device. It will, of course, be obvious that a main weight may be used of any suitable size to counter-balance the drill and parts associated therewith or the auxiliary weights may be added as desired.

The advantages of the counter-weight arrangement is that it provides greater flexibility in the movement of the drill, easier operation, increased travel length of drill bit at a given setting of the drill head on the column, greater sensitiveness during the drilling operation and more convenience when changing to different lengths of drill bits.

With my improved counter-weight, the weight of the drill head and the weights are always supported by the main column and therefore the parts are in full floating conditions at all times. This permits easy and convenient adjustment or setting of the apparatus for drilling or during adjustment of the drill head height.

Another substantial advantage with the counter-weight balancing is the fact that the ratio of drill travel distance is greater than with the arrangement heretofore used, such as spring balancing. The range of travel is limited only by the operating lever and link action. With my counter-weight balancing, the various parts are freely floating and the available drill travel is abundantly long to make up for lack of nearness to the workpiece.

Other advantages will readily suggest themselves with those familiar with this art and the advantages over the spring operated stand is apparent from the above description.

Having thus described my invention, what I claim is:

1. In combination, a base, a tubular column extending upwardly from the base, a collar slidably mounted on the column, means for holding the collar in adjusted positions, a block slidably mounted on the column below the collar, a bracket adjustably mounted on a block, means for holding the bracket in adjusted positions, an electric hand tool carried by the bracket, an operating lever pivoted on the block, a link connecting one end of the lever with the collar the other end of the lever extending forwardly adjacent to the drill, a rod secured to the collar and extending downwardly through a bearing in the block and serving to prevent the drill from twisting around a center line of the column, a substantially T-shaped bracket having a stem extending into the top of the column and rotatable therein, pulleys on said bracket, a weight, flexible means connecting the weight and extending over the pulleys and connected with the bracket that supports the tool whereby it will serve to counter-balance the tool and connected parts.

2. In a drill stand of the character set forth, the combination of a base for supporting a work piece, a tubular column extending upwardly from the base, a collar slidably mounted on the column adjacent to the top thereof, a set screw for holding the collar in adjusted positions, a block slidably mounted on the column below the collar, an arm secured to the block, means for attaching an electric hand drill to said arm, an operating lever pivoted to the block, a link connecting one end of the lever with the collar, said lever extending forwardly and

adapted to raise and lower the block, a rod secured to the collar and extending downwardly through a bearing in the block and serving to guide the block in its vertical movement, pulleys mounted at the top of the column, a counterweight, a flexible member connecting the arm with said counterweight and rove over said pulleys, substantially as shown.

3. In an apparatus of the character set forth, the combination of a base, a tubular column extending upwardly from the base, a collar slidably mounted on the column adjacent to the top thereof, means for holding the collar in adjusted position, a block slidably and rotatably mounted on the column below said collar, an arm secured to the block, means for attaching an electric hand drill to said arm, a lever pivoted to the block, a link connecting one end of the lever with said collar, said lever extending forwardly and adapted to be actuated to raise and lower the block, a rod secured to the collar and extending downwardly through a bearing in the block and serving to guide the block in its vertical movements, pulleys mounted at the top of the column, a counterweight spaced outwardly from the block, a flexible member connecting the arm with said counter-weight and rove over said pulleys, the arrangement being such that the electric hand drill may be adjusted vertically and will also have free rotatable movement around the column.

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