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DRILL STEEL CENTRALIZER

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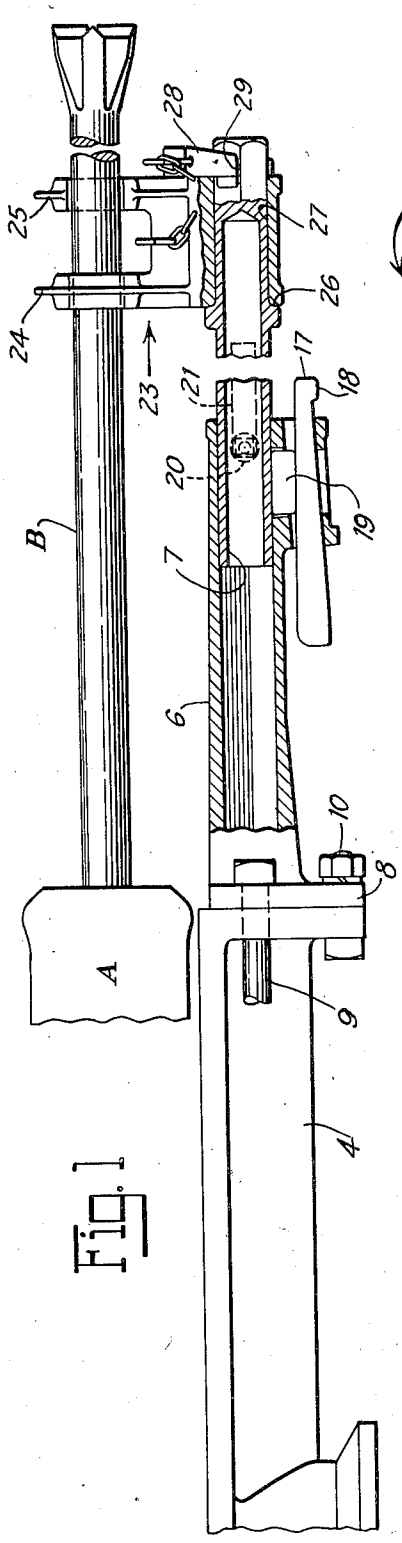


Fig. 1

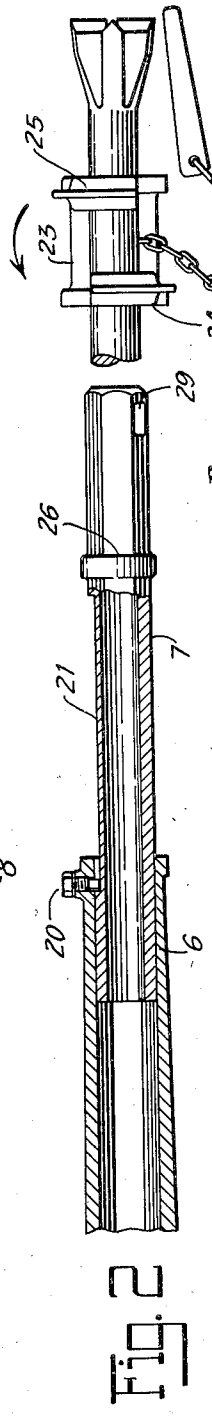


Fig. 2

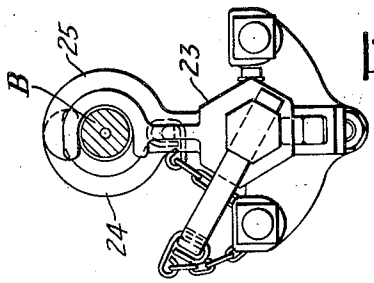


Fig. 4

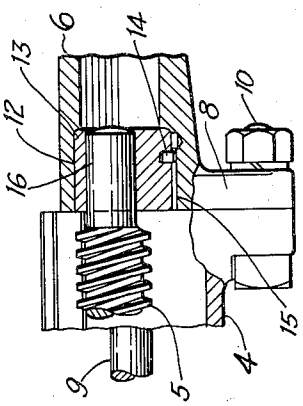


Fig. 3

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DRILL STEEL CENTRALIZER

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3 Claims. (Cl. 255—45)

This invention relates to rock drilling apparatus with particular reference to guiding devices for the drill steels, usually referred to as centralizers.

One object of this invention is to provide improved means for supporting and guiding drill steels so as to place holes accurately in the desired position. Another object is to facilitate starting holes on inclined or uneven surfaces, such as present in dimension stone quarries.

The present invention may be considered as an improvement upon applicant's prior Patent 1,768,994 issued July 1, 1930. In that patent is disclosed a drill steel guide member supported upon an extension of a shell mounting. It is a further object of the present improvement to make the guide member quickly adjustable toward and away from the drill mounting, whereby the guide member may be placed close to the hole, notwithstanding irregularities in the face of the rock being drilled, and consequent variations of the distance between the hole and the drill mounting.

A feature of this invention resides in the connection between the extension member and the drill mount, whereby the former provides a bearing for the usual feed screw. Another feature is the quick detachable connection between the guide member and the extension member.

Other objects and features will be apparent from the following description taken in connection with the accompanying drawing and appended claims.

In order to illustrate the invention, one concrete embodiment thereof is shown in the accompanying drawing, in which:

Fig. 1 is a side view partly in section of the forward end of a shell mounting with the centralizer apparatus attached thereto, and indicating the manner of use of the same;

Fig. 2 is a top view of the extension member—shown partly in section—and the guide member attached thereto;

Fig. 3 is a detail view, principally in section, showing the connection between the drill mounting and the extension member; and

Fig. 4 is an end view, looking from right to left in Fig. 1.

The invention takes the form of an attachment adapted to be applied to the conventional type of shell mounting 4 upon which is mounted a drilling machine A which is fed to and retracted from the work by the usual feed screw 5 (Fig. 3). The attachment includes a telescoping extension member made up of a fixed section 6 and a movable section 7. The fixed section 6 is flanged at its inner end to provide a base or face plate 8 secured to the forward end of shell 4 by the conventional side bolts 9 and by one or more additional bolts 10, if desired. Base plate 8 takes the place of the usual end plate and is arranged to provide a support for feed screw 5 as illustrated in Fig. 3. In accordance with the present invention, the section 6 of the extension is provided with a counterbore 12 at the end which abuts the shell mounting. A bearing 13 is secured within this counterbore, as by a press fit, and may be held against rotation by one or more dowel pins 14 projecting from the bearing into a groove 15 in the section 6. The feed screw 5 has a cylindrical extension 16 rotatably mounted within bearing 13. From the above description it will be apparent that the extension member which supports the drill steel guide may be supported on the shell mounting coaxially with the feed screw without depriving the latter of a suitable bearing support. Furthermore, when the bearing becomes worn, it may be replaced without replacing the extension member.

As shown in Figs. 1 and 2, the parts 6 and 7 constituting the extension are telescopingly connected. In order to prevent relative rotation the bore of section 6 and the cooperating outer surface of section 7 are of non-circular cross-section, the illustrative form being in the shape of a hexagon. Releasable means for maintaining the adjustment of the parts consists of a key 19 mounted for radial movement in a slot in the outside section 6. The key is adapted to be forced radially against one of the plane outer surfaces of the inside section, by means of a wedge 17 mounted in a longitudinally extending opening in the section 7. The reduced end of the wedge may be upset at 18 to prevent accidental withdrawal of the former from the section 7.

In order to prevent accidental separation of the extension sections from each other, a detent 20 is screwthreaded into, or otherwise removably secured to the fixed section 6. Cooperating with the detent 20 is a recess 21, formed along one of the longitudinal edges of the movable section 7 and having a shoulder at each end to provide a limit stop for the detent 20.

The guide member 23 for the drill steel B is preferably constructed similarly to the guide member disclosed in applicant's aforementioned prior Patent 1,768,994, the principal difference being the manner of attaching the guide member to the extension. Member 23 has axially spaced guide arms 24 and 25 which are generally semi-

circular in shape as indicated in Fig. 4 and arranged to interengage opposite sides of the drill steel B. The space between the guide arms permits the insertion and removal of the drill steel from the guide member by disposing these parts transverse to one another rather than in the parallel axial planes in which member 23 guides the steel as shown.

Guide member 23 has a quick detachable connection with respect to the outer end of the extension member. The extension part 7 is shouldered at 26, and provides between this shoulder and its free end, a tenon of hexagonal cross-section, which fits in a corresponding slot 27 or mortise formed through the lower end of the guide member. The mortise and tenon connection is held in place by a key 28 passing through a slot 29 in the tenon and which may be chained to the guide member.

The use of the apparatus will be clear from the previous description. With the parts in the position shown in Figs. 1, 2 and 4, steel B is guided by arms 24 and 25 for starting a hole. After the hole has been started, and the guiding of the forward portion of the drill is no longer necessary, the operator removes the key 28, displaces the guide member 23 to the right (Fig. 1) until it is clear of the extension, and then turns the guide member in the direction of the arrow in Fig. 2. When the member 23 has been moved to a position transverse to the extension member 6, 7, it may then be pulled downwardly off drill steel B. If desired, the operator then may replace the guide member upon the extension in inverted position.

To arrange member 23 to guide the drill steel, the above operations are reversed. Since the guide member must be moved longitudinally of the extension and of the drill steel through a distance equal to the length of the tenon, it might appear that the guide will be separated from the drill steel head by at least this distance. On the contrary, however, the guide may be mounted as close as desired to the drill steel head, because of the adjustability of the length of the extension member. This member may be shortened to permit the guide member to be placed on the extension, and thereafter adjusted to any desired position.

While the invention has been herein shown and described in what is now considered to be a preferred form, it is to be understood that the invention is not limited to the specific details thereof, but covers all changes, modifications, and adaptations within the scope of the appended claims.

I claim as my invention:

1. A shell mounting for rock drills having an extension for supporting thereon a drill steel guide, said extension comprising two relative adjustable telescoping sections, means for securing the sections in adjusted position comprising a key and a wedge supported by the outer section, the inner section having a continuous flat surface, said wedge being adapted to force the key radially against the flat surface on the inner section.

2. The combination with a shell mounting for a drilling machine of guide means for the drill steel arranged to be supported on said mounting, and comprising an elongated main supporting member, one end of which abuts against one end of the mounting, an extension member slidably supported by said first member in a relatively longitudinal direction between limiting stops, means to prevent relative axial rotation between said first and second members, means to lock said members against relative longitudinal movement therebetween, a drill steel guide slidable longitudinally on said extensive member with means to prevent relative axial rotation therebetween, means to rigidly lock said guide to the extension member in a plurality of axial positions, said guide being readily and completely removable from said extension when said locking means is released, said guide comprising a body portion engaging the extension and two opposed semi-circular lugs adapted to engage the drill steel so as to prevent displacement of the drill steel from its longitudinal axis yet permitting its free movement longitudinally, said guide being removable from the extension and the drill steel by a longitudinal withdrawal from said extension and an angular movement relative to the drill steel.

3. A rock drill shell mounting for supporting a drilling machine and comprising a shell, a feed screw for the drilling machine supported by said shell, an extension having means for guiding a drill steel, said extension being in line with the feed screw and terminating at one end in an integral flange secured to said shell, said extension being hollow and having a counterbore in the same transverse plane as the flange, and a bearing member for said feed screw removably secured within the counterbore in the extension and being held against rotation with respect to the latter.

GUSTAVE M. NELL.