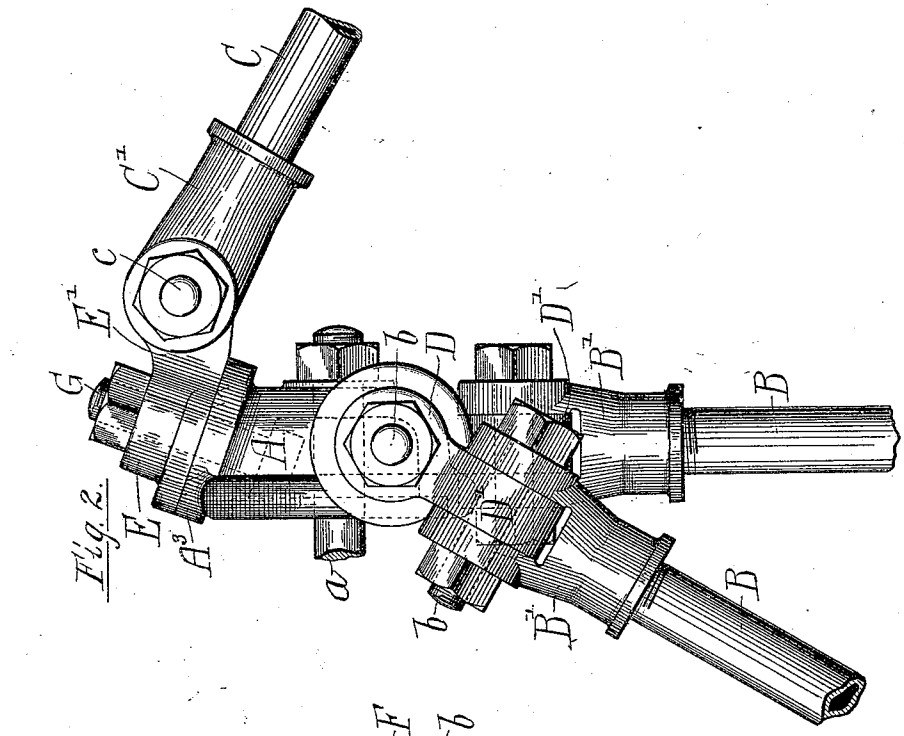
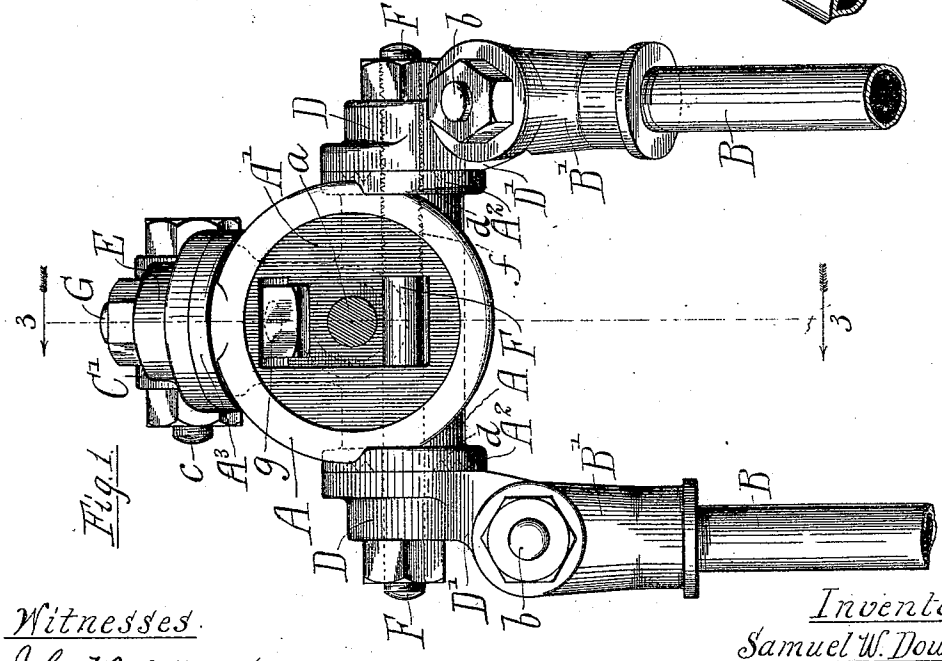
(No Model.) 2 Sheets—Sheet 1.

S. W. DOUGLASS & A. J. SYPHER.

ROCK DRILL TRIPOD.

No. 512,016. Patented Jan. 2, 1894.





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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

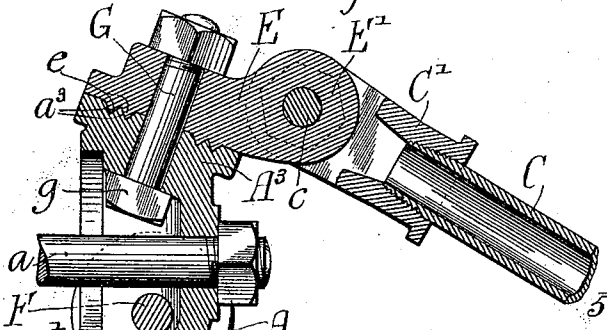

Fig. 4.

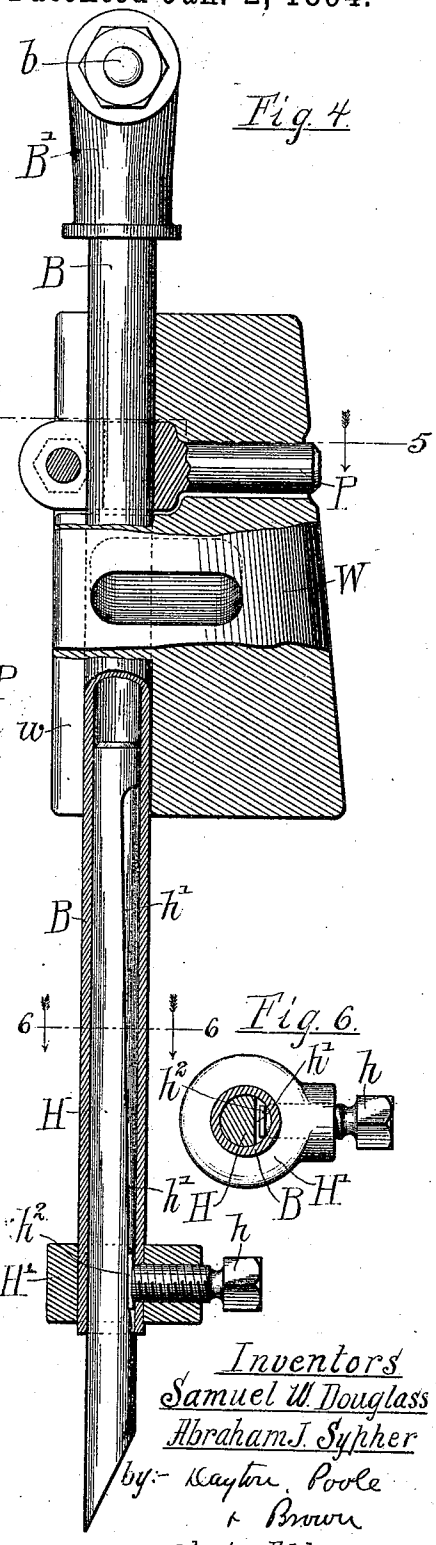

Fig. 5.

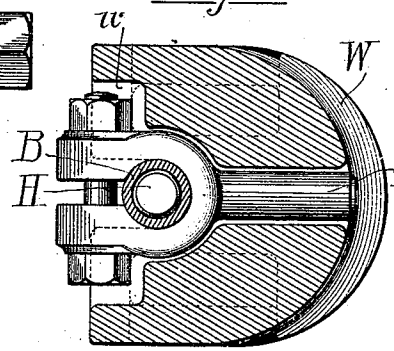

Fig. 7.

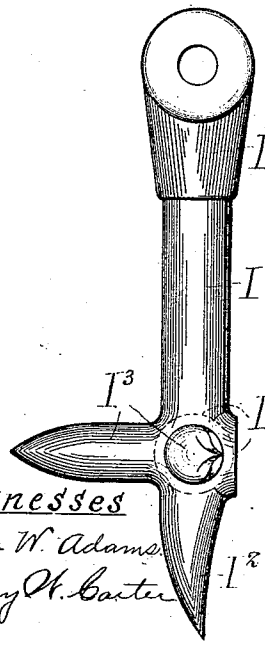

Fig. 8.

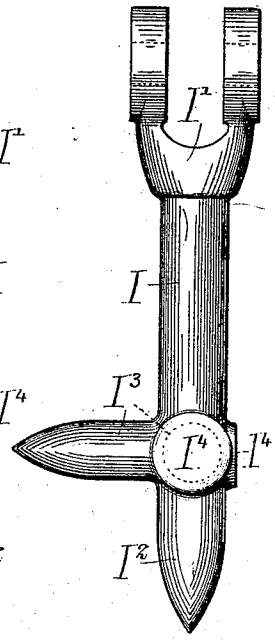

Fig. 6.

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UNITED STATES PATENT OFFICE.

SAMUEL W. DOUGLASS AND ABRAHAM J. SYPHER, OF CHICAGO, ILLINOIS, ASSIGNORS TO MILAN C. BULLOCK, OF SAME PLACE.

ROCK-DRILL TRIPOD.

SPECIFICATION forming part of Letters Patent No. 512,016, dated January 2, 1894.

Application filed January 11, 1893. Serial No. 457,984. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL W. DOUGLASS and ABRAHAM J. SYPHER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rock-Drill Tripods; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in rock-drill supports of that class known as "tripods," and consisting of three supporting legs adjustably connected with a main frame or saddle to which the drill is secured.

The object of our invention is to provide a construction which shall afford a convenient means for effecting the adjustment of each of the legs independently and in any direction, whereby the drill may be easily handled and will be capable of quick adjustment, particularly in cramped and confined localities and on uneven surfaces, and which at the same time shall be simple and cheap to manufacture and easy to repair, and which shall possess other advantages due to the novel construction of the several members comprising the tripod.

Our invention consists in the parts, improvements and combinations hereinafter set forth and particularly pointed out in the appended claims.

In the drawings: Figure 1 is a front elevation of a portion of a tripod embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional elevation taken on the line 3—3 of Fig. 1. Fig. 4 is a detail view, partially in section, of one of the supporting legs with a weight attached thereto. Figs. 5 and 6 are horizontal sections on line 5—5 and 6—6 respectively of Fig. 4. Figs. 7 and 8 are side elevations of one of the auxiliary legs.

The improved tripod thus illustrated, comprises a main frame or saddle A, which supports the drill and which is in turn supported by three legs bolted thereto.

Suitable means are provided for adjustably and removably securing the drill to the saddle, consisting in this instance, of a circular recess A′ forming an annular seat within which the drill back disk is adapted to fit and rotate and a center bolt *a*, engaging the drill frame and the saddle and serving, through the medium of a nut on its rear end, to clamp the drill back disk in the recess A at any desired angle.

B B are the side legs and C the rear leg. The said legs are not attached to the saddle directly, but are pivoted to intermediate connecting or hip pieces D D E, which are in turn pivoted to the saddle.

D D indicate the side hip pieces and E the rear hip piece. Said leg and hip pieces are identical in all respects and are consequently interchangeable. Pivotal connection between the saddle and hip pieces is provided by forming on the saddle outwardly facing bosses A^2 A^2 A^3, against which the hip pieces are secured by bolts. The bosses A^2 A^2 to which the side hip pieces are clamped, are located on each side of the saddle piece and are made parallel and concentric, and a through bolt F extends laterally through the saddle piece and is secured to the same by having a screw-threaded connection therewith, as shown at *f*, the common axes of the bosses A^2 A^2 being so located that the bolt F does not interfere with the drill supporting bolt *a*, in this instance passing below the same. The third boss A^3, to which the hip piece of the third or rear leg is attached, is located about equidistant from the bosses A^2 A^2, being in this instance on the top of the saddle piece, and its pivot bolt consists of an ordinary headed bolt G inserted from the interior of the saddle piece, which is cored out for this purpose, the cavity thus formed being just wide enough to receive the head *g* of the bolt, and the boss E being so inclined as to enable the bolt to be slipped in without striking the lower edge of the circular recess A′.

To further secure a rigid engagement between the hip pieces D D E and the saddle A, they are provided with projecting ribs *d d e*, fitting within corresponding grooves a^2 a^2 a^3 on the bosses A^2 A^2 and A^3, said ribs and grooves being made annular and concentric with the bolts F and G in order to not interfere with the rotation of the hip pieces about said bolts as pivots.

In addition to affording a larger engaging surface of the disks, said ribs and grooves relieve the pivot bolts of a large part of the shearing strain due to the weight of the saddle and drill and to which the said bolts would otherwise be subjected.

Pivotal connection between the hip-pieces D D E and the supporting legs B B and C is provided by means of lugs D′ D′ E′ on the hip pieces and forked heads B′ B′ C′ on the upper ends of the legs to engage said lugs, bolts *b b c* being passed through said lugs and heads to adjustably clamp them together. The legs B B C are so located that the bolts *b b c* stand at right angles to the bolts F and G, thereby providing a form of universal joint between the legs and saddle permitting adjustment of each of the legs at any angle. Said legs are provided in the usual manner with adjustable and removable point sections H inserted in the body portions of the legs, which are made tubular to receive them, and adjustably clamped in position by any suitable means, as by set-screws *h* which enter the tubular body portions near the ends thereof through suitable screw-threaded apertures and engage the said point-sections. Collars H′ are provided on the tubular body portions at this point to afford additional bearing for the set screws and to safely resist the thrust thereof. Said set screws are further shown as engaging the point sections within longitudinal grooves *h′* provided in said point sections and deepening toward the inner ends of the same, thus affording an inclined surface acting to wedge said sections tighter in the tubular body portions under the pressure coming on their points. A bearing plate h^2, is also shown in this instance, between the point of the set screw and the bottom of the groove *h′* to prevent the latter from being mutilated by said set screw.

As the point sections often become so tightly wedged or rusted in as to be difficult of removal or adjustment, it is important that some effective means be provided for loosening or moving them under such circumstances. To this end, therefore, the bore of the tubular body portion of the legs is left open at its upper as well as at its lower end, the forked heads B′ B′ C′ being provided for this purpose with an aperture forming a continuation of the bore of the tubular body portion and opening between the two arms of the forked head, so that when the leg is removed from the saddle a rod may be thrust into the upper end of said bore and the point section forced out thereby. The forked heads are, in this instance, formed separate from the tubular body portion of the legs and are secured thereto by screw-threaded engagement therewith, and the aperture forming the continuation of the bore of said tubular body portion is merely a continuation of the hole which is tapped to afford said screw-threaded engagement. In case a set screw is broken short off in its aperture and cannot, consequently, be withdrawn from its engagement with the bottom of the keyway, the upward and inward inclination of the latter will still enable the point section to be readily dislodged in the manner above described, as any outward movement of the point section will bring the set screw into a deeper portion of the keyway and thus relieve the binding pressure due to said set screw; and it will only be necessary to drive the point section outward a short distance before such binding pressure is relieved entirely.

To facilitate the adjustment of the drill in confined places and especially for mine work where the tripod is set up on a wooden staging to drill holes for "breaking down" ore; also for "flat" drilling or "wall" drilling, we further provide short claws I, adapted to be used in place of one or more of the supporting legs. As herein shown, each of the said claws is formed of a single piece of metal provided at one end with a head I′, identical with the heads B′ B′ and C′ of the supporting legs, and by means of which it may be attached to either of the hip pieces in place of a supporting leg, and at the other end with diverging spurs adapted to be driven into the planking to resist tensile stress on the claw and serve to anchor the tripod in place. Said spurs are herein shown as three in number, one of which I^2, is merely the sharpened end of the short body portion of the claw, while the other two, I^3 I^3, extend laterally at right angles to said body portion and to each other. Flattened bosses I^4 I^4 are formed on the body portion of the claw directly opposite said spurs I^3 I^3, by striking which said spurs may readily be driven in.

In Figs. 4 and 5 the leg B is shown provided with the usual weight W, attached in the usual manner by means of a pin P, adjustably clamped to the leg and engaging a suitable aperture in the weight; the latter being slipped over the pin and having a vertical recess *w* in its face to engage the leg. The number of different parts in the improved tripod thus described is very small, only three patterns being required to provide castings for the saddle and all hip pieces and leg heads, and this, together with the fact that the only machine work required is the boring out of the recess for the drill back disk, renders the cost of manufacture very small and renders it easy to keep a large stock of duplicate parts on hand so that in case of breakage repairs may be effected without delay. Moreover, the design of the parts is so simple that all except the saddle piece may readily be forged by an ordinary blacksmith at the quarry or mine, if necessary.

The improved method of attaching the legs to the saddle gives a much more rigid structure than when a yoke is used, and each leg may be adjusted independently without loosening either of the others and thereby one

man is enabled to readily effect the adjustment.

We claim as our invention—

1. A rock drill tripod comprising an integral saddle piece provided with an annular seat adapted to receive the drill back disk and having a bearing surface at each side of said recess and a third bearing surface between the first two bearing surfaces, bolts projecting from each of the bearing surfaces and serving to clamp supporting legs to the same, the integral saddle piece being recessed behind the drill back seat to permit the inserting of the bolt of the third bearing surface and to receive the head of the same, substantially as described.

2. A rock drill tripod, comprising a saddle provided with a circular recess adapted to receive the drill back disk, projecting bolts at each side of the saddle, a third bolt projecting from the top of the saddle, said saddle being cored out behind the circular recess to receive the head of the third bolt and the latter standing in an inclined position, whereby it may be inserted without striking the lower edge of the circular recess, hip pieces pivoted on said bolts, nuts on the ends of the latter to clamp the hip pieces against the saddle, and supporting legs pivotally attached to said hip pieces, substantially as described.

3. An auxiliary supporting claw for rock drill tripods comprising a short body portion adapted to be clamped directly to the saddle of the tripod in lieu of a supporting leg and integral spurs diverging in a plane at right angles to the axis of the body portion flattened bosses being provided on the body portion opposite said spurs whereby they may be driven into an adjacent surface to resist a tensile stress on the claw, substantially as described.

In testimony that we claim the foregoing as our invention we affix our signatures in presence of two witnesses.

SAMUEL W. DOUGLASS.
ABRAHAM J. SYPHER.

Witnesses:
C. CLARENCE POOLE,
HENRY W. CARTER.