

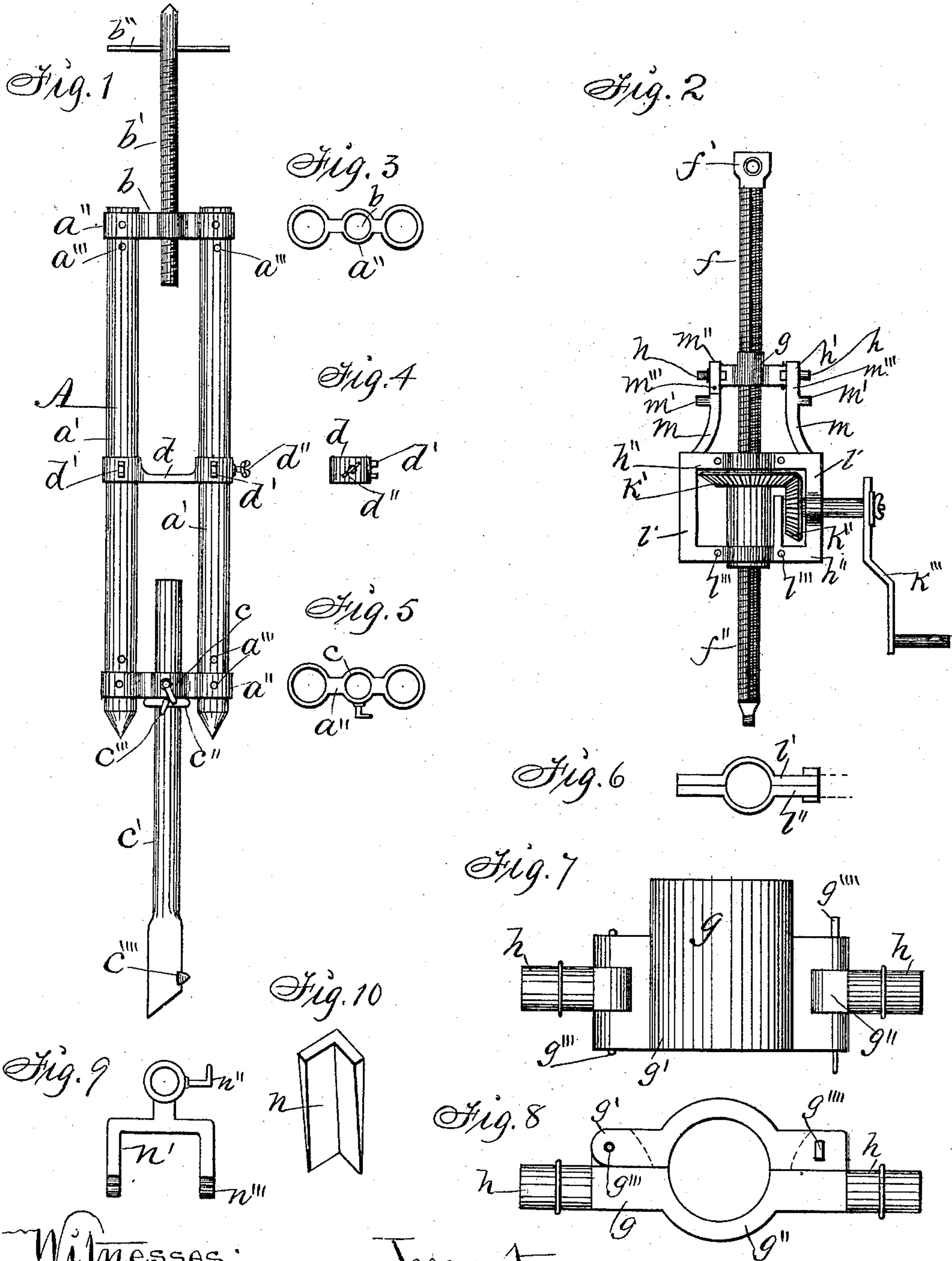
(No Model.)

2 Sheets—Sheet 1.

W. A. J. THOMPSON.
DRILL FOR MINING COAL.

No. 378,481.

Patented Feb. 28, 1888.



Witnesses:

John F. Hard.
R. H. Orrig.

Inventor:

William A. J. Thompson,
By Thomas G. Orrig, Attorney.

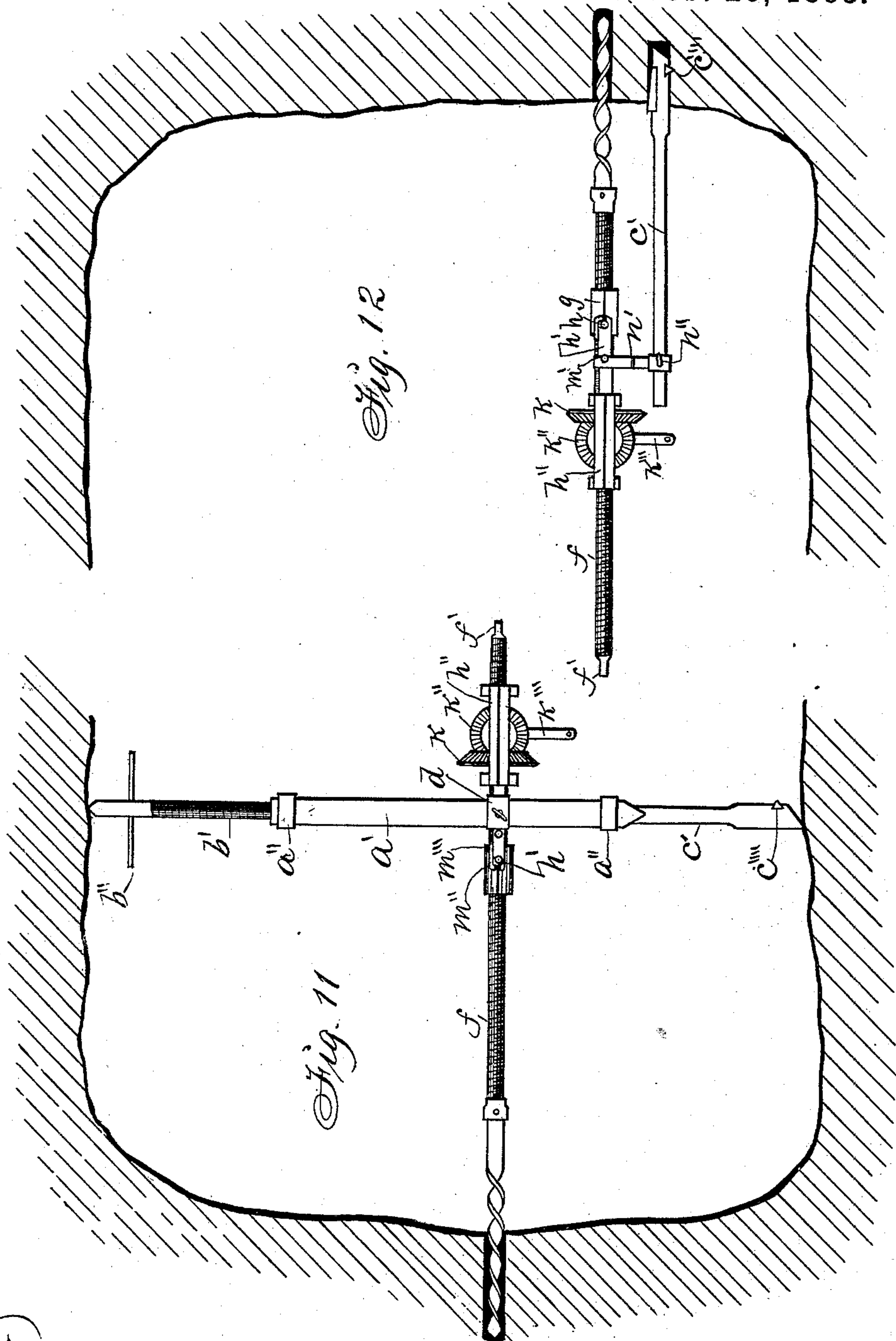
(No Model.)

2 Sheets—Sheet 2.

W. A. J. THOMPSON.
DRILL FOR MINING COAL.

No. 378,481.

Patented Feb. 28, 1888.



Witnesses:
John H. Ward,
R. H. Orwig.

Inventor:
William A. J. Thompson,
By Thomas G. Orwig, Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM A. J. THOMPSON, OF OTTUMWA, IOWA.

DRILL FOR MINING COAL.

SPECIFICATION forming part of Letters Patent No. 378,481, dated February 28, 1888.

Application filed June 20, 1887. Serial No. 241,938. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. J. THOMPSON, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented a new and useful Drill for Mining Coal, of which the following is a specification.

The object of my invention is to provide a separate and convertible drilling-machine that can be advantageously operated in both thick and thin veins and in chambers and drifts where other machines of similar construction cannot be operated; and my invention consists in the construction and combination of a post, a detachable post-extension, and a detachable and reversible frame to support the drill on the post, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the extension-post; Fig. 2, a top view of drilling mechanism; Figs. 3 and 5, top views of the upper and lower clasps of the post-frame; Fig. 4, an edge view of the adjustable trunnion-support; Fig. 6, a bottom end view of the frame that supports the drill and operating mechanism; Fig. 7, a top view of the detachable and reversible nut of the drilling mechanism; Fig. 8, an edge view of the same; Fig. 9, a detail view of the trunnion-support to be attached to the extension of the post; Fig. 10, a perspective view of a wedge used in combination with lower extension of the post. Fig. 11 is a view showing the drill and post combined and in position as required for practical use. Fig. 12 is a view showing the drill and the post-extension combined and in a horizontal position, as required in places where the complete post cannot be admitted.

A is a post, the main parts of which are two pieces of iron tubes, a' , with their lower ends pointed to engage in the floor of a vein. These pieces a' are held firmly and parallel to each other by the two adjustable clasps a'' , which are fitted to the upper and lower ends of the tubes a' and secured by pins passed through the holes a''' . In the upper clasp a'' , midway between the tubes a' , is a hole, b , to receive the screw b' , which may be extended by means of the hand-lever b'' to any desirable distance, as required, to hold the post A firmly by its contact with the roof of the vein. The lower

clasp a'' also has a hole, c , coinciding with the hole b of the upper clasp, which receives the bar c' and constitutes the lower extension of post A.

The bar c' is provided with the adjustable collar c'' , which collar may be secured to the bar c' at any point of elevation desired by means of the set-screw c''' , to support the entire upper portion of the post A. The lower end of the bar c' is square and provided with a beveled point and a spur, c'''' , on one corner of the square portion.

Upon the tubes a' and between the clasp a'' is a third clasp, d , with trunnion-bearings d' upon one side. This clasp d slides freely up and down upon the tubes a' , and may be secured at any point by the set-screw d'' , as required, for operating the drill at any desired height; and in view of the fact that the bar c can be removed and the top cross-piece, a'' , that carries the screw, lowered at pleasure, it is obvious that the post can be reduced in length by simply adjusting the upper cross-piece, to thereby adapt the post for a greater variety of positions in mines than other posts of similar appearance.

The drilling mechanism shown in Fig. 2 is composed of the feed-screw f , with drill-socket f' at one end and the groove f'' running the entire length of the screw. The screw f feeds through the clamp-nut g , which is composed of the two parts g' and g'' , hinged at g''' and secured on the opposite side by the pin g'''' . From the lower part, g'' , of the clamp-nut g project on each side the trunnions h , designed to rest in bearings h' in the frame h'' . The screw f also passes through the hub k of the bevel gear-wheel k' , which is provided with a key that travels in the groove f'' . A rotary motion is thus given to the screw f , with drill attached, by the bevel gear-wheels k' and k'' and the crank k''' .

The bevel-gearing is supported by the rectangular frame h'' , made of the two parts l' and l'' , as shown in Fig. 6, which parts are bound together by bolts or rivets l''' .

From the front side of the frame l two arms, m , project forward, having on their outer sides the trunnions m' , which engage with and are supported in the bearings d' of the clamp d on the post A. The bearings h at the end of the arms m are made with the upper part m'' on

one side and lower part m'' on the other side, pivoted at m''' , so that the parts m'' may be swung laterally and the clamp-nut g removed and inverted and again replaced and fastened, as required, when the entire drilling mechanism is inverted on the trunnions m' to throw the crank k''' on the opposite side of the post A in cases where room will not permit the crank to be operated on the right side.

Fig. 11 shows the entire mechanism in operative position, with arms m extending between the tubes or legs a' and the trunnions m' resting in the bearings d' . When the vein is too thin to set the post A with the extension c' , the extension c' may be removed and the points of the tubes or legs a' allowed to rest on the floor, thus reducing the length of the post.

Fig. 12 shows the drill in position to be operated in a vein too thin to allow the post A to be erected. In this case a hole of a few inches depth is broken into the wall with a pickax or hand-bar, and the square end of the bar c' inserted horizontally and the wedge n driven firmly into the hole with the bar c' , thus forcing the spur c''' into the side of the hole so firmly that the backward pressure of the drill in operation will not withdraw it. The trunnion-support n' is then slipped upon the end of the bar c' and retained in any desired position by the set-screw n'' . Trunnions m' are then placed in the bearings n''' of this frame n' , and the means of support are complete.

By this management of the drilling mechanism with the trunnion-bearings and means of support it is possible to drill a hole at any desirable angle by swinging the entire drilling-frame on the trunnions.

I am aware that a frame has been made of two straight side pieces and a number of cross-pieces in such a manner that it can be fastened in a drift by means of a vertical adjustable screw, to support a vertical adjustable drill-carrying frame; but my manner of making an extensible frame and post adapted to be separated and a part thereof used in a horizontal position to support a drill is novel and advan-

tageous, in that the complete device is adapted to be operated in a greater variety of positions than any similar post heretofore used to support an adjustable drill.

I am aware that an extensible post has been composed of two parallel upright pieces, a fixed cross-piece at the top, and adjustable cross-pieces at the bottom and center, and that two parallel tubes have had a fixed cross-piece at their lower ends and a telescopic extension at their top ends that carried a screw in the center of its fixed cross-piece.

I am also aware that a post has had a detachable and vertical adjustable bar at its lower end; but my manner of constructing an extensible post with two plain tubes and three sliding cross-pieces and a straight bar having an adjustable collar is novel and greatly advantageous, in that it can be changed in length by lowering the top cross-piece, by elevating the lower cross-piece, by adjusting the collar on the detachable bar at its bottom, and by detaching the said bar, and therefore fitted into a greater variety of positions than a post that has less adjustable parts.

I claim as my invention—

1. A separable and extensible post for suspending and operating a mining-drill, composed of two straight parallel tubes, a cross-piece having a female screw, a cross-piece having a perforation coinciding with said female screw, and a vertically-adjustable cross-piece adapted to carry a drill, a screw fitted in said female screw, and a straight bar having an adjustable collar fitted in the perforated cross-piece or clasp, to operate in the manner set forth, for the purposes stated.

2. A drill-supporting frame having arms m , provided with trunnions m' , cross-pieces g' and g'' , and pivoted bearings h , the frame n' , having trunnion-bearings n''' , and the bar c , constructed, arranged, and combined in a drift, to operate in the manner set forth.

W. A. J. THOMPSON.

Witnesses:

N. A. THOMPSON,
FRANK DUNGAN.