

(No Model.)

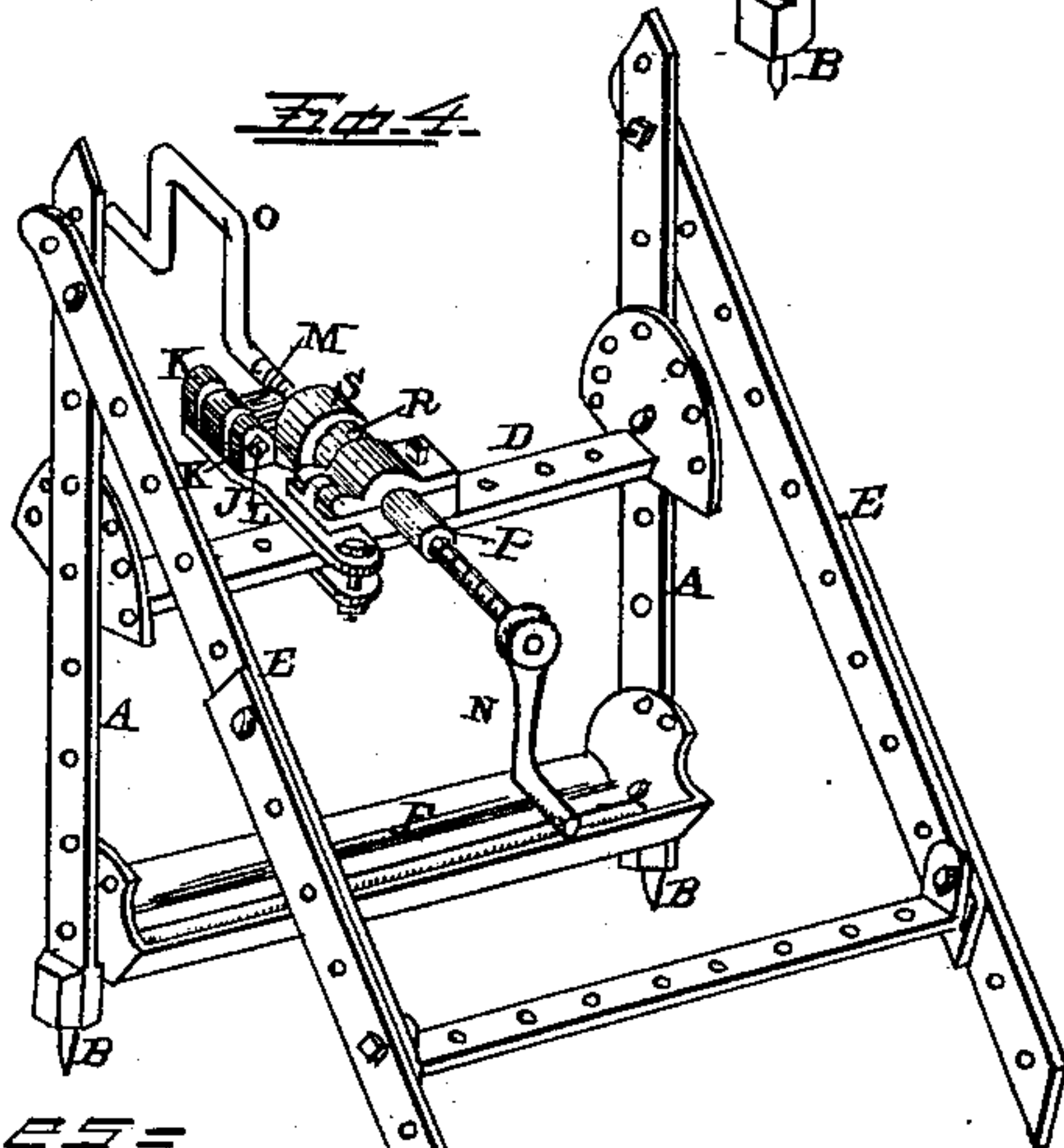
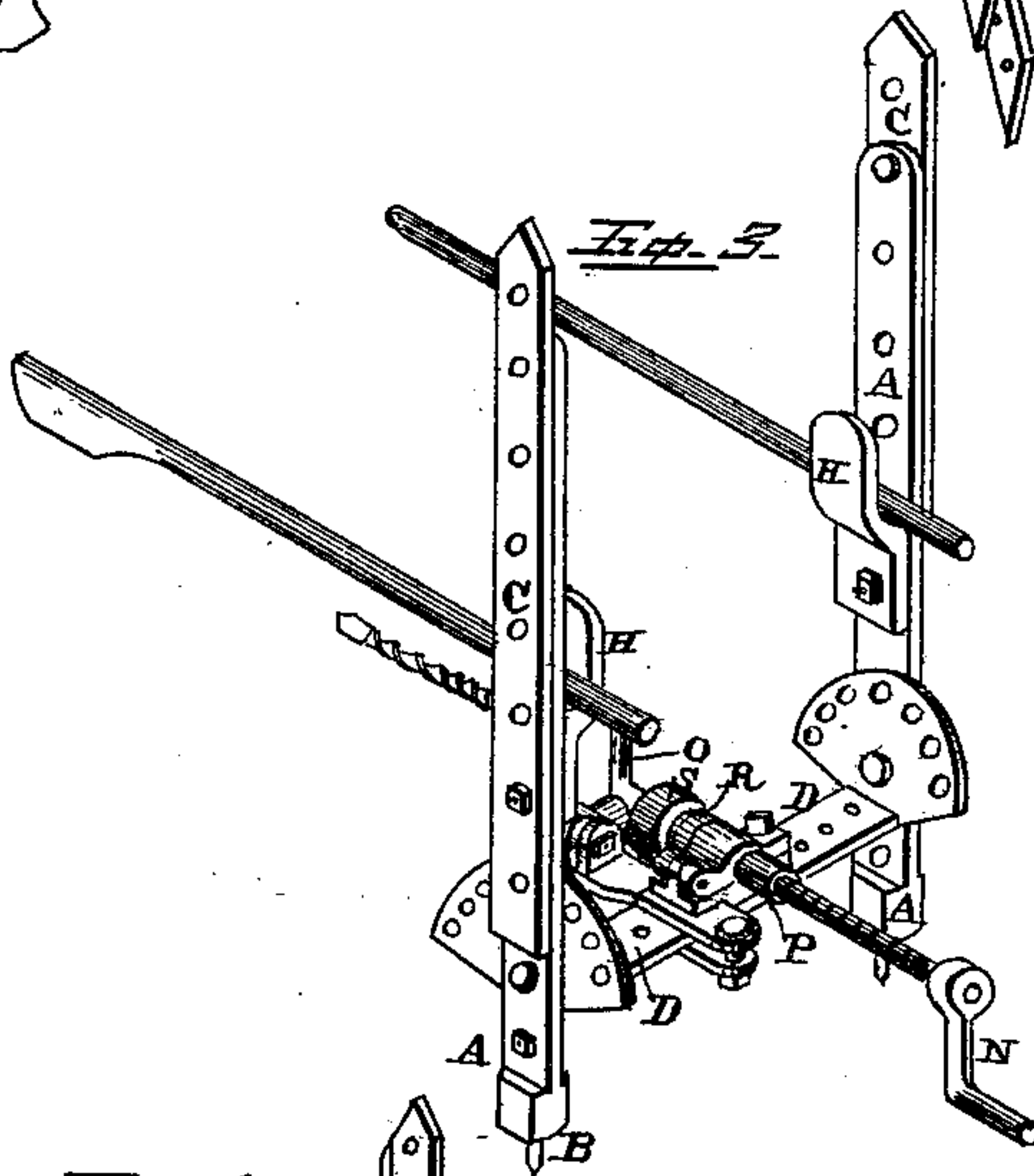
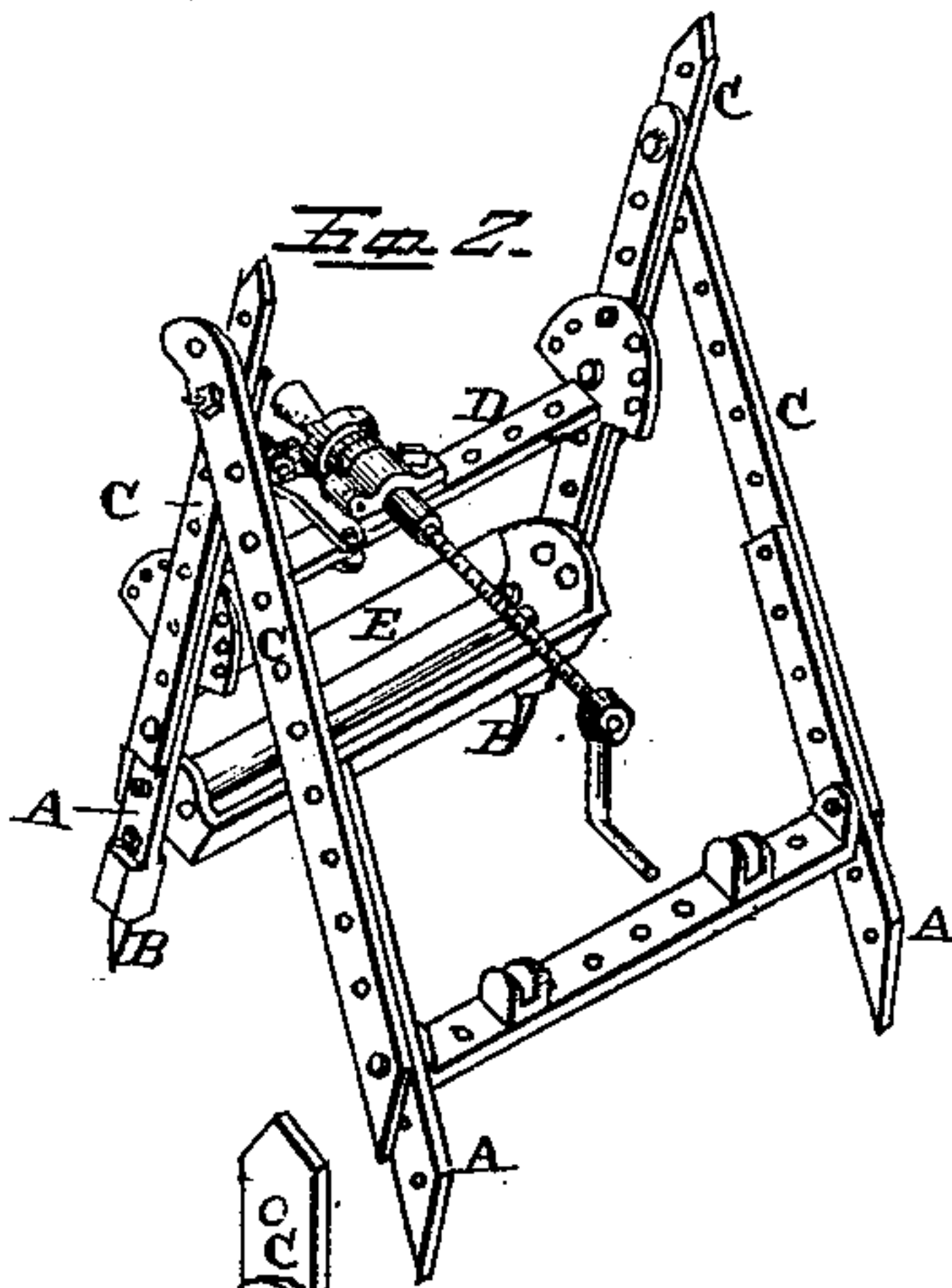
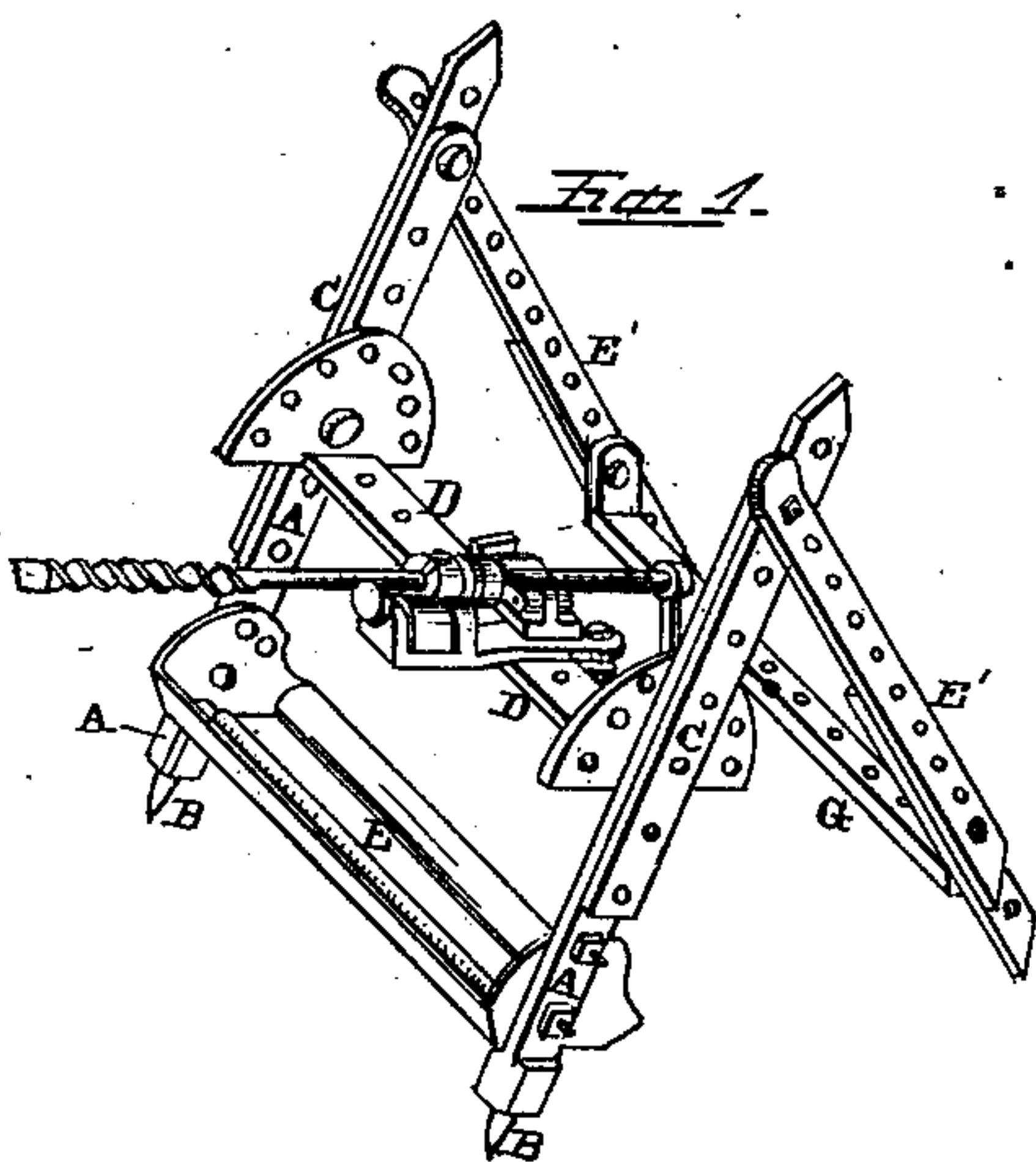
3 Sheets—Sheet 1.

W. WEAVER.

Coal Mining and Drilling Machine.

No. 229,781.

Patented July 6, 1880.



Witnesses—

W. W. Mortimer  
W. H. Kern

Inventor—

Wm. Weaver,

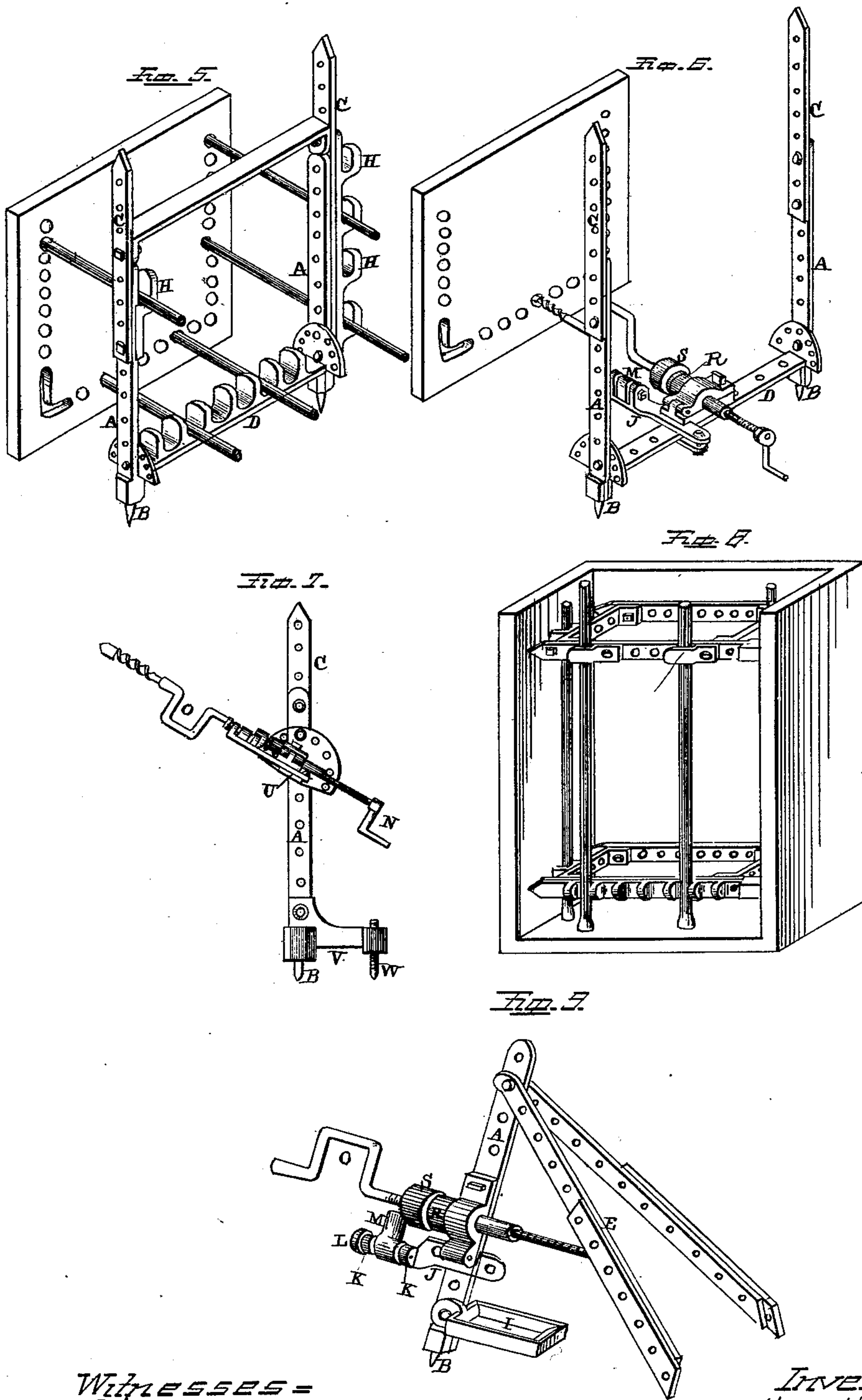
per

F. A. Lehmann, atty.

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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

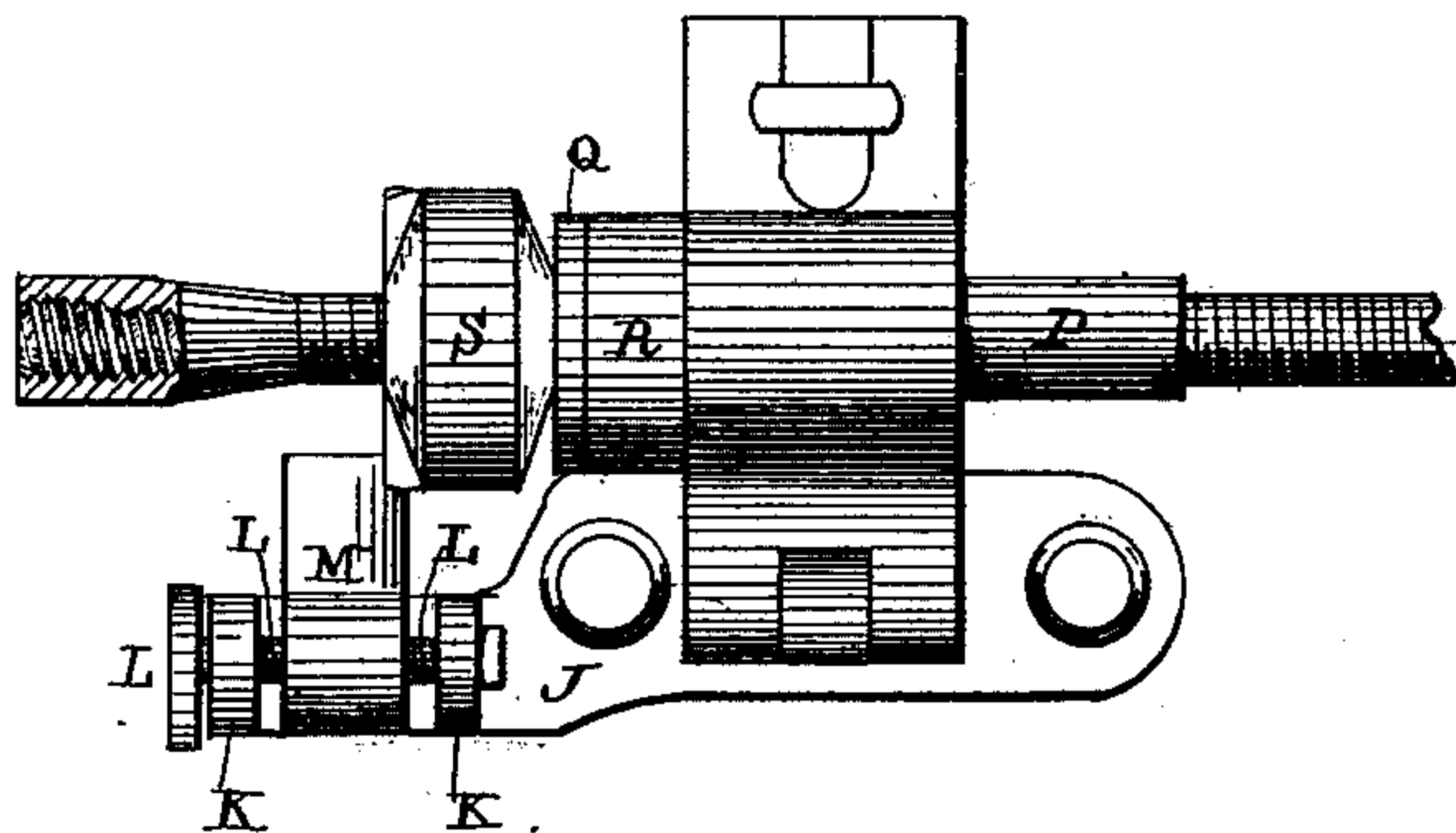
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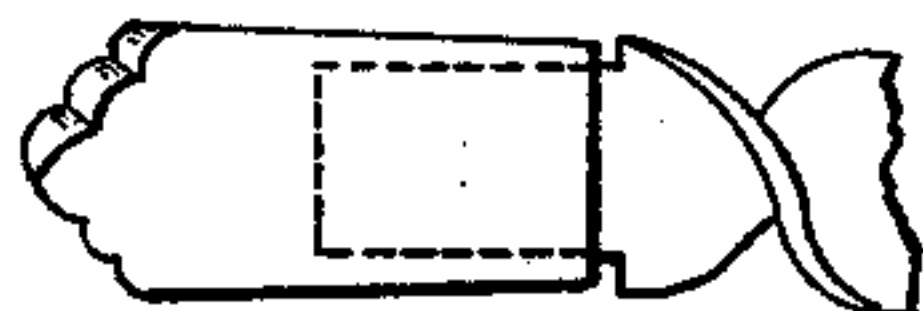
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*Fig. 10.*



*Fig. 11.*



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# UNITED STATES PATENT OFFICE.

WILLIAM WEAVER, OF PHOENIXVILLE, PENNSYLVANIA.

## COAL MINING AND DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 229,781, dated July 6, 1880.

Application filed May 21, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WEAVER, of Phoenixville, in the county of Chester and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Coal Mining and Drilling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it per-  
10 tains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in coal mining and drilling machines; and it con-  
15 sists in the combination and arrangement of parts, which will be more fully described hereinafter, whereby the machine is adapted equally well for use in mines, where the standards can be braced against the ceiling above, or can be  
20 used where the ceiling is too high to be reached, or for surface work.

The object of this invention is to provide a machine by means of which a hole can be  
25 bored at any angle, or any number of holes can be bored side by side, either in horizontal or vertical lines, and in which the feed is automatic, so that all that the person working the machine has to do is to adjust the machine  
30 in position and then turn the cranked boring-shaft, and the drill will be fed forward at any desired rate of speed.

The accompanying drawings represent my invention in different positions.

Figures 1, 2, and 4 are perspectives of the  
35 machine when adjusted for surface work. Figs. 3 and 5 are perspectives of the machine when used where the ceiling can be reached. Fig. 5 is a perspective of the standards adapted to support the operating-tools. Fig. 7 shows the  
40 machine used upon a single standard. Fig. 8 shows the standards braced between two vertical walls. Fig. 9 is a perspective of the machine where but three standards are used. Fig. 10 is a plan view of the operating parts  
45 of the drill. Fig. 11 is a plan view of the drill-point.

A represents two standards, which are provided with the sharp screw-feet B, for the purpose of bracing the standards in position upon  
50 any kind of surface. These standards may be of any desired length, and have a suitable

number of holes made through them, so that the slides or extensions C may be bolted thereto, as shown, for increasing the length of the standards to any desired degree.

Where the ceilings are not too high the  
55 standards can be increased any length until they reach the ceiling, against which they can be tightened in place by means of the screw-feet B.

Where the ceilings cannot be reached the standards are not increased very much in length, and they are connected together horizontally by means of the perforated cross-bar  
60 D and trough E.

The machine thus formed may be braced or supported at any desired angle by means of the rear braces, E', which consist of perforated bars or slides, like the ones C. As the holes  
65 in all of these braces or slides register, it is evident that any desired number of them may be bolted together, for the purpose of making the standard or brace of any desired length. These braces are also connected together horizontally by means of the cross-bar G.

Upon the outer sides of the standards, braces, or horizontally-connecting pieces there may be secured any number of U or L shaped  
75 pieces, H, which serve as supports for tools of various kinds, which are used for breaking away the thin shells between the holes which  
80 have been bored by the drill, or for any other purpose.

The trough E, which connects the lower ends of the standards together, serves for a recep-  
85 tacle for heavy weights, which are used to steady the machine in doing surface work, or where the standards cannot be secured rigidly in position between the floor and ceiling. Of course, where the standards can be made to  
90 reach the ceiling this trough will never be necessary. Where but a single one of the standards is being used, instead of two, as here shown, a much smaller and shorter trough, I, can be attached to the standard, for the pur-  
95 pose of receiving the weight which is to steady the machine in position.

The cross-bar D has a segment of a circle upon each end, which segments have a number of holes made through them, so that the  
100 cross-bar can be turned to any desired angle and then bolted to the standard, so as to hold it



rigidly in place. There are also a number of perforations made through the cross-bar itself, so that the clamp which holds the drill can be adjusted from one hole to the other, as  
5 may be desired. This clamp is made to open, so that the cranked screw drill-rod can be inserted and removed at pleasure.

Projecting outward upon the left side of the drill-rod is an arm, J, which has the two ears  
10 K formed upon its top, and through which ears passes the screw L. Upon this screw is placed a stop, M, which can be adjusted back and forth to any desired position between the two ears by simply turning the screw which is  
15 provided for this purpose. This clamp is held securely upon the cross-bar D by means of the plate which extends underneath the bar D, and is fastened to the arm J by means of suitable clamping-bolts. This plate prevents the  
20 clamp from becoming accidentally displaced at any time.

Upon one end of the screw drill-rod is secured a crank, N, and near the center of the rod is formed a second crank, O, so that one  
25 or more persons can unite in turning the rod while boring a hole. Around this rod is passed a sleeve, P, which passes through the clamp and serves to prevent the screw-thread upon the drill-rod from being injured. On the inner  
30 end of this sleeve is formed a flange, Q, and between this flange on the sleeve and the clamp is placed a rubber spring, R. On the screw-rod itself is placed a nut, S, which has two or more projections on its outer side for the purpose of catching against the adjustable  
35 stop. As this rod is being fed forward these projections on the nut catch against the stop and impede the forward motion of the nut until the rubber spring has again been sufficiently compressed to overcome the resistance  
40 of the stop against the nut, when the projection on the nut slips past the stop, and the spring forces the drill-rod forward. As the force of the spring is expended the projections  
45 on the nut again catch against the stop and again cause the compression of the spring, as described, until the force of the spring overcomes the frictional contact of the nut against the stop, when the projections on the nut  
50 again slip past and allow the spring to exert its pressure in forcing the drill-rod forward. In the end of the drill-rod, just beyond the inner crank, there is made a screw or other suitable socket, into which a suitable screw  
55 drilling-bit may be secured or otherwise fastened.

Where but a single standard is being used a supporting-piece, U, may be clamped to the side of the standard for the purpose of supporting the clamp. This supporting-piece U  
60 consists of a flat horizontal bar having a number of holes made through it and having a segment of a circle upon one end, which segment has a number of perforations through it, similar to the cross-piece D, so that it can be  
65 readily secured at any desired angle. Where

but a single standard is being used, as here shown, an additional foot, V, provided with a screw, W, may be used for bracing the standard rigidly in position. 70

Where but a single standard is being used, as in surface work, it may be braced in position by means of the two hind braces, which have their upper ends clamped to the side of the standard by a single bolt, the upper ends  
75 of these braces being slightly bent outward, so that their lower ends are separated at suitable distance from each other. Where the ceiling can be readily reached no rear braces are needed, in which case the two standards will  
80 be connected together by means of the cross-piece D, which supports the drill-rod in position. This cross-piece D can then be adjusted vertically upon the two standards, and the drill-rod can be adjusted from side to side, so  
85 as to bore the holes in any desired relation to each other.

After all the holes have been bored any desired number or form of rests for the tools for breaking away the shell being secured upon  
90 the standard, as already described, by resting the long rods upon these supports, and then reciprocating them back and forth and moving them up and down, all of the thin walls between the holes may be broken away. By  
95 boring a number of holes side by side, and then breaking away the thin intervening shells, the coal or other material being mined can be broken down without blasting or breaking the coal up into such small pieces. 100

Where the boring is light and easy a coiled spring may be used upon the drill-rod; but where the drilling is in any way heavy or difficult a block of rubber, as here shown, is preferred. 105

The boring-bits used upon the auger have a recess made in their inner ends, so as to fit over the flattened portion of the auger, whereby, when the bit has become dull, it can be readily removed and replaced by another. The  
110 edges of this auger are made sharp, so as to cause them to clear the material out of the hole very rapidly and easily.

In the patent granted to me May 25, 1880, is shown a slotted arm and a movable stop,  
115 which has to be adjusted by hand and clamped in place by means of a set-screw. This manner of adjusting the stop requires considerable effort and time—two disadvantages which are entirely overcome by placing the stop upon  
120 the screw, as here shown. By having the projections upon the nut upon the drill-rod it operates much more smoothly than where it has to catch against the sharp corner of the stop alone. 125

Having thus described my invention, I claim—

1. The combination of the drill-clamp, an arm provided with ears or projections, an adjustable screw, and a movable stop with the  
130 nut on the drill-rod, substantially as set forth.
2. The combination, with a standard or



standards, of the U or L shaped supports upon which the mining or drilling tools are supported, substantially as specified.

3. A drill-shaft provided with a crank upon its rear end, and a crank in between the auger and the feed-clamp, whereby one or two persons can operate the drill-rod, substantially as shown.

4. The nut on the drill-bar provided with projections on its forward end for catching against the adjustable stop, substantially as described.

5. The combination of the nut provided with projections on its forward end, a sleeve passing through the clamp and provided with a

flange and a rubber spring, which is held between the clamp and the flange, substantially as set forth.

6. The clamp for holding the drill-rod, in combination with the arm which forms a part thereof, and which is clamped to the cross-bar, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of May, 1880.

WILLIAM WEAVER.

Witnesses:

B. F. WIDDICOMBE,

R. H. VANDUSLEY.