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PORTABLE DRILL PRESS
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6 Claims

ABSTRACT OF THE DISCLOSURE
A device for securing a portable drill to the material being worked upon and providing leverage through a fulcrum for applying pressure to the drill. The fulcrum is extendable and slidably and pivotally connected to the stationary base support while the lever is pivotally and rotationally connected to the fulcrum. The drill attachment means is rotatably and pivotally connected to the lever outwardly of a handle means thereon oppositely disposed from the fulcrum.

In using a power drill it is often difficult to apply pressure to it which is required to drill holes in certain materials because they are hard such as metal or are inconveniently located for the operator of the drill. Also it is frequently difficult to maintain drill alignment with the work product throughout the drilling operation.

The portable drill press of this invention is universal in its application by being supported on a versatile standard. Through pivoting, sliding and rotating of the components of the standard it is possible to position the drill in almost any desired position for a drilling operation. Moreover, it is possible to obtain the desired drill pressure for the drilling operation. The standard provides a most desirable guide for maintaining drill alignment with the work product.

The standard of this invention for the portable drill is simple in its construction involving a minimum number of parts which include a clamp for securing the standard to a stationary base support, a fulcrum member is connected to the clamp and a lever arm is connected to the fulcrum member and to an attachment means which is connected to the portable pistol-type drill.

These and other features and advantages of this invention will become readily apparent to those skilled in the art upon reference to the following description when taken in consideration with the accompanying drawings, wherein:

FIG. 1 is a perspective view of the portable drill press of this invention;
FIG. 2 is a side elevation view of the drill press showing it in alternate positions 180 degrees apart;
FIG. 3 is a cross-sectional view taken along line 3-3 in FIG. 1;
FIG. 4 is a front elevational view of the portable drill press in use;
FIG. 5 is a perspective view of the drill attachment means;
FIG. 6 is a side elevation view of an alternate clamp means for securing the drill standard to a base support; and
FIG. 7 is a cross-sectional view taken along 7-7 in FIG. 6.

The portable drill press of this invention is referred to in FIG. 1 generally by the reference numeral 10 and is shown mounted on a work product 12 of metal or like material.

A pistol-type drill 14 having a handle 16 and a drill 18 engages the work product 12 through a drill bit 20. An attachment assembly or harness is mounted on the drill body and includes a front yoke plate 22 extending under the front end of the barrel 18. A pair of connecting rods 24 extend rearwardly on opposite sides of the barrel body 18 for connection with a rear plate 26. The rods include intermediate sleeve portions 28 and threaded bolt portions 30 in the opposite ends for selective adjustment in clamping the yoke 22 and the rear plate 26 to the drill body.

A back plate 40 is bolted at its top end to the rear plate 26 and is bolted to a back plate of a pair of clamping plates 42 engaging the lower end of the drill handle 16.

A U-shaped clevis 44 is rotatably connected intermediate the ends of the back plate 40 and pivotally receives one end of a lever arm 48 having a handle 50 at the opposite end on the opposite side of a fulcrum arm 52 pivotally connected thereto through a clevis 54.

The lever arm 52 as been best seen in FIG. 3 includes a sleeve 58 rotatably connected through a pin 60 and telescopically connected at the opposite end to a shaft 62 which in turn is pivotally connected to a clevis 64 slidably and pivotally mounted on a shaft 70 of a clamping device 72.

The fulcrum 52 is extendable by provision of a series of holes 74 in the rod 62 for alignment with a pin 76 extending through the sleeve 58 and the appropriate opening or hole 74.

The clamp device 72 includes a pair of end members 80 connected rigidly to the shaft 70.

As seen in FIG. 1, an adjustable jaw 90 is carried on a threaded element 92 extending through the end member 80 for engagement with one side of the work product 12 while the other end member 80 engages the opposite side thereof. A handle 94 on the threaded element 92 provides for manual vise-type clamping of the jaw element 90 and the outer end member 80 onto the work product member 12 as seen in FIG. 2.

In FIGS. 6 and 7 an alternate base clamp means 72A is provided which includes a hook-shaped element 100 which is provided with a clevis-like end 102 for pivotal connection to the lower end of a pipe 104 which may be of any desired length. The pipe 104 is threadably connected to a coupling element 106 which in turn is threadably connected to a shaft or rod 62A telescopically engaging the sleeve 58. The hook 100 is shown mounted on a tubular element 110 of a scaffold (not shown in detail). A clamping lock and set screw 112 extends through the free end portion of the hook for direct engagement with the exterior of the pipe 110. Accordingly the hook 100 is slidably and rotatably connected to the pipe 110 just as the clevis 64 is slidably and rotatably connected to the shaft 70 in FIG. 3 for example. The hook 100 may be mounted on the pipe 110 by passing the pipe 110 into the hook through the mouth 114.

Thus it is seen in operation that the portable drill press employing the versatile standard shown and described is capable of an infinite number of uses since it may be positioned almost anywhere as desired. In FIG. 1 the clamp 72 is secured to the work product 12 which is being drilled by the drill 14 while in FIG. 2 the drill is repositioned relative to the stationary base support member 12 such that the drill bit 20 engages a concrete wall 120 and is capable of drilling a series of longitudinally arranged holes 122 as seen in FIG. 4.

In FIG. 6 the drill 14 is positioned on a pipe 110 of a scaffold and is shown drilling a work product 130.

In FIG. 1 it is seen that the drill may pivot back and forth relative to the work product member 12 and also slide from side to side because of the clevis 64 interconnecting the lower end of the fulcrum 52 to the clamp shaft 70. Moreover the drill may be rotated through 360 degrees by virtue of the clevis 54 interconnecting the
outer end of the sleeve 58 of the fulcrum 52 to the lever 48. Additionally the drill is adjustably positioned close to or far away from the work product 12 by virtue of the extendable fulcrum 52 as seen best in FIG. 3.

Further, the drill 14 may pivot and rotate relative to the outer end of the lever 48 because of the clevis connection 44.

The attachment means shown in FIG. 5 for mounting on the drill 14 is adaptable to practically all drills and is appropriately adjustable by provision of such features as elongated slots 130 in the rear plate 26. Similar slots 132 are provided in the yoke plate 22 while slots 134 and 136 are provided in the clamping plates 42.

Some changes may be made in the construction and arrangement of our portable drill press without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

1. An electric drill holder and work clamp comprising, an attachment means adapted to be secured to a drill, a lever arm pivotally connected to said attachment means and said lever arm having a handle means, a fulcrum arm pivotally attached to said lever arm intermediate its ends between said attachment means and said handle means, and anchoring means for securing said fulcrum arm to a support base member, said lever arm being rotatably connected to said fulcrum arm, said fulcrum arm being slidably connected to said anchoring means, said fulcrum arm being pivotally secured to said base support means, said fulcrum arm being extendable, said attachment means being rotatably secured to said lever means, and said attachment means including a front yoke for engagement with the front end of the barrel of a pivotal-type drill, a pair of oppositely disposed parallel plates adapted to engage the handle of a pistol drill, a pair of fastener rods extending rearwardly from said yoke and engaging a rear plate, a back plate interconnecting the rear of said pair of plates and said rear plate, and said lever being pivotally connected to said back plate of said attachment means.

2. The structure of claim 1 wherein said base support means includes a detachable clamp means for engagement with a support means.

3. The structure of claim 2 wherein said clamp means is a hook means adapted to engage a tubular support means, and a lock set screw is movable on said hook means to engage said tubular support means and lock said hook means thereto.

4. The structure of claim 1 wherein a clevis connects each of said attachment means to said lever, said lever to said fulcrum, and said fulcrum to said base support means.

5. An electric drill holder and work clamp comprising an attachment means adapted to be secured to a drill, a lever arm pivotally connected to said attachment means and said lever arm having a handle means, a fulcrum arm pivotally attached to said lever arm intermediate its ends between said attachment means and said handle means, and anchoring means for securing said fulcrum arm to a support base member, said lever arm being rotatably connected to said fulcrum arm, said anchoring means including an elongated member extending perpendicular to the longitudinal axis of said fulcrum and said fulcrum having a connecting means slidably, rotatably and pivotally connecting said fulcrum to said elongated member, said fulcrum arm being extendable, and said attachment means being rotatably secured to said lever means.

6. The structure of claim 5 wherein said connecting means is further defined as being a hook means and said elongated member is tubular in shape.

References Cited

UNITED STATES PATENTS
2,625,063 1/1953 Hanson ------------ 77—59
2,472,270 6/1949 Stinchcomb ------------ 77—7

FOREIGN PATENTS
1,225,467 9/1966 Germany.

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