March 30, 1937. W. A. EILER 2,075,185

PORTABLE DRILL MOUNTING

Filed June 27, 1935 2 Sheets-Sheet 1

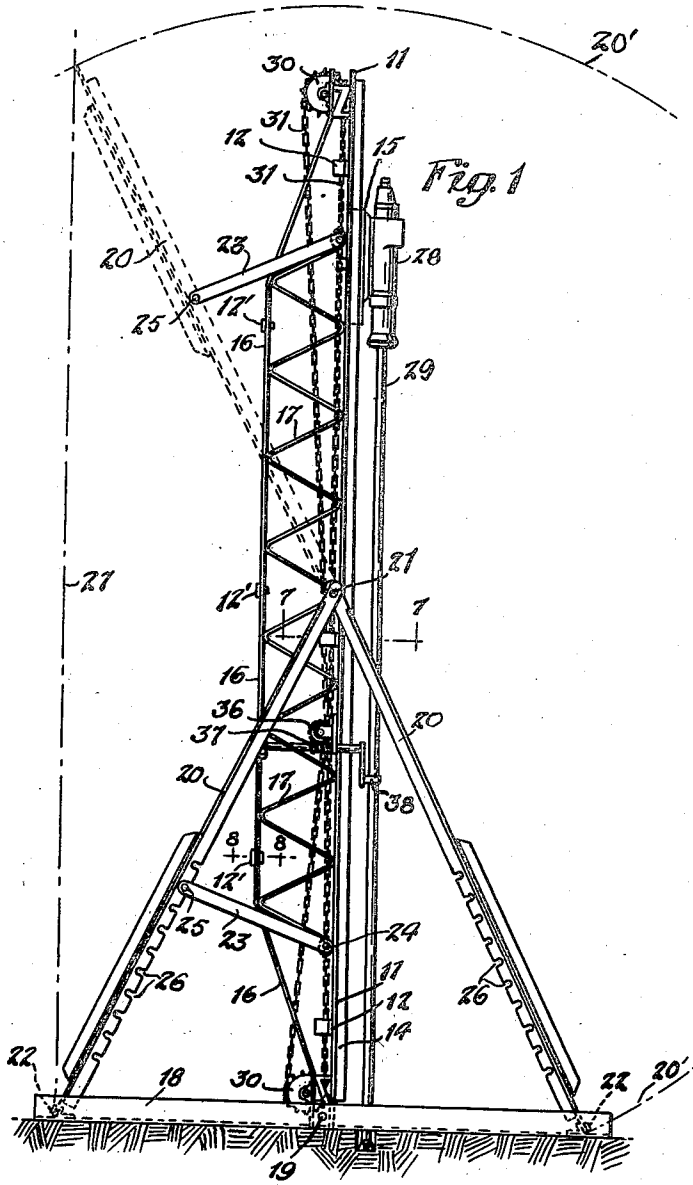


Fig. 1

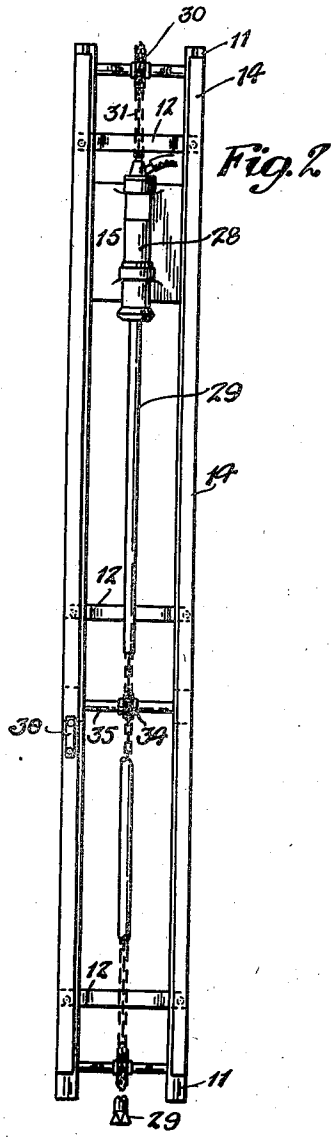


Fig. 2

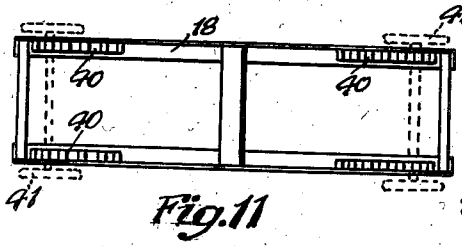


Fig. 11

Inventor

William A. Eiler

By C. Yse Fraser

Attorney

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Fig. 3

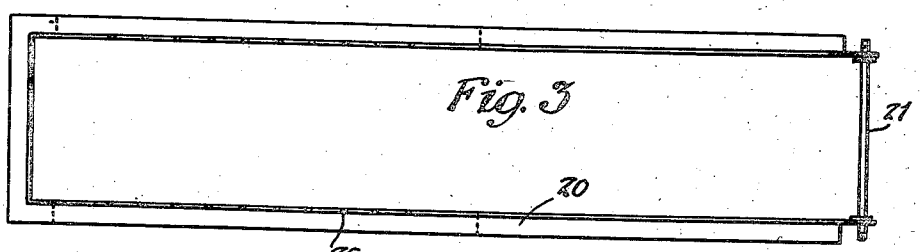


Fig. 4

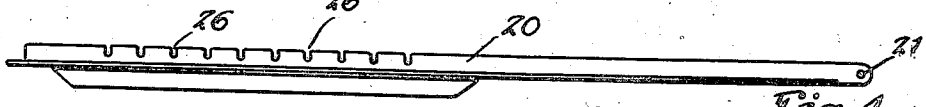


Fig. 7

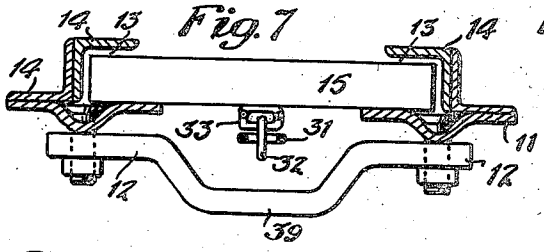


Fig. 6



Fig. 5

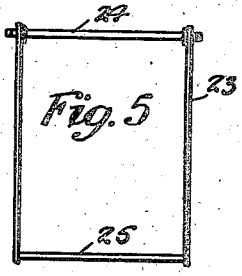


Fig. 8

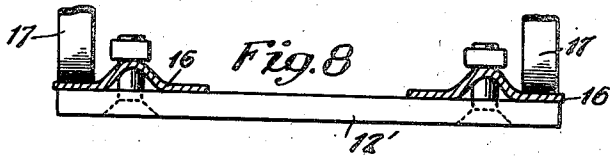


Fig. 12

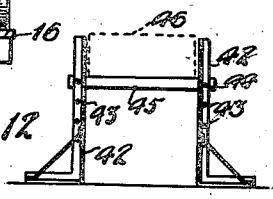


Fig. 13

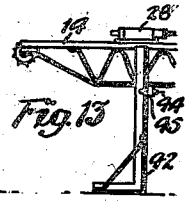


Fig. 9

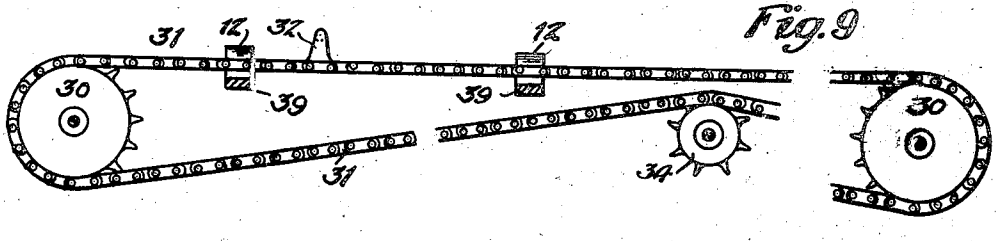
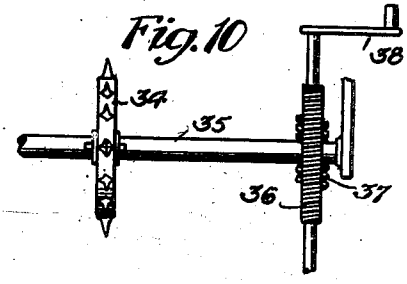


Fig. 10



Inventor

William A. Eiler

By C. H. Fraser

Attorney

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UNITED STATES PATENT OFFICE

2,075,185

PORTABLE DRILL MOUNTING

William A. Eiler, Benton, Wis.

Application June 27, 1935, Serial No. 28,727

6 Claims. (Cl. 255—51)

My invention relates to drills such as rock drills, and more particularly to a portable drill mounting therefor.

An important object of my invention is to provide a drill mounting which can be readily set up and which can be quickly and easily adjusted to any desired angle for drilling.

Another object of my invention is the provision of a drill mounting which is sturdy and substantial but which is extremely light and easy to handle, and which can be transported from place to place with great facility.

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

In the accompanying drawings, which form a part of this specification and wherein like characters of reference denote like or corresponding parts throughout the same,

Figure 1 is a side elevation of my improved drill mounting arranged for vertical drilling,

Figure 2 is a front elevation of the main drill frame,

Figure 3 is an elevation of one of the supporting legs,

Figure 4 is an edge view thereof,

Figure 5 is an elevation of one of the adjusting risers,

Figure 6 is an edge view thereof,

Figure 7 is a fragmentary cross section on the line 7—7 of Figure 1,

Figure 8 is a fragmentary sectional view on the line 8—8 of Figure 1,

Figure 9 is a detail side elevation of the drill adjusting chain, parts being broken away,

Figure 10 is a detail elevation of the driving gear for the chain and its operating members,

Figure 11 is a top plan view of the base,

Figure 12 is an elevation of a supporting stand for use with the drill frame where high elevations are desired, and,

Figure 13 is a side view thereof with the drill frame supported thereon.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, a drill frame comprises a pair of spaced, centrally grooved rails 11 bolted or otherwise secured to cross bars 12, shown in Figure 2 as three in number, although any desired number of cross bars may be used. Suitable channels 13 are formed on each rail 11 by angle irons 14 secured thereto as in Figure 7. A drill plate 15 is arranged in the channels 13 and freely slidable longitudinally of the rails 11. Behind each rail 11 a grooved runner 16 is arranged in spaced parallel relation to the rail and secured thereto for the greater portion of its length by a reinforcing metal strap 17 bent into zig-zag formation as shown in Figure 1. The end portions of the runners 16 are bent over into an inclined position and secured adjacent the ends of rails 11 as seen in Figure 1. Suitable cross bars 12' are bolted to the rear faces of the grooved runners 16 as shown in detail in Figure 8.

A suitable base 18 is provided for vertical and near vertical positions of the drill frame and the end of the drill frame may be removably and pivotally secured to the base, as by a pivot pin 19. A pair of adjustable legs 20, of elongated U-shape and preferably formed of angle iron, are pivoted behind the rails 11 adjacent the center of the drill frame by means of a suitable pivot rod 21. In the vertical position of the drill frame, the legs 20 rest upon the base 18 adjacent the ends thereof, and may be secured thereto by bolts or catches 22 if desired or by any other suitable means. At each end of the reinforcing metal strap 17, a riser 23 is pivoted by means of pivot rods 24. The risers 23 each comprises spaced arms secured to the pivot rods 24 and connected at their ends by suitable cross rods 25 adapted to be received in suitable spaced notches 26 in the sides of the legs 20, as seen in Figure 1. The angle of either of the legs 20 with respect to the drill frame may be varied by moving cross rod 25 to another pair of notches 26.

The rails 11, runners 16, cross bars 12 and 12' and reinforcing straps 17 form a sturdy structurally strong drill frame of very light weight, and the legs 20 may be adjusted to support the drill frame in any desired position from the vertical position indicated in Figure 1 to a horizontal position. To place the drill frame in a horizontal or near horizontal position, one of the legs 20 is swung over the frame to the dotted line position indicated in Figure 1 and braced by riser 23. The path of the end of the leg is indicated by broken line 20' in Figure 1. In this position the base 18 is not used, but the legs 20 rest directly on the surface of the ground indicated by broken line 27 in Figure 1. When, for any reason it is undesirable to swing either of the legs over the end of the drill frame, the leg may be disconnected from pivot rod 21 and connected thereto on the opposite side of the drill frame. If desired, two risers can be arranged at each end of the frame to engage both legs at either end of the frame.

A rock drill 28 of any suitable construction

is mounted on drill plate 15 and operates a drill rod 29 in the usual manner, the drill rod being arranged in parallel relation to the drill frame. An idling sprocket gear 30 is rotatably mounted at each end of the drill frame between the rails 11 as indicated in Figure 1, and an endless sprocket chain 31 is passed over the sprockets 30. One of the links of the sprocket chain 31 is provided with a projecting loop or the like 32 adapted to detachably engage a loop 33 or other projection on the plate 15 to move the plate in either direction with the chain 31.

A driven sprocket gear 34 is keyed to a cross shaft 35 which is operated by a worm gear 36. Worm gear 36 is driven by worm 37 operated by any suitable motor means such as a removable hand crank 38. Assuming a horizontal position of the frame, the lower portion of the chain 31 passes between the upper portion of the sprocket chain and the driving sprocket 34 and engages the upper portion of the sprocket 34 as indicated in Figure 9. With this arrangement the chain is placed under slight tension by sprocket 34 and will be positively driven without danger of disengaging the sprocket 34 which engages only the lower section of the chain.

The cross bars 12 are bowed in their central portions at 39 and the upper portion of the sprocket chain passes through this bowed portion of the bars 12, as indicated in Figures 8 and 9. In operation, the drill plate and drill are moved from end to end of the drill frame by means of crank 38 and driving sprocket 34. The drill plate may be turned end for end, if desired for drilling from the opposite end of the frame.

The lower ends of the legs may be moved to any desired position on the base, and if desired a sliding plate support, or a ratchet 40 may be used to support the legs in their various positions.

When not to be used, legs 20 may either be removed, or they may be swung into alignment with the rails 11 and thus be out of the way of the operator. For horizontal drilling the frame may rest on the runners 16 in place of legs 20. Suitable wheels 41 may be removably attached to base 18 for moving the drill frame from place to place as indicated in dotted lines in Figure 11, and the entire frame may be drawn as a trailer.

It will be seen that I have provided a drill mounting capable of adjustment for drilling at any desired angle, which is strong structurally but light in weight, and which can be easily and rapidly set up and adjusted by a single operator with a minimum of effort.

When it is desired to drill at an elevation which is too high to be accommodated by the legs 20, I provide a pair of supports or standards, one of which is indicated in Figures 12 and 13. Each support comprises a pair of spaced uprights 42 having spaced openings 43 therein to receive pins 44 for securing the cross bar 45 in adjusted position. The drilling frame is placed between the uprights and rests on cross bar 45 as indicated in dotted lines at 46 in Figure 12 and in full lines in Figure 13. Any number of openings 43 may be provided to secure the desired adjustment of cross bar 45. One of the supports is arranged at each end of the frame, and may be of any height desired to permit drilling at a considerable elevation. The cross bars of each support may be arranged at the same level for horizontal drilling or at different levels for inclined drilling.

While I have shown and described the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. In a drill mounting, a drill frame comprising spaced channeled members, cross members connecting said channeled members, a pair of spaced longitudinal runners, reinforcing spacing members connecting the runners with the channeled members, a leg arranged on one side of the drill frame, an adjusting member connecting the leg and frame and adapted to vary the angle between the leg and frame, a second leg member arranged on the other side of the frame, said second leg member being adapted to be moved to the opposite side of the drill frame, an adjusting member adapted to connect said drill frame to the second leg in its second named position to vary the angle between the second leg and the drill frame, a drill slide movably carried by said drill frame, means to adjust the drill slide longitudinally of the drill frame, and a rock drill mounted on said drill slide.

2. In a drill mounting, a drill frame, a leg pivoted at its end to the drill frame and extending at an angle from said frame on one side thereof, a riser pivotally connected to said frame and adapted to engage said leg at selected points along its length, an elongated U-shaped leg arranged on the other side of the frame and pivotally connected thereto, said last named leg being adapted to be swung about its pivot and over the frame to the opposite side of the frame, a second riser pivoted to the frame and adapted to engage the second named leg at selected points along its length while in its second named position to vary the angle between said second named leg and the frame, a drill supporting slide movably mounted on the frame, and means to adjust the drill supporting slide longitudinally of the frame.

3. In a drill mounting, a drill frame, a leg pivoted at its end to the drill frame and extending at an angle from said frame on one side thereof, a riser pivotally connected to said frame and adapted to engage said leg at selected points along its length, an elongated U-shaped leg arranged on the other side of the frame and pivotally connected thereto, said last named leg being adapted to be swung about its pivot and over the frame to the opposite side of the frame, a second riser pivoted to the frame and adapted to engage the second named leg at selected points along its length while in its second named position to vary the angle between said second named leg and the frame, a drill supporting slide movably mounted on the frame, means to adjust the drill supporting slide longitudinally of the frame, said drill supporting slide adjusting means comprising sprockets rotatably mounted on said frame, an endless chain passing around said sprockets and engaging the drill supporting slide, and mechanism engaging one of said sprockets to rotate it in either direction.

4. In a drill mounting, a drill frame comprising spaced channeled members, cross members connecting said channeled members, a pair of spaced longitudinal runners, reinforcing spacing members connecting the runners with the channeled members, a leg arranged on one side of the drill frame, an adjusting member connecting the leg and frame and adapted to vary the angle between the leg and frame, a second leg member arranged on the other side of the frame, said second leg member being adapted to be moved

to the opposite side of the drill frame, an adjusting member adapted to connect said drill frame to the second leg in its second named position to vary the angle between the second leg and the drill frame, a drill slide movably carried by said drill frame, means to adjust the drill slide longitudinally of the drill frame, and a rock drill mounted on said drill slide, said drill slide adjusting means comprising a plurality of sprockets rotatably mounted on said frame, an endless chain passing around said sprockets and engaging the drill slide, and mechanism engaging one of said sprockets to rotate it in either direction.

5. In a drill mounting, a drill frame, a leg pivoted to the drill frame and adapted to extend at an angle from said frame on one side thereof, a riser pivotally connected to said frame and adapted to engage said leg at selected points along its length, a second leg member arranged on the other side of the frame and pivotally connected thereto, said second named leg member being adapted to be moved to the opposite side of the drill frame, a second riser pivoted to the frame and adapted to engage the second named leg member at selected points along its length while in its second named position to vary the angle between the second named leg and the frame, and a drill supporting member mounted on the frame.

6. In a drill mounting, a drill frame, a leg pivoted to the drill frame and adapted to extend at an angle from said frame on one side thereof, a riser pivotally connected to said frame and adapted to engage said leg at selected points along its length, a second leg member arranged on the other side of the frame and pivotally connected thereto, said second named leg member being adapted to be moved to the opposite side of the drill frame, a second riser pivoted to the frame and adapted to engage the second named leg member at selected points along its length, a drill supporting slide movably mounted on the frame, means to adjust the drill supporting slide longitudinally of the frame, said drill supporting slide adjusting means comprising sprockets rotatably mounted on the frame, an endless flexible member passing around the sprockets and engaging the drill supporting slide, and mechanism engaging one of said sprockets to rotate it in either direction.

WILLIAM A. EILER.