No. 816,295. PATENTED MAR. 27, 1906.

K. BROOKS.

EQUALIZING WEIGHT FEED FOR DRILL SHANKS.

APPLICATION FILED JULY 7, 1905.

2 SHEETS—SHEET 1.

Fig. 1,

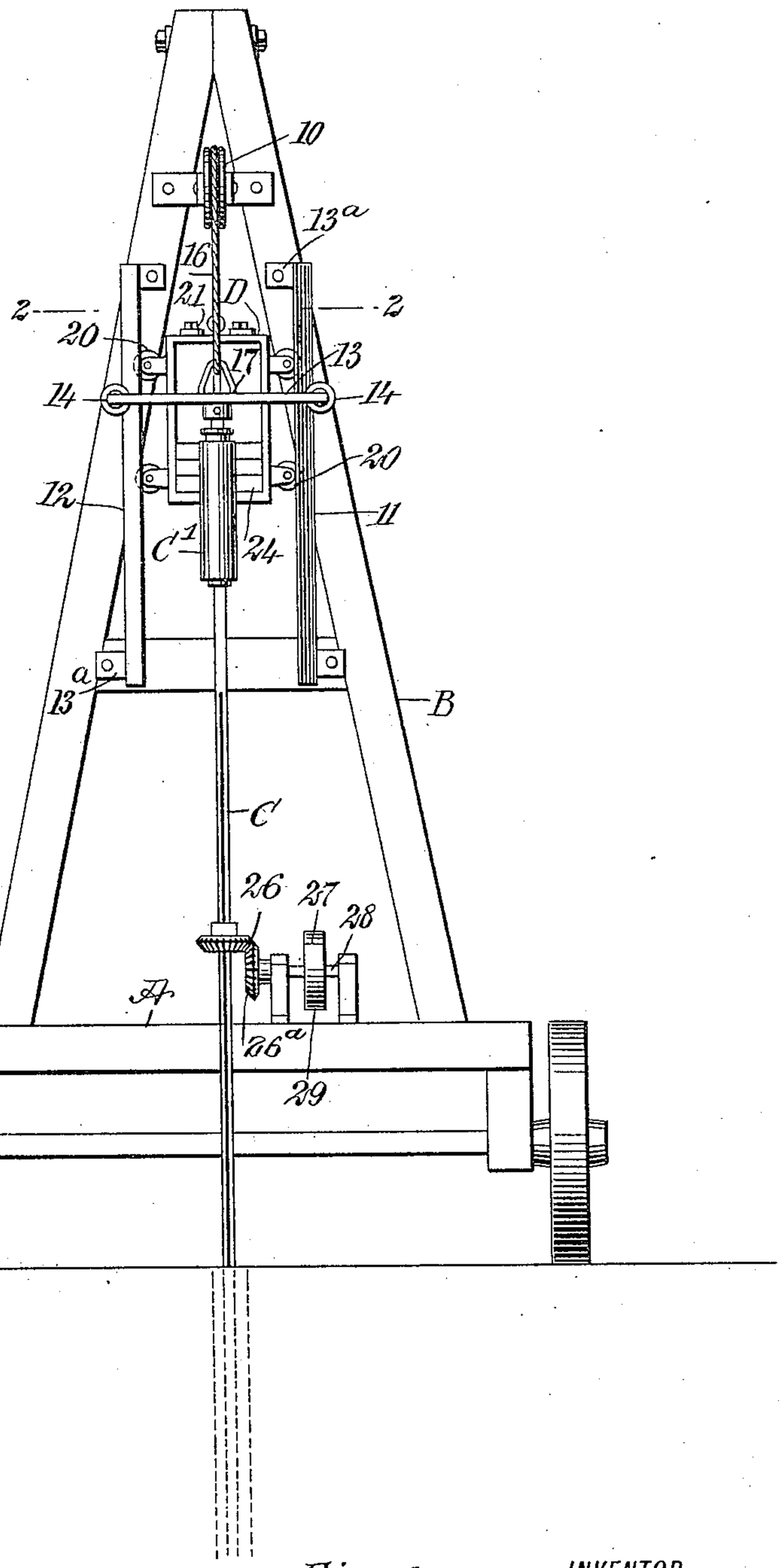
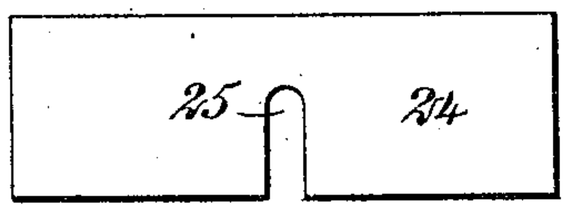


Fig. 4.



WITNESSES:

Edward Thorpe.

J. Fred Acker.

INVENTOR

Karmell Brooks

BY Munn & Co

ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2,

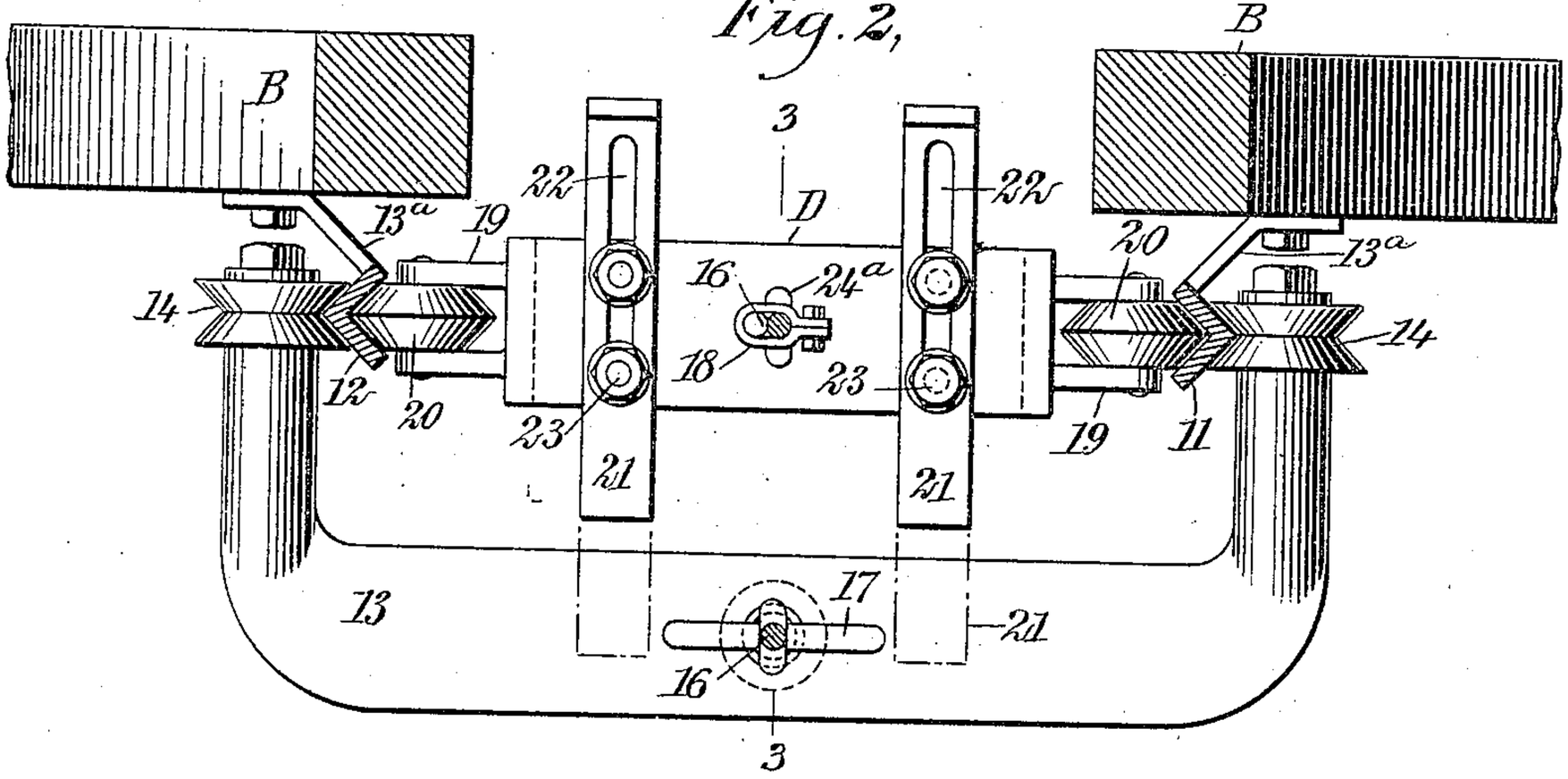
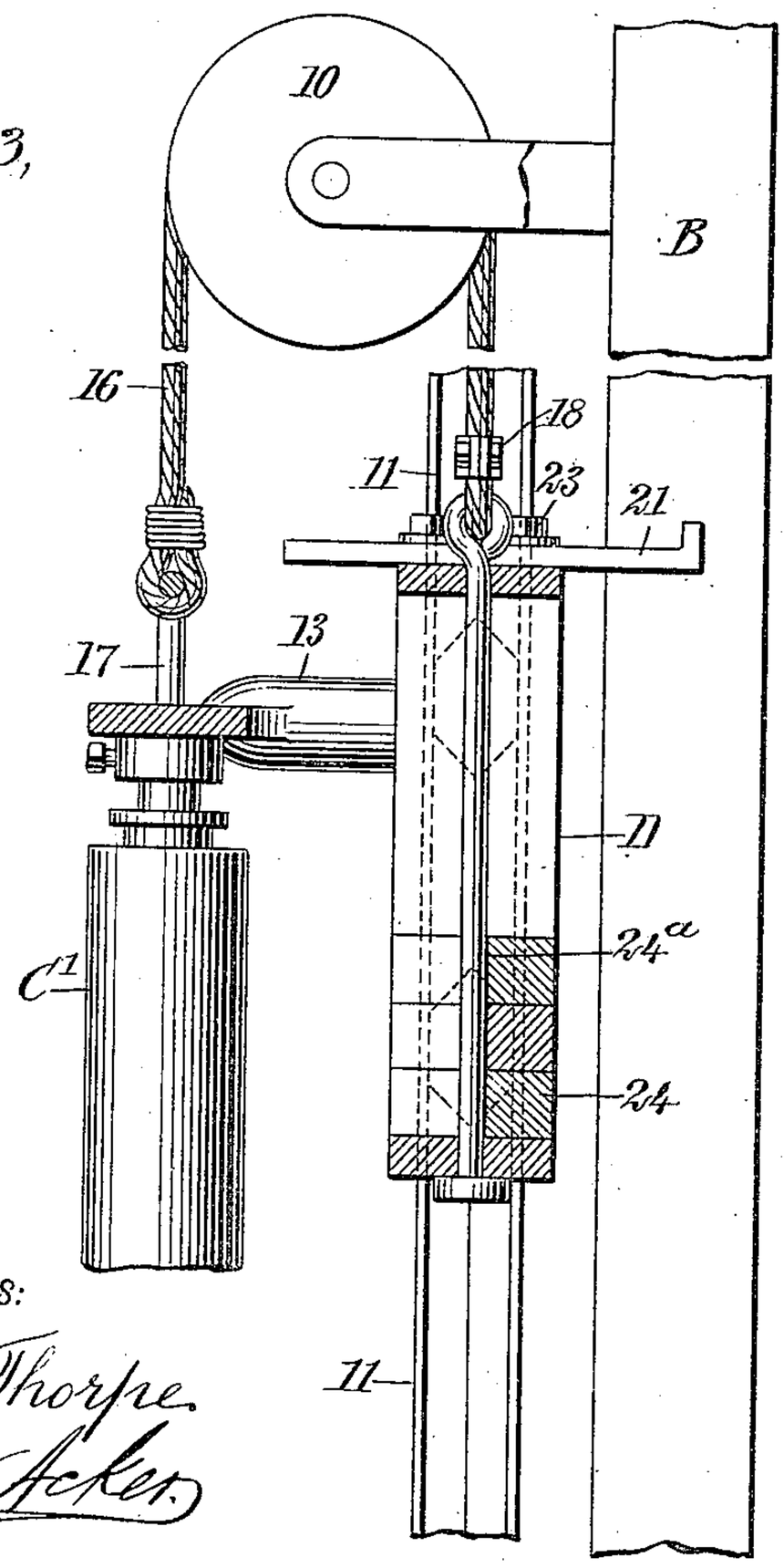


Fig. 3,



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UNITED STATES PATENT OFFICE.

KARMELL BROOKS, OF NEW YORK, N. Y.

EQUALIZING WEIGHT-FEED FOR DRILL-SHANKS.

No. 816,295. Specification of Letters Patent. Patented March 27, 1906.

Application filed July 7, 1905. Serial No. 268,667.

To all whom it may concern:

Be it known that I, KARMELL BROOKS, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Equalizing Weight-Feed for Drill-Shanks, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide an adjustable automatic weight or core drill feed for drill-shanks designed to furnish a uniform pressure for what is known as "core-drills" from the commencement to the completion of its work and to provide the device with adjustable weights, which serve to maintain a perfect equilibrium.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved device. Fig. 2 is an enlarged horizontal section taken practically on the line 2 2 of Fig. 1. Fig. 3 is an enlarged vertical section taken substantially on the line 3 3 of Fig. 2, and Fig. 4 is a plan view of one of the weights.

As the pressure on the diamond regulates the depth of the cut, so in the present invention the pressure on the drill-rods regulates the action of the cutting edge of the core-barrel and is designed to work automatically with a continuous pressure, obviating the present defective method of feeding by hand-pressure, which causes the core to have an irregular surface and sometimes causes jamming of the core-barrel to such an extent as to almost render it useless, thus entailing the loss of the tool. By means of the device to be hereinafter described an even pressure is assured from the surface to any depth below it, producing an even face on the inner wall of the well and the outer surface of the core, and it increases the durability and efficiency of the drill, permitting the work to proceed with despatch as compared with previous efforts in the same direction.

A represents a truck provided with suitable supporting-wheels, and B represents a mast of the A type secured on the said truck. At the upper portion of the mast B a pulley 10 is suitably mounted, being located at the central portion of the said mast, and below the pulley vertical parallel rails 11 and 12 are located, one at each side of the center of said mast, and said rails are held out from the mast by means of horizontal arms 13ª, secured to the top and bottom portions of the rail, as is shown in Figs. 1 and 2. The said rails 11 and 12 are preferably V-shaped in cross-section, as is clearly shown in Fig. 2. A horizontal equalizing-arm 13 is used in connection with the said rails, the said equalizing-arm being substantially U-shaped in plan, and it is provided at each of its rearwardly-extending members with a pulley 14, the said pulleys having a peripheral V-groove. The pulleys 14 are adapted to travel upon the outer faces of the rails 11 and 12. The swivel-head C′ for the drill-rod C is connected in any approved manner with the central forward portion of the equalizing-arm 13, as is shown in Fig. 1. A rope, chain, or cable 16 is secured to the central portion of the said equalizing-arm 13 by means of a suitable eye 17, and the said rope, chain, or cable 16 is carried up over the said pulley 10 at the front and then downward between the pulley and the mast B, as is shown in Fig. 3.

In connection with the rope, chain, or cable 16 a weight-carrier D is employed, which is shown as being of rectangular skeleton contour, and the said weight-carrier D is provided with an eyebolt 24ª, which extends through from top to bottom. The rope, chain, or cable 16 is removably secured to the upper end of the bolt 24ª by means of a clamp 18, as is shown in Figs. 2 and 3; but any equivalent fastening device may be employed. The weight-carrier is provided at each side at top and bottom with horizontal ears 19, and conical wheels 20 are mounted between the ears at the top and at the bottom of the said weight-carrier, which wheels engage with the inner faces of the tracks 11 and 12, as is shown in Fig. 2.

Suspension-bars 21 are transversely and adjustably located upon the upper faces of the weight-carrier D, the said bars being at a right angle to the front face of the mast B, and they extend in direction of the steadying and equalizing arm 13. These bars 21 are provided with longitudinal slots 22, and bolts 23 are passed through these slots and into the upper surface of the weight-carrier D, and in this manner the suspension-bars 21

are rendered readily adjustable and can be firmly held in their adjusted position.

In connection with the weight-carrier D any desired number of weights 24 are employed, one of which is shown in detail in Fig. 4. Said weights extend from side to side of the carrier when in position therein and are provided with a recess 25 in one of their longitudinal edges to receive the eyebolt 24[a]. When it is desired to counterbalance the drill in such manner as to relieve its point from undue pressure, a rod, chain, or cable 16 is connected with the weight-carrier D in the manner shown in the drawings, and as many weights as may be required are placed in the carrier. When it is desired to add to the weight of the drill-rod C and to force the drill down to its work, the rope, chain, or cable 16 is disconnected from the eyebolt 24[a] and the weight-carrier D is permitted to drop, the suspension-bars 21 having first been adjusted outward, so that when the weight-carrier drops the forward ends of the said suspension-bars will rest upon the steadying-arm 13 at each side of its center, and in this manner the burden of the weights in the said carrier is made to bear directly upon the drill-rod from a point above it.

The drill-rods C may be driven in any approved manner—as, for example, as is shown in Fig. 1, wherein a bevel-gear 26 is secured upon the rod, meshing with a similar gear 26[a], mounted upon a shaft 28, supported by the truck, and on the shaft 28 a pulley 27 is secured, adapted for belt connection with any suitable motor.

In operation one thousand pounds of the adjustable weights, for example, are placed in the carrier, the carrier having been coupled to the cable 16, and therefore to the steadying and equalizing arm 13, and then the engine is started and the weights are adjusted to that point which will cause the engine to run at the desired speed without slacking. Should the engine slacken down, enough of the weights are removed to obtain the speed desired in drilling. When a new drill-rod is added, one of the adjustable weights is removed, and this is repeated as each new rod is added to the ones used or until all of the weights are removed.

The weights 24 have a threefold use—first, they add pressure to the drill-rod when the well is shallow; second, they can be used to counterbalance the drill-rods when the weights of the drill-rods exceed what is desired for the pressure of the cutting edge; third, they are employed to add a counterbalance and aid in removing drill-rods when exceedingly heavy, as in deep wells. Furthermore, less motor-power is required when the counterbalancing-weights are employed.

I desire it to be understood that I do not restrict myself to the tracks and rollers acting thereon, as the same may be omitted or any equivalent substituted, and I further desire it to be understood that any convenient support may be substituted for the mast shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A supporting structure for a drill-rod, an equalizing-arm connected with the swivel-head of the drill-rod, a weight-carrier connected with the said equalizing-arm, and removable weights located within the carrier.

2. The combination with a support, a drill-rod and its swivel-head, a weight-carrier connected with the said swivel-head, and weights removably placed in the weight-carrier to counterbalance the drill-rods.

3. In a feed for drill-rods, a support, an equalizing-arm adapted for vertical movement, roller-guides for the said arm, a swivel-head for drill-rods connected with the equalizing-arm, a weight-carrier, roller-guides for the said arm, a swivel-head for drill-rods connected with the equalizing-arm, a weight-carrier, roller-guides for the said carrier, a cable connection between the equalizing-arm and the weight-carrier, and a roller-support for the cable.

4. In feeding mechanism for drills, the combination with a support, a mast located thereon, a pulley mounted at the upper portion of the mast, and parallel vertical rails supported on the mast, the rails being V-shaped in cross-section, of a horizontal steadying-arm substantially U-shaped in plan view, friction-rollers located at the ends of the said arm, having peripheral V-grooves and adapted for engagement with the outer faces of the said rails, a swivel-head for drill-rods connected with the said steadying-arm, a weight-carrier having conical wheels engaging with the inner surfaces of the said rails, a cable attached to the said steadying-arm and removably connected with the weight-carrier, a roller-support for the said cable, and suspension-bars adjustable on the weight-carrier and adapted for engagement with the upper face of the steadying-arm when the cable is detached from the weight-carrier.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KARMELL BROOKS.

Witnesses:
J. FRED. ACKER,
EVERARD B. MARSHALL.