2 Sheets--Sheet 1.

G. E. NUTTING & J. C. GITHENS.

Tripod for Steam Rock-Drill.

No. 162,302. Patented April 20, 1875.

Fig. 1.

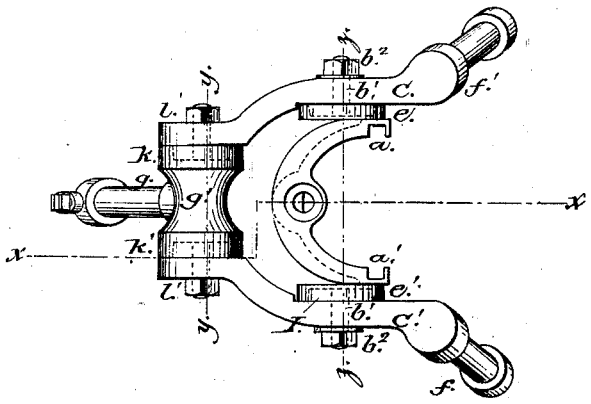
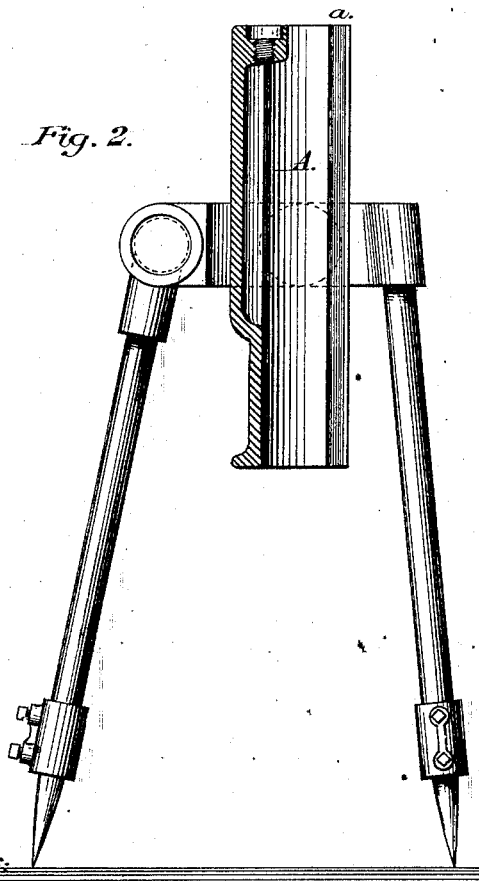


Fig. 2.



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2 Sheets--Sheet 2.

G. E. NUTTING & J. C. GITHENS.

Tripod for Steam Rock-Drill.

No. 162,302. Patented April 20, 1875.

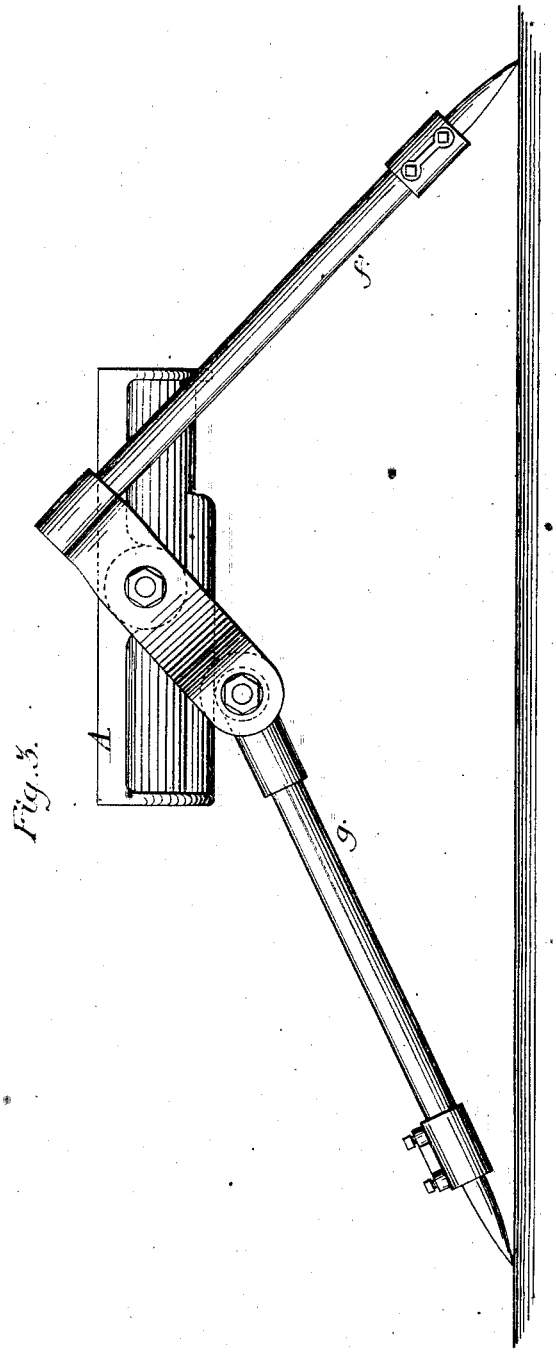

Fig. 3.

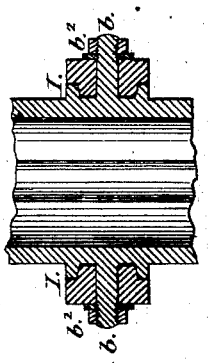

Fig. 5.

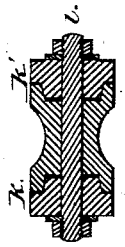

Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE E. NUTTING AND JOSEPH C. GITHENS, OF NEW YORK, N. Y.

IMPROVEMENT IN TRIPODS FOR STEAM ROCK-DRILLS.

Specification forming part of Letters Patent No. **162,302**, dated April 20, 1875; application filed April 8, 1875.

To all whom it may concern:

Be it known that we, GEORGE E. NUTTING and JOSEPH C. GITHENS, both of the city and State of New York, have invented certain Improvements in Tripods for Supporting the Steam-Cylinders of Rock-Drills, of which the following is a specification:

Our invention relates to the structure or apparatus by means of which the steam-cylinders of rock-drills are adjusted and rigidly supported in variable positions; and consists of a substantial shell or bed, which embraces the exterior of the steam-cylinder, and is mounted on substantial trunnions having partly conical bearings in a yoke, which is supported by three extensible legs, two of which are rigidly affixed to the yoke, while the other leg is pivoted at its upper end, so that it may swing backward and forward, and thus permit the adjustment of the apparatus with reference to the ground upon which the drill is placed when being operated. The shell or bed has longitudinal grooves, which engage tongues or lugs upon the outside of the cylinder when it is desired to change its position in the bed.

The accompanying drawings are as follows, viz: Figure 1 is a top view of the supporting-structure. Fig. 2 is a longitudinal section of the same, through the line *x x* on Fig. 1. Fig. 3 is a side elevation of the same, showing the legs spread apart, as required to enable the cylinder-bed to assume a horizontal position. Fig. 4 is a section through line *y y* on Fig. 1, showing the cone-faced bearings of the head of the pivoted leg. Fig. 5 is a section through line *z z* on Fig. 1, showing the cone-faced trunnion-bearings.

The shell or bed A, provided with the grooves *a* and *a'*, is mounted and swings upon the trunnions *b b*, having their bearings b^1 b^1 in a yoke, which is formed of the two arms *c* and *c'*. Broad washers *e* and *e'* are placed in the trunnions, between the shell and the arms *c* and *c'*. The trunnions project outwardly beyond the arms, and a screw-thread is cut upon them, for the purpose of engaging the thread of the nuts b^2 b^2, by means of which the shell is held by friction at any desired angle. A conical boss is turned on the inside of each of the arms *c* and *c'*, and the shell is correspondingly countersunk, as shown at I I on Fig. 5, the object of this construction being to obtain a larger friction by the wedge-like action of the cones in their seats when the nuts b^2 b^2 are tightened. The head *g'* of the pivoted leg *g* is countersunk to receive conical projections upon the inside of the rear ends of the arms *c* and *c'*, as shown at *k k'*, and the pivot *l* is a screw-bolt, the head of which bears upon the outside of one of the arms, while the shank extends through the arms, and receives the nut *l'*, which bears upon the outside of the other arm. In this case, as in the case of the trunnion-bearings, the tightening of the nut *l'* drives the cones into the countersinks in the head *g'*, and holds the leg *g* by powerful friction. To the front ends of these arms the supporting-legs *f* and *f'* are rigidly affixed. The other supporting-leg *g*, being pivoted by its head *g'* between the rear ends of the arms *c* and *c'*, is capable o being swung backward and forward, as may be required, for the adjustment of the structure with reference to the operation of the drill. The legs are telescopic, and extensible in the usual way.

It will be seen that the facilities for adjusting the drill embrace, first, the grooved bed in which the cylinder slides; secondly, the trunnions upon which the bed is mounted, by means of which the angle of the cylinder, and consequently of the drill, may be varied without altering the position of the legs; thirdly, the movable leg of the tripod, by means of which the cylinder may be made to occupy any part of the arc of a circle described by the sweep of the fixed supporting-legs *f* and *f'*; fourthly, the telescopic legs, either one or all of which may be varied in length.

Fig. 5 illustrates the manner in which the legs may be spread apart for the purpose of varying the position of the cylinder-bed. By extending or elongating the fixed legs, it will, of course, be seen that still further variability may be given to the position of the yoke, and consequently of the cylinder-bed.

We claim as our invention, in an apparatus for supporting rock-drills—

1. The combination of a grooved bed, mounted upon trunnions, with a yoke supported upon two fixed extensible legs, and one

pivoted extensible leg, for the purpose of facilitating the adjustment of the drill-cylinder at variable elevations, and at variable angles, substantially as described.

2. A yoke provided with bearings for the trunnions of a drill-cylinder bed, in combination with two fixed legs and one movable leg, the latter pivoted in double conical-face bearings by means of a screw-bolt and nut, for the purpose of securely holding the movable leg in prescribed position, substantially as set forth.

3. The combination of a drill-cylinder bed with two horizontal trunnions having conical-face bearings, each provided with a screw-bolt and nut, for the purpose of securely holding the cylinder-bed in prescribed position, substantially as set forth.

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