June 24, 1930. G. W. BERRY 1,765,362

DRILL OPERATING HOLDER

Filed Sept. 4, 1928

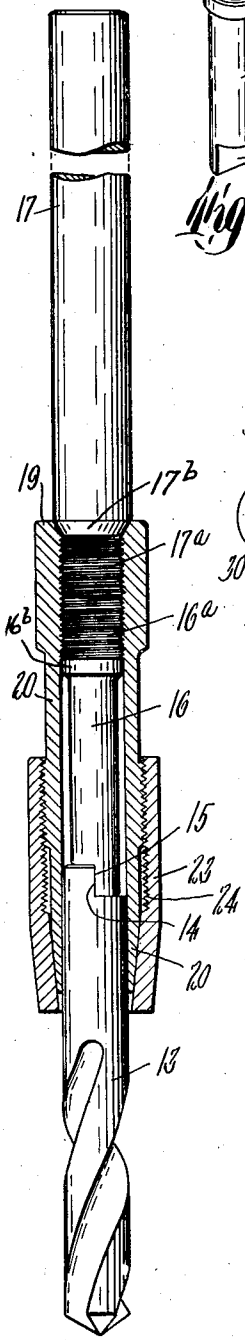

Fig. 1.

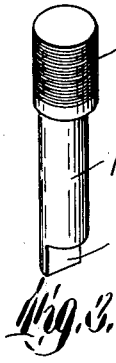

Fig. 3.

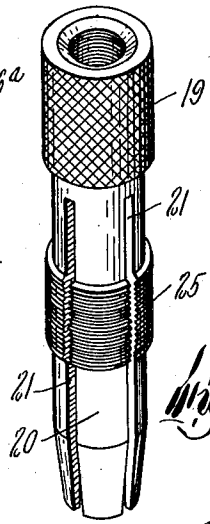

Fig. 4.

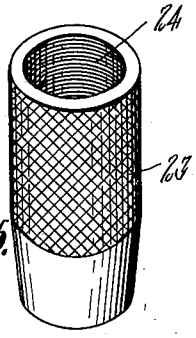

Fig. 5.

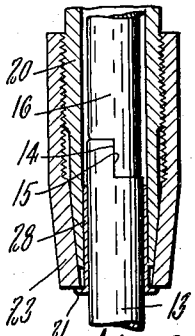

Fig. 2.

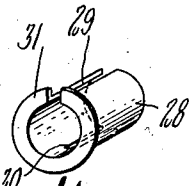

Fig. 6.

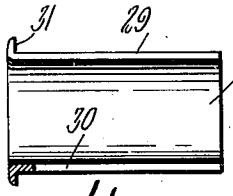

Fig. 7.

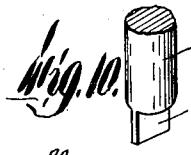

Fig. 10.

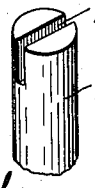

Fig. 11.

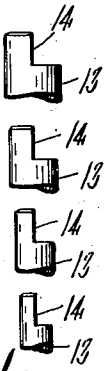

Fig. 12.

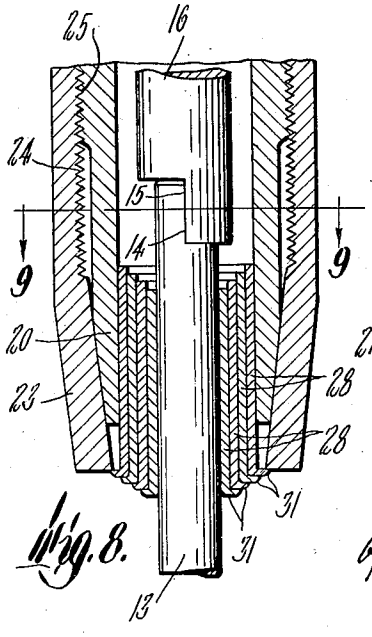

Fig. 8.

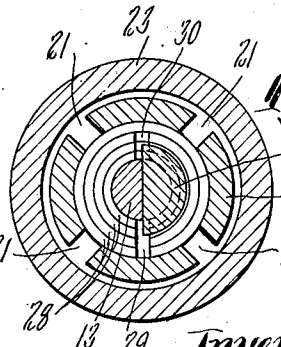

Fig. 9.

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UNITED STATES PATENT OFFICE

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DRILL-OPERATING HOLDER

Application filed September 4, 1928. Serial No. 303,854.

This invention relates to a drill holder adapted to be engaged with the drill driving member of an electric drill press, such as is commonly used in automobile repair shops and garages to operate a drill.

It is often desirable to locate the drill at a considerable distance from the driving member of the drill press, and at various distances therefrom.

The object of my invention is to provide, as an adjunct or extension of a drill press, a drill holder of simple construction, adapted to hold a drill in axial alinement with the driving member of the press, and at any distance therefrom that may be required by the nature of the work being performed.

Of the accompanying drawings forming a part of this specification,—

Figure 1 shows partly in section and partly in elevation a drill holder embodying the invention, grasping a drill of maximum diameter.

Figure 2 is a view similar to Figure 1, showing a bushing cooperating with the chuck jaws of the holder to grasp a drill of smaller diameter.

Figure 3 shows in perspective the inner section hereinafter described of the drill-holder shank.

Figure 4 shows in perspective the tubular member hereinafter described which includes the drill-grasping jaws.

Figure 5 shows in perspective an element of means for closing the jaws shown by Figure 4, on a drill.

Figure 6 is a perspective view of the bushing shown in section by Figure 2.

Figure 7 is an enlarged sectional view of the bushing member shown by Figure 6.

Figure 8 is an enlargement of a portion of Figure 1, showing a series of bushings.

Figure 9 is a section on line 9—9 of Figure 8.

Figure 10 shows in perspective a portion of the inner section of the drill-holder shank and a modification of the stepped end thereof.

Figure 11 shows in perspective a portion of a drill formed to engage the stepped end shown by Figure 10.

Figure 12 shows the outer end portions of a series of drills of different diameters.

The same reference characters indicate the same parts in all of the figures.

My improved holder constitutes an extension of the driving member of a drill press, and is adapted to hold either of a plurality of cylindrical drills 13, of different diameters. Said holder includes a tubular member having longitudinal slots 21, extending from its inner end throughout the major portion of its length, to form drill-grasping chuck jaws 20, and provided with compressing means of well known character adapted to close the jaws on a drill 13 inserted in the bore of said member, said means including a sleeve 23 having an internal screw thread 24, engaged with an externally threaded portion of the slotted tubular member, the sleeve having a tapered internal surface portion bearing on end portions of the jaws 20. The outer end portion of the tubular member is rigid and internally screw-threaded, and constitutes an elongated coupling sleeve, with which are separably engaged externally threaded portions of a two-part elongated shank which is adapted at one end to be grasped by the driving member of a drill press, and at the other end to engage a drill 13 grasped by the jaws 20. Said shank includes an inner section composed of a reduced body 16, and an enlarged externally threaded end 16^a, constituting a coupling member separably engaged with the coupling sleeve 19. The shank includes also an outer section composed of an elongated body 17, adapted to be engaged by a drill-press member, and a reduced externally threaded end 17^a, constituting a coupling member separately engaged with the coupling sleeve 19, and separably abutting the end 16^a of the inner section.

The inner shank section has a stepped end adapted to have a torque-transmitting engagement with the stepped end of a drill 13. Said stepped ends may be variously formed. The inner shank section may have a stepped end 15, formed to engage a stepped end 14 on the drill, as shown by Figures 1, 3 and 8, or a stepped end 15^a, formed to engage a stepped end 14^a on the drill, as shown by Figures 10 and 11.

The reduced body 16 of the inner shank section is separated by an annular space from the internal surface of the slotted portion of the tubular member, as shown by Figures 1, 2 and 8, so that said reduced body permits the jaws 20 to be closed on drills of different diameters.

The separability of the outer shank section from the coupling sleeve 19, and from the inner shank section, permits outer shank sections of different lengths to be used interchangeably, so that the length of the holder as a whole, may be varied to locate the drill 13 at any desired distance from the driving member of a drill press.

The inner shank section is preferably provided with a peripheral enlargement 16^b between the reduced body 16 and the threaded end 16^a, said enlargement bearing on the bore of the tubular member, as shown by Figure 1, to prevent looseness of the inner section, which might be permitted by the screw-thread connection between the end 16^a and the coupling sleeve 19, if said enlargement were not provided. The inner section is therefore rigidly supported laterally. To provide additional rigidity I provide the outer shank section with a bevelled peripheral face 17^b, bearing on a complemental internal face formed on the sleeve 19, as shown by Figure 1.

It will now be seen that the described holder is simple, compact, and rigid, and well adapted for use with the electric drill press now commonly used in repair shops and garages.

The jaws 20 may be supplemented by compressible bushings or reducers insertible in the bore of the slotted portion of the tubular member to cooperate with the jaws in grasping drills whose diameters are smaller than those of drills adapted to be grasped directly by the jaws.

I have here shown a series of compressible tubular bushing members 28 of different diameters. Each bushing is preferably a resilient sheet metal tube divided longitudinally from end to end by a slot 29 (Figures 6 and 7) and partly divided by a slot 30. Two or more of the bushing members may be nested together to form a laminated tubular bushing whose wall thickness is determined by the number of nested members. The largest bushing member conforms to the internal diameter of the compressible socket 20, and is adapted, as shown by Figure 2, to engage a drill shank whose diameter is less than that of a shank adapted to be engaged directly by the socket 20, as shown by Figure 1. The other bushing members are adapted to engage drill shanks of other and smaller diameters. When all the bushing members are nested, as shown by Figure 8, the laminated bushing formed thereby, is adapted to engage the smallest drill shank.

Each bushing member 28 is provided at its outer end with a stop to limit its insertion in the compressible socket 20, the stop being preferably an outwardly projecting flange 31. The stop of the largest bushing member is formed to abut the outer member 23 of the chuck, and the stop of each of the other members is adapted to abut the stop of the next larger member as shown by Figure 8.

I claim:

1. A drill holder constituting a drill-press extension and adapted to hold either of a plurality of cylindrical drills of different diameters, said holder comprising a tubular member longitudinally slotted from its inner end throughout the major portion of its length, to form chuck jaws, and provided with compressing means adapted to close said jaws on a cylindrical drill, the outer end portion of said member being rigid and internally screw-threaded to constitute an elongated coupling sleeve, and a sectional shank including an inner section composed of a reduced body and an enlarged externally threaded end constituting a coupling member separably engaged with said coupling sleeve, and an outer section composed of an elongated body, adapted to be engaged by a drill-press member, and a reduced externally threaded end, constituting a coupling member separably engaged with the coupling sleeve, and separably abutting the inner section, the inner shank section having a stepped end adapted to engage the stepped end of a drill grasped by said jaws, the reduced body of the inner shank section permitting the jaws to be closed on cylindrical drills of different diameters, the separability of the outer section permitting outer sections of different lengths to be used interchangeably.

2. A drill holder as specified by claim 1, the inner shank section being provided with a peripheral enlargement between its reduced body and threaded end, said enlargement bearing on the internal surface of the tubular member.

3. A drill holder as specified by claim 1, the outer shank section being provided with a bevelled peripheral face bearing on a complemental face formed on the coupling sleeve.

In testimony whereof I have affixed my signature.

GEORGE W. BERRY.