Nov. 13, 1951 W. H. COLE 2,575,097

DRILL SUPPORT

Filed Dec. 7, 1949 2 SHEETS—SHEET 1

Fig. 1.

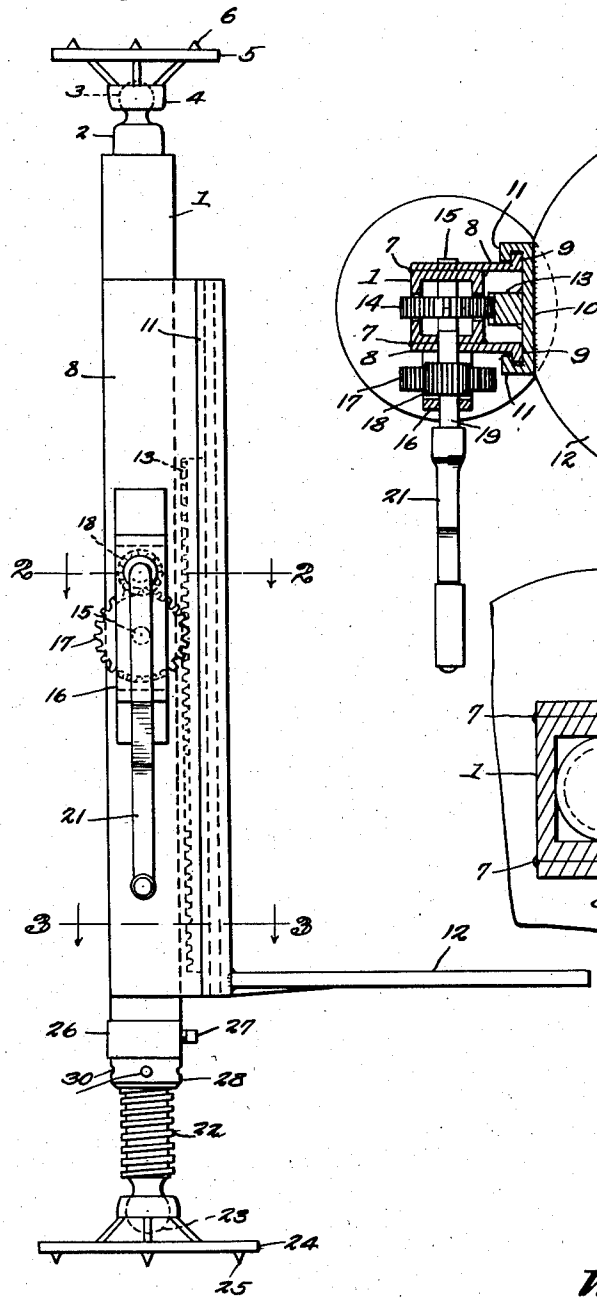
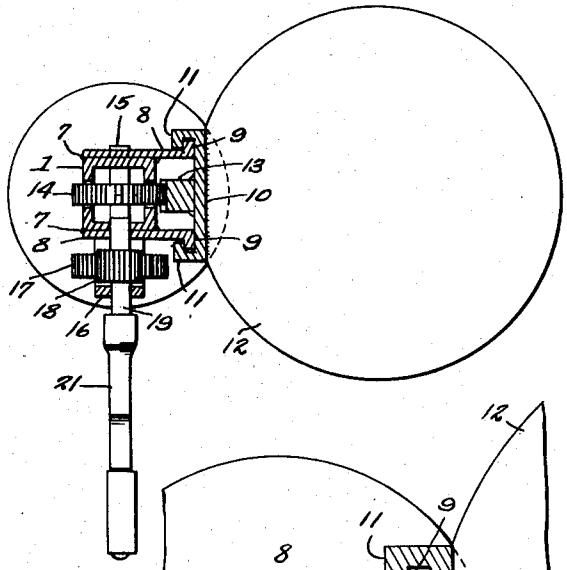


Fig. 2.



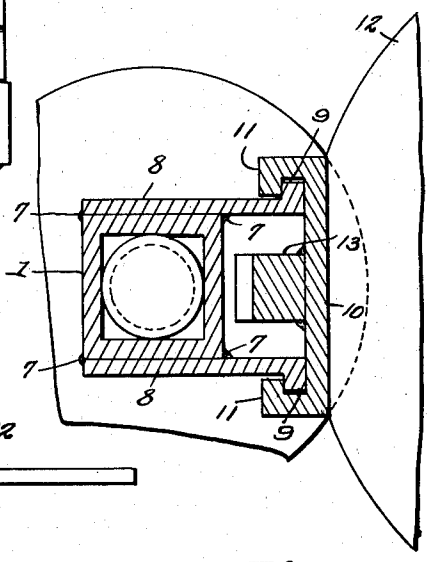


Fig. 3.

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Fig. 4.

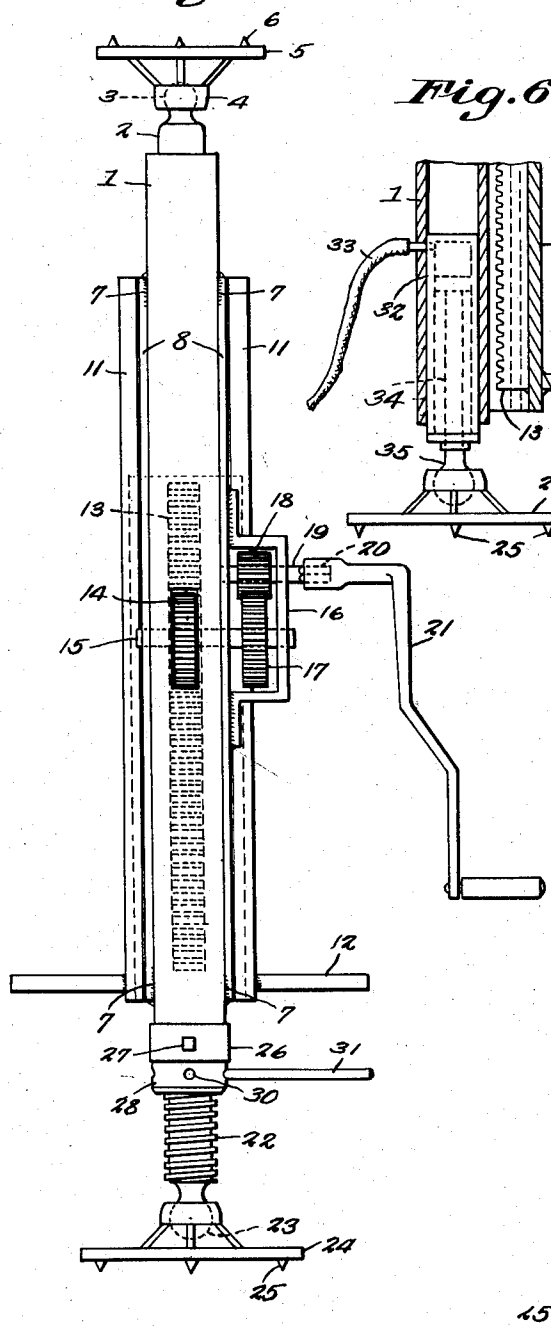
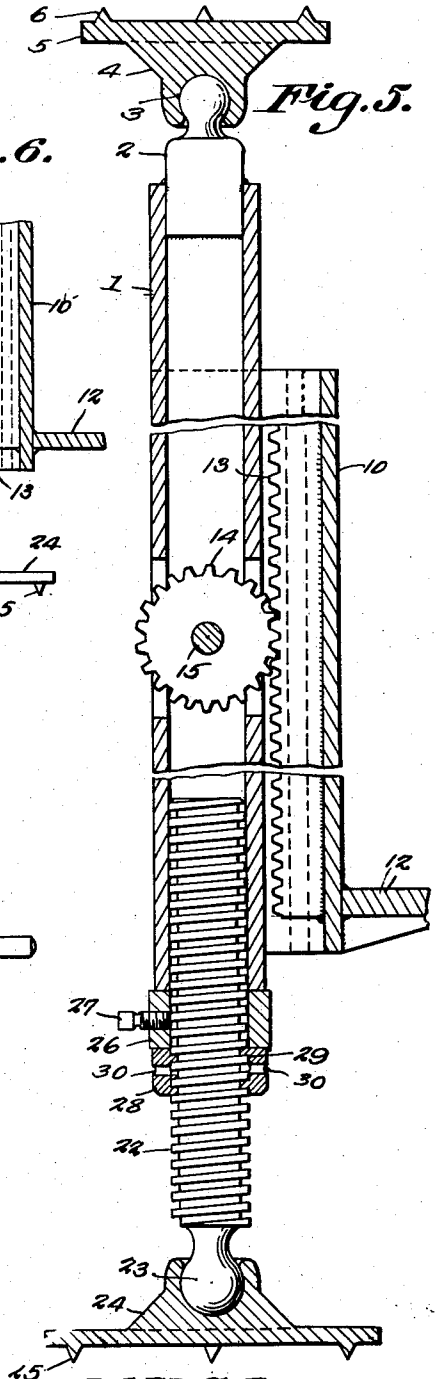


Fig. 6.

Fig. 5.



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DRILL SUPPORT

William H. Cole, Gauley Bridge, W. Va.

Application December 7, 1949, Serial No. 131,639

1 Claim. (Cl. 255—53)

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This invention relates to a drill support, and more particularly, has reference to a supporting device for supporting at any angle and/or elevation electric drills such as used in coal mines or similar locations.

By way of background, it may be noted that drilling operations in mines are hampered considerably by reason of the closely cramped quarters in which the driller must work, the weight and size of the drill, and other factors which make it quite difficult for the driller to hold and operate the drill at the precise angle and elevation desired.

The main object of the present invention is to eliminate these difficulties by the provision of a drill support or elevator which is so formed as to be swiftly positioned immovably in a manner to support a drill at the exact angle and elevation desired by the driller.

Another important object is to provide a support of the type stated which is adjustable as to length within a wide range, is formed at its ends to grip the top and bottom walls, respectively, or the opposite side walls of a mine shaft, can be swivelled throughout three hundred sixty degrees of a circle after having been placed into gripping engagement with said walls, and which after having been engaged with the walls permits subsequent adjustment of a supported drill as to elevation.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings—

Figure 1 is a side elevational view of a drill support formed in accordance with the invention.

Fig. 2 is a section taken substantially on line 2—2 of Fig. 1.

Fig. 3 is an enlarged section taken substantially on line 3—3 of Fig. 1.

Fig. 4 is an elevational view taken from the left of Fig. 1.

Fig. 5 is an enlarged longitudinal section through the drill support, portions being broken away.

Fig. 6 is a fragmentary longitudinal section through a modified form.

Referring to the drawings in detail, I provide

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an elongated tubular casing 1 formed open at both ends, and which in the present instance, but not necessarily in every instance, is of rectangular cross section.

In one end of the casing 1 I mount fixedly, as by welding, a plug 2 that projects from the casing and is formed with a ball 3 mounted in a ball socket formed in the socket member 4 that extends from one face of the flat plate 5 the other face of which is provided with a plurality of spaced gripping teeth 6.

From this, it is seen that the casing 1 is provided at one end with a means for gripping a surface such as the wall or roof of a tunnel or shaft, and that a universal connection exists between said casing and the wall gripping means, so that the casing is capable of being positioned at any desired angle relative to the wall gripped by said plate.

Fixedly secured as by welds 7 to opposite sides of the casing 1 are the elongated flat plates 8, projecting laterally from the casing as best seen from Figs. 1 to 3 inclusive, the projecting portions of said plates being formed with longitudinal outturned flanges 9 providing parallel tracks extended longitudinally of the casing for a purpose to be apparent.

Mounted in slidable contact with the flanges 9 is the elongated movable plate 10 that is formed with inturned longitudinal flanges 11 straddling the guide flanges 9 to provide for slidable mounting of said plate 10 upon the described trackway. At its lower end there is rigidly secured to the plate 10 a flat cradle or cable on which can be supported any type of drill, not shown. In the present instance the cradle 12 is of circular configuration, but this is not critical to the invention. In any event, the drill table or cradle 12 projects laterally from the sliding plate 10 and is fixedly secured to said plate.

Rigidly mounted against the inside face of the plate 10 and disposed between the projecting portions of the plates 8 is an elongated rack 13 in mesh with a gear 14 mounted for rotation with a shaft 15 journaled in the opposite walls of the casing 1 and in a bracket 16 rigidly mounted upon and exteriorly of the casing 1 and formed from a length of flat bar material bent to the shape illustrated in Fig. 4.

As may be readily noted from Fig. 5, opposite portions of the wall of the casing 1 may be cut away to provide openings into which the large gear wheel 14 extends into mesh with the rack 13.

Mounted for rotation with the shaft 15, and housed by the bracket 16, is a gear 17 in mesh

with a pinion 18 also housed by the bracket and rotatable with and by a stub shaft 19 journaled at its opposite ends for rotation in the adjacent wall of the casing 1 and in the bracket 16. The stub shaft 19 projects laterally from the bracket 16 as best seen from Fig. 4, and the projecting end of said stub shaft is formed non-circularly as at 20, so as to fit into a correspondingly shaped socket on one end of an operating crank 21.

At the other end of the casing 1, seen as the lower end in the drawings, there is mounted for telescopic adjustment into and out of the casing a screw 22 the projecting end of which is formed with the ball 23 fitted into the ball socket formed in the socket plate 24 the outer face of which is provided with the wall gripping teeth 25. For holding the screw 22 in proper position I prefer to use a collar 26 capable of being secured to the screw at any point between the ends of the screw by means of a set screw 27.

Below the collar 26, there is mounted the screw adjusting collar 28 having the threaded bore 29 and formed with a circumferential series of spaced openings 30 any one of which receives a removable handle 31.

I believe it will now be apparent that regardless of the wall formation of the tunnel, the drill support can be fixedly mounted at any angle. This result is achieved simply by positioning the casing 1 at any angle desired, and generally, the desired angle will be determined by proper positioning of the drill cradle 12, since in the final analysis, the workman will desire to position the drill at a particular angle while supporting it solidly upon the cradle 12.

In any event, after the casing 1 has been adjusted to the desired position, the operator uses the handle 31 to rotate the screw adjusting collar 28 to elongate the support until the teeth 6 and 25 at opposite ends thereof are pressed tightly in gripping engagement with the opposite walls of the tunnel. The universal connections between the wall gripping means and the respective ends of the casing permit any malformation of the wall surfaces to be compensated for while still holding the casing 1 at the desired angle.

After the casing 1 has been immovably mounted in the manner described immediately above, the drill itself can be adjusted or shifted longitudinally of the casing, and this is done by operation of the handle 21 to elevate the drill cradle 12 on which the drill is supported. Then, drilling operations can commence, and by making small adjustments as to elevation, a row of drill openings can be made in succession, which row will be disposed at a preselected angle determined by proper positioning of the casing 1. At the same time, swivelling of the drill cradle 12 is permitted, by reason of the universal connections, so that openings can be drilled laterally, that is in directions perpendicular to the direction in which the casing extends.

Referring to Fig. 6, I have here illustrated a modified means for adjusting the drill support as to length. Instead of the screw type adjustment previously described, a hydraulic adjusting means is illustrated, there being a cylinder 32 mounted in the end of the casing 1, into which cylinder extends a fluid supply line 33, through which fluid is forced under pressure to act upon a piston 34 on the projecting end of which is the ball 35 receivable in the previously described socket member 24.

What is claimed is:

A drill support comprising an elongated tubular casing; means at opposite ends thereof adapted to grip spaced apart wall surfaces, said casing being of rectangular cross sectional configuration and having bearing openings formed in opposite side walls thereof intermediate opposite ends of the casing; a gear rotatably mounted in the bearing openings and disposed interiorly of the casing, the casing having an opening through which a portion of said gear is extended; elongated flat plates fixedly secured to said opposite side walls, said plates projecting laterally from the casing, the projecting portions of the plates being formed with longitudinal outturned flanges providing parallel tracks extended longitudinally of the casing; an elongated plate having inturned longitudinal flanges straddling the first-named flanges, for slidable mounting of the last-named plate upon said tracks; a drill cradle rigid with and extended outwardly from the last-named plate; and an elongated rack extended longitudinally of and rigidly secured to the inner surface of the last-named plate between said tracks, said rack being in mesh with said projecting portion of the gear.

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