

J. CHAPMAN.
No. 120,036.

Improvement in Rock Drills.

Patented Oct. 17, 1871

Fig. 1.

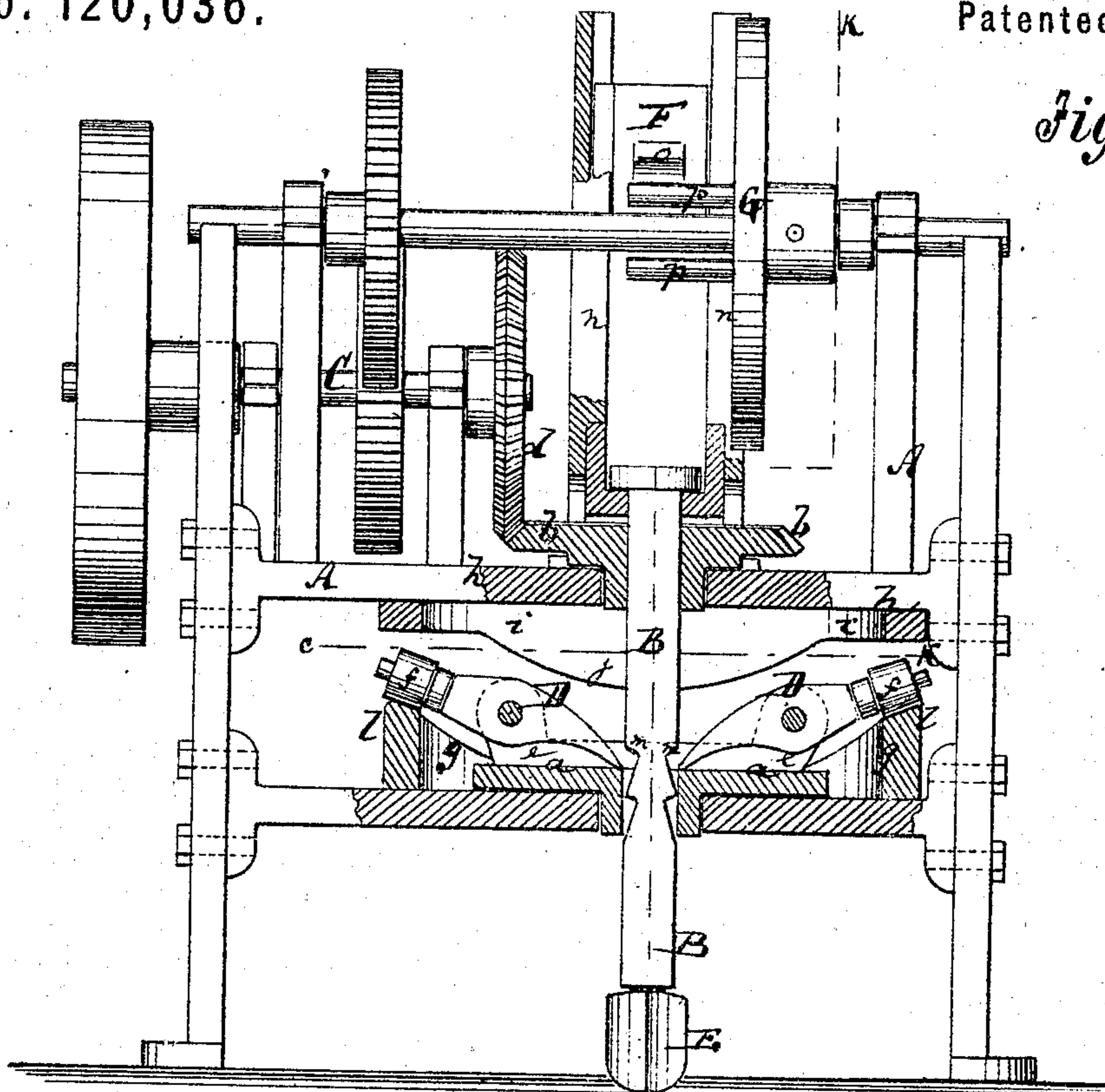


Fig. 4.

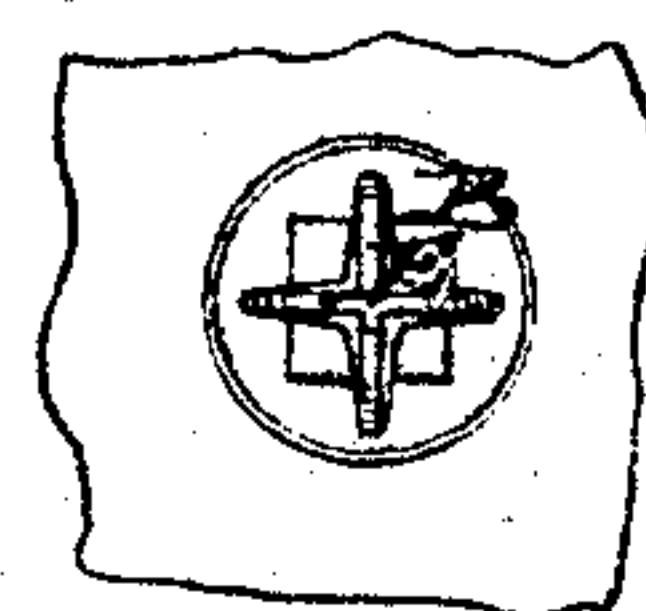
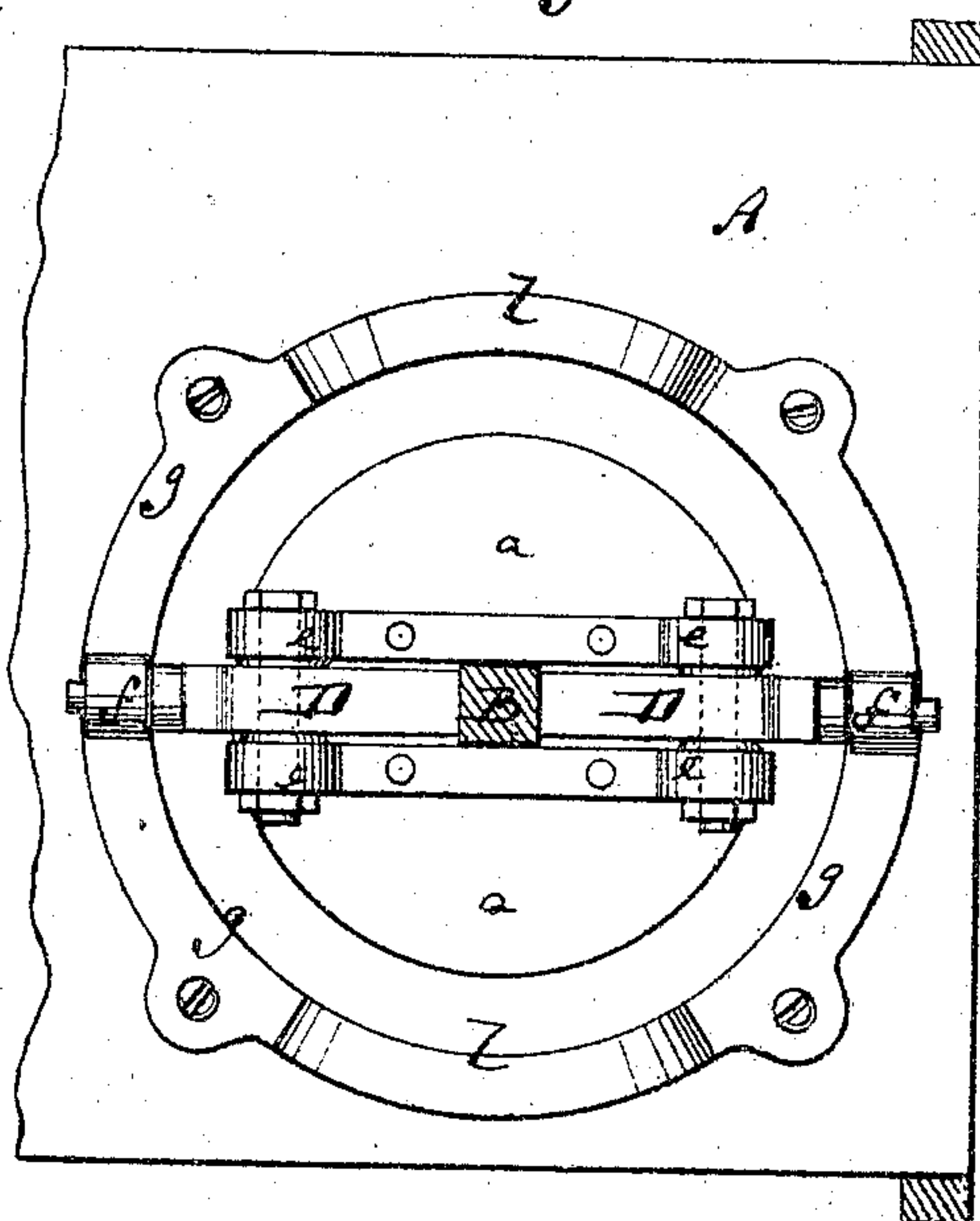
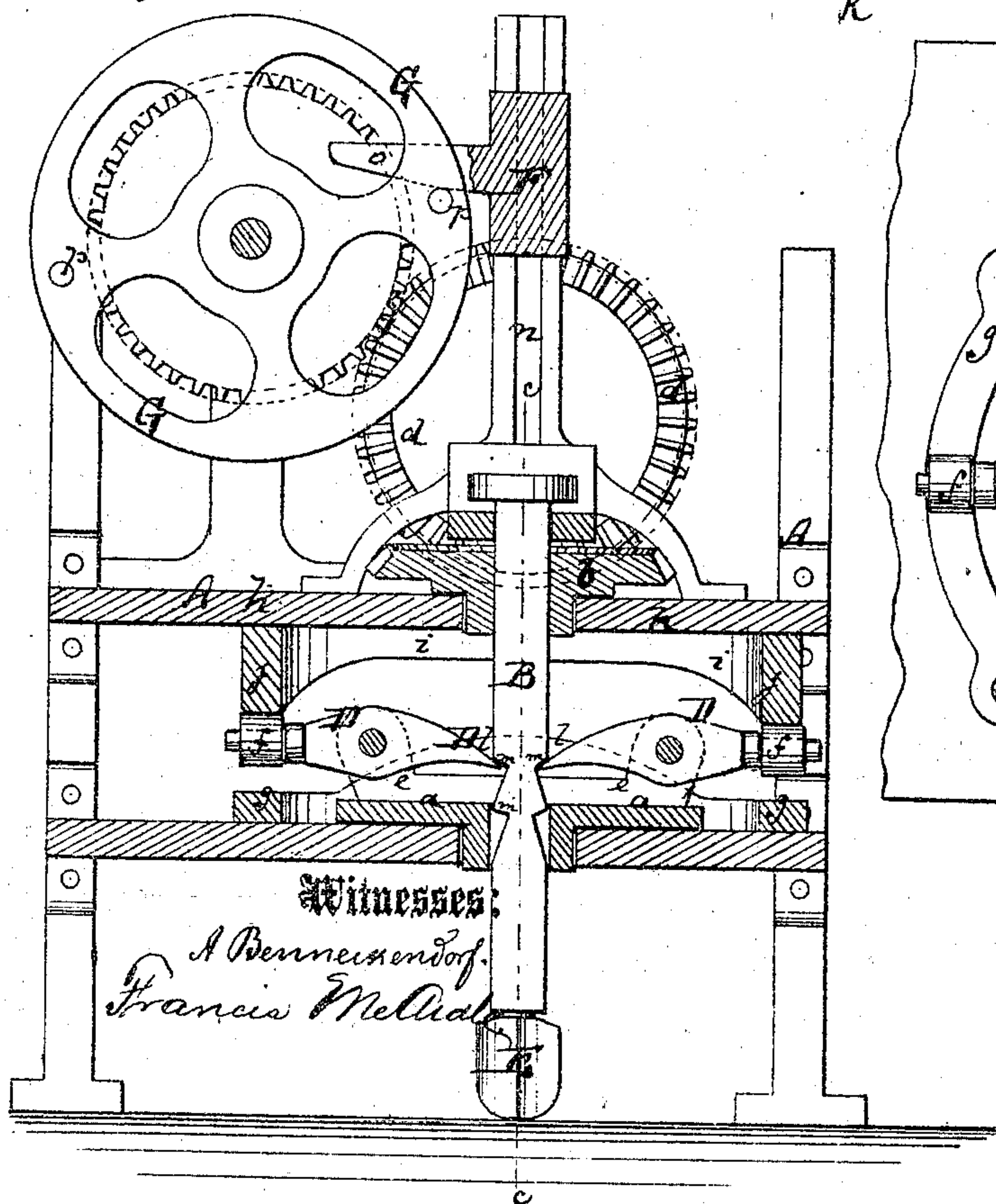


Fig. 2.

Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN CHAPMAN, OF AMSTERDAM, NEW YORK.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. 120,036, dated October 17, 1871.

To all whom it may concern:

Be it known that I, JOHN CHAPMAN, of Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Improvement in Rock-Drilling Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 represents a vertical longitudinal section of my improved rock-drill, taken on the line *c c*, Fig. 2. Fig. 2 is a vertical transverse section of the same on the line *K K*, Fig. 1. Fig. 3 is a horizontal section of the same on the line *c k*, Fig. 1. Fig. 4 is a lower end view of the drill-shaft.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machine for revolving and striking the shank of a rock-drill with the object of obtaining an equal amount of effective power to a suitable depth. The invention consists in the improvement of mechanism for elevating the shaft of a rock-drill, as hereinafter fully described and subsequently pointed out in the claim.

A in the drawing represents the frame of my improved rock-drill. B is the upper portion of the drill-shaft, made prismatic, and fitted loose through a disk, *a*, and cog-wheel *b*. The latter receives rotary motion by another toothed wheel, *d*, from the driving-shaft C, which has its bearings in the frame A. By this shaft C the drill-shaft is constantly rotated. From the face of the disk *a* project ears *e*, which support pivoted pawls D D, as shown. These pawls have friction-rollers *f f* at their outer ends, while their inner ends are pointed. The friction-rollers rest on a circular stationary track, *g*, and revolve thereon around the axis of the shaft B, as the disk *a* is being revolved by the same. Above the rollers *f f* is suspended from a plate, *h*, another ring or track, *i*, of about the same diameter as the track *g*. In the track *i* are two pend-ent cams, *j j*, and the track *g* carries two pro-

jecting cams, *l l*, as shown. Whenever the rollers *f* are in contact with the edges of the cams *j* the outer ends of the pawls D are depressed and their inner ends raised against shoulders *m m* of the drill-shaft. The latter is thereby slightly elevated, so as to clear the drill E from the rock, and then, as the rollers *f* are in contact with the cams *l*, dropped again upon the same, having been turned while thus elevated. In this manner the changes of position are effected without undue friction of machinery. When the rollers *f* are on the cams *l* the inner ends of the pawls are lowered quite clear of the drill-shaft, as is clearly shown in Fig. 1. Directly above the drill-shaft are on the frame two vertical guides or posts, *n n*, between which a drop-weight, F, is arranged. The same is provided with a projecting finger, *o*, which is, at proper intervals, brought in contact with the projecting pins *p* of a rotating wheel, G, that is connected with the driving-gear. Thereby the weight F is raised, and, as the pins *p* leave the finger *o*, suddenly dropped upon the drill-shaft, which it strikes with sufficient force to cause the desired descent of the tool.

The strokes imparted to the drill-shaft by means of the weight F are subsequent to every slight elevation of the same by pawls and rather independent of the same; that is to say, the drill-shaft is loosened by being slightly raised and lowered, and is then struck by the drop.

The machine can be used to drill to a suitable depth by attaching sections to the lower end of the drill-shaft, as may be found necessary.

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

The stationary cam-tracks *g l* and *i j*, combined, as described, with the pawl-rollers *f*, so that the latter will move on and between the former, as and for the purpose specified.

The above specification of my invention signed by me this 5th day of July, 1871.

JOHN CHAPMAN.

Witnesses:

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