

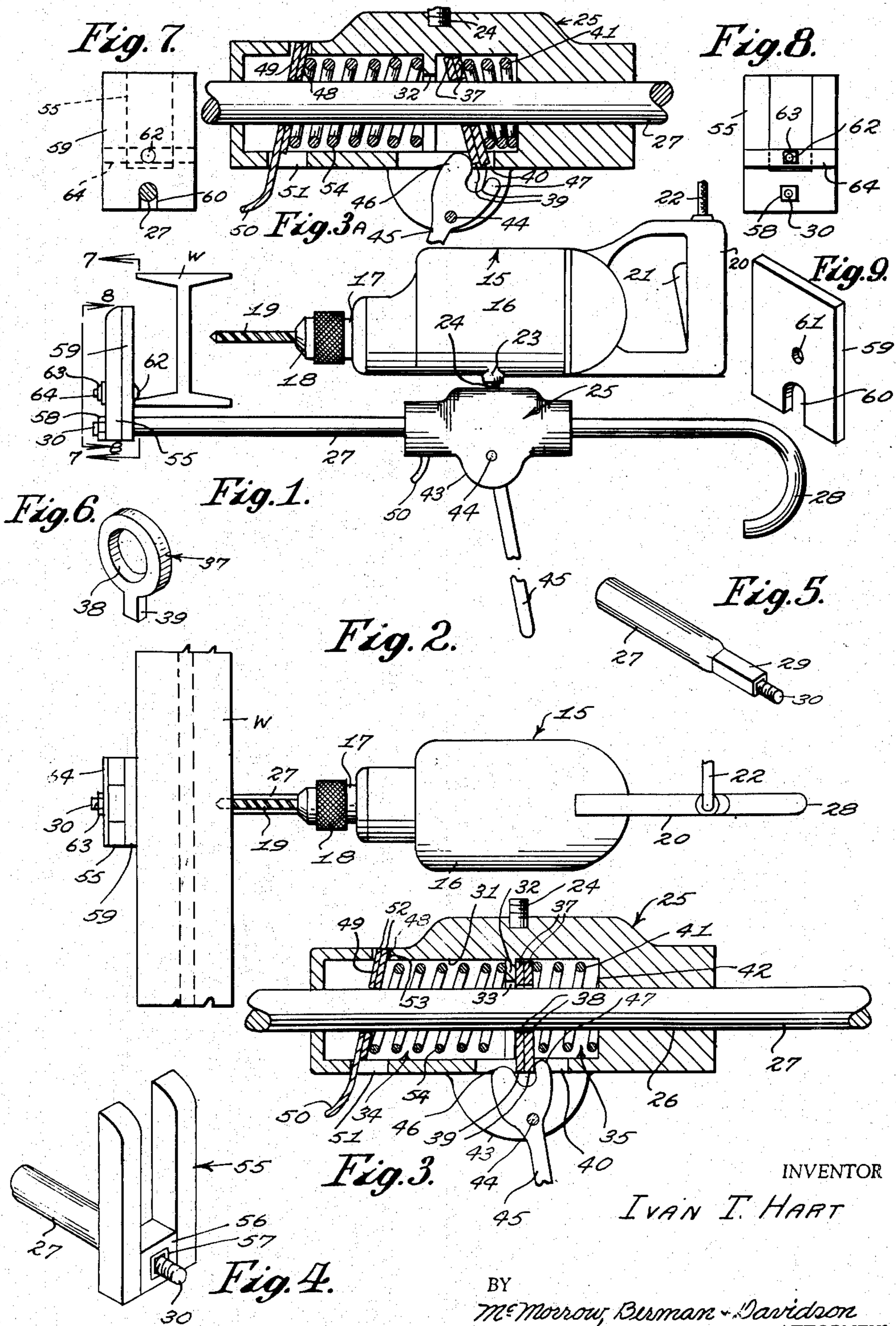
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PORTABLE DRILL PRESS

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## PORTABLE DRILL PRESS

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### 1 Claim. (Cl. 77-7)

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My invention relates to a portable drill press. A primary object of the invention is to provide a drill press attachment for use with a conventional portable electric drill, thereby greatly increasing the range of usefulness of such drill.

A further object is to provide a portable drill press which is highly simplified, compact, very sturdy and relatively inexpensive to manufacture.

A further object is to provide a drill press attachment for use with any conventional type of portable electric drill.

A still further object of the invention is to provide a portable drill press of the above-mentioned character which will provide for steady and positive feeding of the drill against the work.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a side elevational view of a portable drill press embodying my invention and illustrating the use of the same;

Figure 2 is a plan view of the same;

Figure 3 is a central, vertical, longitudinal section through drill press actuating mechanism;

Figure 3-A is a similar sectional view showing parts of the actuating mechanism in different operative positions;

Figure 4 is an enlarged, fragmentary, perspective view of a work engaging foot and associated elements;

Figure 5 is a similar view of one end of a drill press standard;

Figure 6 is an enlarged perspective view of an actuating element removed;

Figure 7 is a transverse, vertical, sectional view taken on line 7-7 of Figure 1;

Figure 8 is an end elevational view taken on line 8-8 of Figure 1, parts omitted; and

Figure 9 is an enlarged, perspective view of a work engaging plate removed.

In the drawings, where, for the purpose of illustration, is shown a preferred embodiment of the invention, the numeral 15 designates generally a conventional, portable electric drill and including the usual motor casing 16 having a rotatable spindle 17 projecting longitudinally beyond one end of the same. The spindle 17 is provided with the usual adjustable chuck 18 for receiving and holding the drill bit 19. The opposite end of the motor casing 16 is equipped

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with a handle extension 20 which may have a starting switch 21 built therein. An electric wire 22 leads into the handle extension 20, as shown, and is electrically connected with the windings of the motor. The motor casing 16 is provided near its longitudinal center with a short, radially projecting, internally screw-threaded boss 23 receiving a short, radial, screw-threaded stud 24 rigidly secured to an actuating mechanism head or housing 25. The stud 24 thus serves to detachably connect the portable drill 15 and mechanism housing 25.

The housing 25 is elongated and tubular, and extends longitudinally of and adjacent to the motor casing 16. The housing 25 is spaced laterally a slight distance from the motor casing, as shown in Figure 1. The longitudinal axes of the housing 25 and spindle 17 are parallel, as shown. The housing 25 has a central, axial bore 26 slidably receiving an elongated, straight round rotatable rod or standard 27 provided at one end with a curved handle extension 28, by means of which the rod 27 can be rotated, when desired, to position a work engaging foot, hereinafter described, relative to the work. The opposite end of the standard 27 terminates in a reduced, square extension 29 having an axial, reduced, screw-threaded extension 30 for a purpose to be described.

Inwardly of its opposite ends, the bore of the housing is enlarged, as shown at 31, and near the longitudinal center of the housing, a radially inwardly projecting, flat, annular flange 32 is integrally secured to the side wall of the housing 25 and provided with a central, axial opening or bore 33 freely passing the standard 27. The annular flange 32 divides the enlarged bore 31 into separate chambers or recesses 34 and 35, as shown. The standard 27 extends longitudinally through and beyond the opposite ends of the housing 25, as shown.

Means are provided for shifting the housing 25 longitudinally along the standard 27 with a step-by-step movement. Such means comprises two or more rings or washers 37 mounted within the chamber 35 and having bores 38 which are slightly larger than the diameter of the standard 27 and slidably receiving the standard. The washers 37 are flat and disposed in side by side, contacting relation, as shown. The innermost washer 37 is adapted to engage against the adjacent side of the annular flange 32. The washers 37 include short, radial extensions or lugs 39 integral therewith and projecting radially into a longitudinal slot 40 formed in the side wall of

the housing 25 near the longitudinal center of the housing. The washers 37 are free from positive connection with either the housing 25 or standard 27. An expansible coil spring 41 is mounted within the chamber 35 and surrounds the standard 27. One end of this spring 41 engages against the outer washer 37, and its opposite end engages a shoulder 42 formed by the outer end of the recess or chamber 35. The spring 41 serves to maintain the washers 37 in contact with each other and with the annular flange 32 of the housing, Figure 3. Adjacent to the slot 40, the housing 25 is provided with a pair of laterally spaced, depending, apertured lugs or ears 43 integral therewith and receiving a transverse pivot pin 44 upon which is pivotally mounted the inner end of an elongated, straight, operating lever 45. Inwardly of the pivot pin 44, the lever 45 is provided with a pair of laterally spaced cam extensions or teeth 46 and 47 adapted to straddle the radial extensions 39 of the washers, as shown. As is obvious, when the lever 45 is swung clockwise, Figure 3, the tooth 46 will engage the inner face of one extension 39, and when the lever 45 is swung counterclockwise, the tooth 47 will engage the outer face of the other extension 39. The teeth 46 and 47 operate within the longitudinal slot 40, as shown.

Additional means are provided for releasably locking the housing 25 in selected, longitudinally adjusted positions upon the standard 27. Such means comprise a pair of rings or washers 48 and 49 mounted within the chamber 34 of the housing and having bores which are slightly larger than the diameter of the standard 27. The washer 49 includes a generally radial, curved trigger extension 50 extending through a longitudinally elongated slot 51 formed in the side wall of the housing 25 and arranged in longitudinal alignment with the slot 40. The washers 48 and 49 further include short, radial extensions 52, projecting into a fulcrum opening or slot 53 formed in the side wall of the housing 25 at a point diametrically opposite the slot 51. The washers 48 and 49 are separate, flat and disposed in side by side contacting relation. Tilting of the washers 48 and 49 is limited by the slot 53 relative to the housing 25. An expansible coil spring 54 is mounted within the chamber 34 between the washer 48 and annular flange 32, and this spring serves to maintain both of the washers 48 and 49 in a diagonal or tilted relation with respect to the standard 27, as shown. When in such tilted or diagonal positions, the washers 48 and 49 have their bores gripping the standard 27 in a well known manner, so that the housing 25 may be shifted to the left, Figure 3, with respect to the standard 27, but not to the right.

A work engaging foot 55 is provided, and this foot includes a socket block 56 having a square opening or socket 57 for receiving the square extension 29 therein. The screw-threaded extension 30 projects beyond the outer face of the foot 55 and receives a nut 58 serving to detachably secure the foot 55 to the rod or standard 27. One or more flat, substantially rectangular, work engaging plates or shims 59 is provided inwardly of and engaging the inner face of the foot 55. The plate 59 is provided in its bottom edge with a notch or recess 60 engaging over the standard 27 longitudinally inwardly of the square extension 29. Above the notch 60, the plate 59 has an opening 61 receiving a bolt 62 or the like, and this bolt extends between the sides of the foot 55 and beyond the forward face of the foot

for receiving a nut 63. The nut 63 bears against a transverse strip or plate 64 extending transversely of the foot 55 and engaging against the outer face of the same. The bolt 62 and nut thus serve to clamp the plate 59 against the foot 55, as shown.

The operation of my portable drill press is as follows:

The plate 59 and foot 55 are placed beneath or behind the work W to be drilled, as shown in Figure 1. The electric drill 15 is secured to the housing 25, as previously described, and the drill is started by means of the switch 21. The drill bit 19 is now fed against the work W by oscillating the operating lever 45. The lever 45 is swung clockwise or to the left, Figures 1, 3 and 3-A, and the tooth 46 engages the innermost washer or ring 37 and tilts the washers 37 until their bores 38 grip the standard 27. When this occurs, the lever 45 is swung further clockwise and the housing 25 carrying the drill 15 is shifted bodily to the left, Figure 1, and toward the work W. The operating lever 45 is now swung counterclockwise to its starting position, Figure 3, at which time the spring 41 will return the washers 37 to their normal positions at right angles to the standard 27 and against the flange 32. The operating lever 45 is then swung counterclockwise for advancing the housing 25 and drill 15 another step to the left or toward the work W, Figure 1. As the oscillation of the lever 45 is continued, the drill bit 19 is thus fed in a step-by-step movement toward the work, so that the hole may be drilled therein. When it is desired to shift the drill 15 away from the work, it is merely necessary to swing the operating lever to the right or counterclockwise, Figure 3, so that the washers 37 will release their grip upon the standard 27. When this has been done, the trigger extension 50 is grasped and pulled to the right, Figures 1, 3 and 3-A, and the washers 48 and 49 will swing substantially perpendicular to the standard 27, so that their bores will release the standard. The housing 25 is now freely slidable toward the handle extension 28. It should be mentioned that during the oscillation of the lever 45, as previously described, for feeding the housing 25 and drill 15 toward the work with a step-by-step movement, the spring 54 maintains the washers 48 in their diagonal or inclined positions, so that their bores grip the standard 27. Upon each oscillation of the lever 45, the bores of the washers 48 and 49 will permit the housing 25 to advance to the left, Figure 1, but prevent it from shifting to the right when the lever is returned counterclockwise.

It is thus seen that I have provided a highly simplified portable drill press which will greatly increase the effectiveness and range of usefulness of a standard portable electric drill. The construction is highly compact, simplified and sturdy, as well as very easy to manipulate. No expensive gears or rack bars are needed, and the parts involved are quite inexpensive to manufacture.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

In a portable drill press involving a drill having a casing and a drill chuck-equipped shaft

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extending longitudinally outwardly from one end of the casing, a press housing and means for fixedly securing said press housing on one side of said drill casing, the improvement of a rod extending rotatably and slidably through the press housing and projecting beyond opposite ends of the press housing, said rod having a fixed laterally projecting work engaging foot on one end thereof, said work engaging foot being spaced axially outwardly from the drill chuck shaft and a laterally extending handle on the opposite end of the rod for rotating the rod relative to the housing for positioning the foot relative to the work, and means on said housing for

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moving the housing and the drill along said rod in a direction toward said foot.

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