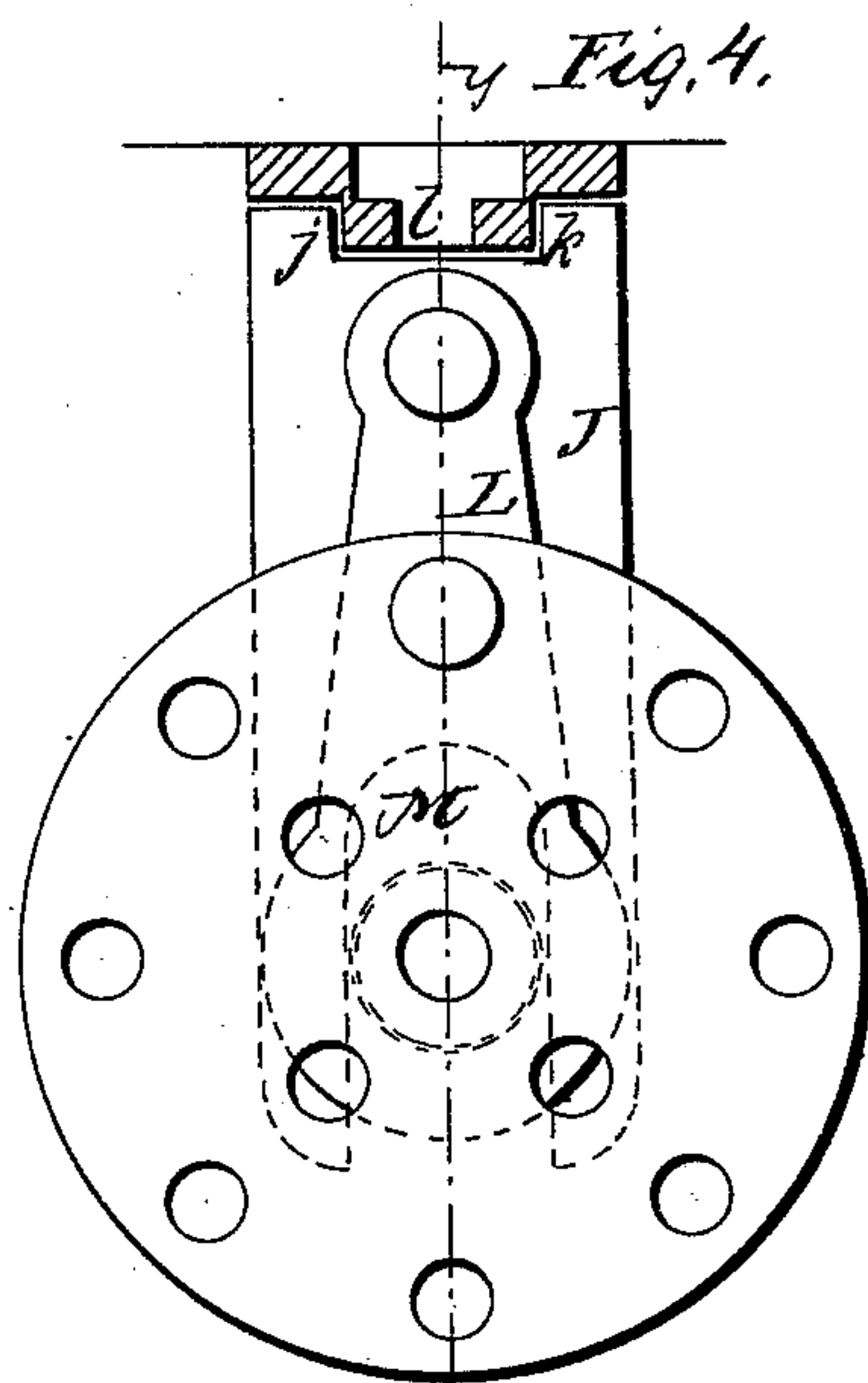
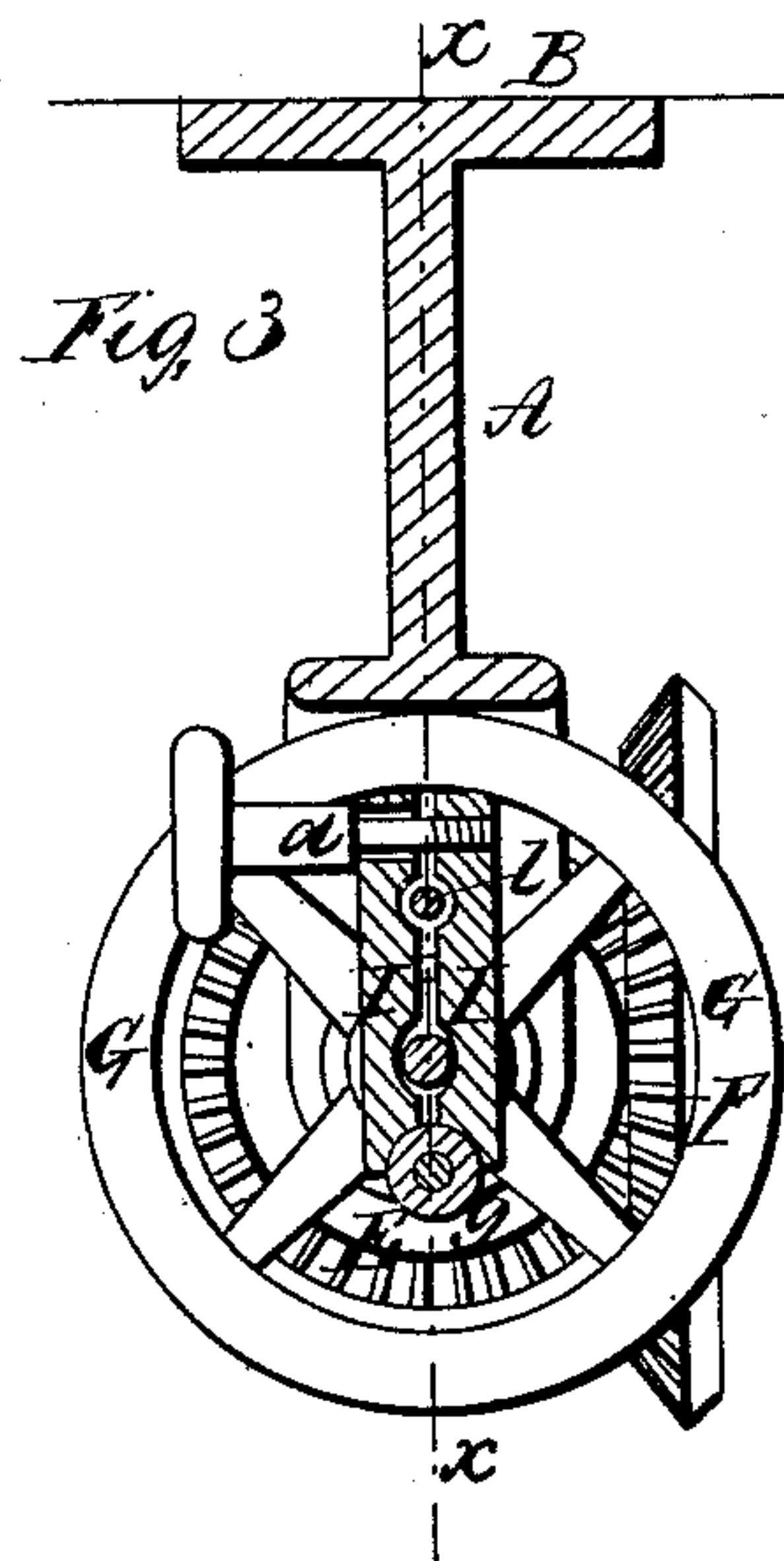
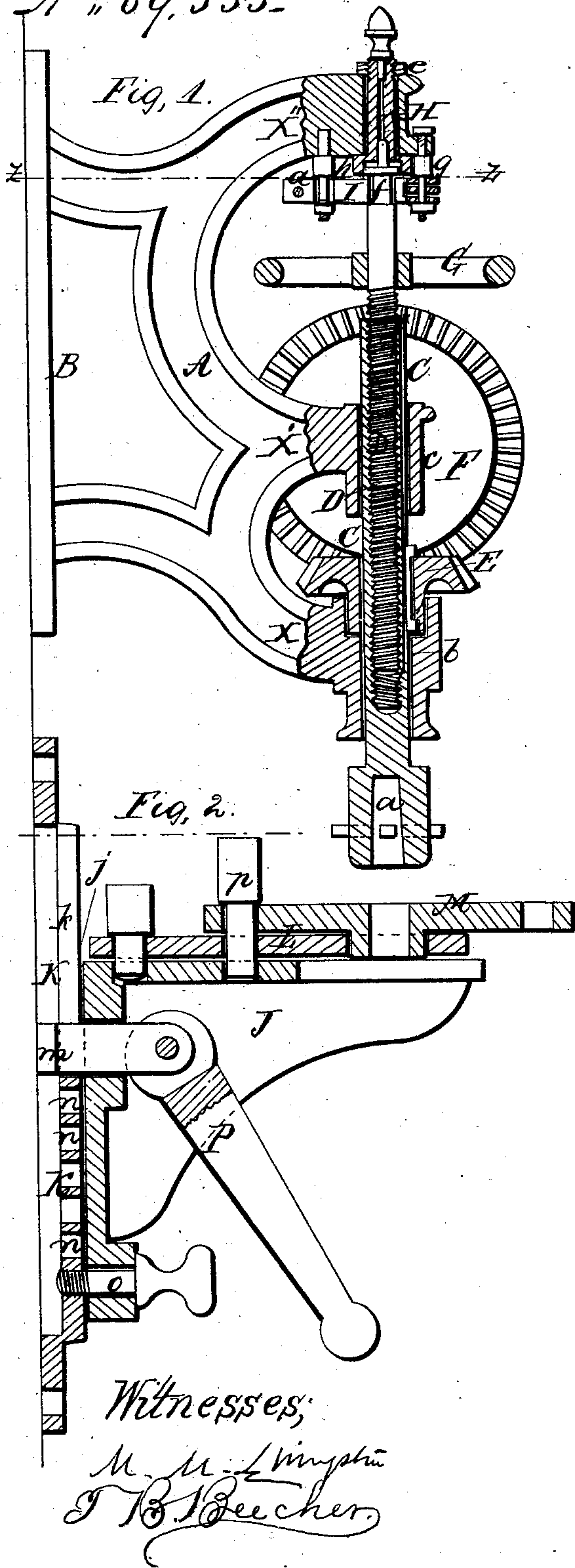


G. W. Bishop, Metal Drill,

N^o 69,533.

Patented Oct. 8, 1867.



Inventor;

G. W. Bishop

United States Patent Office.

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COLEGROVE, OF GREENWICH, CONNECTICUT.

Letters Patent No. 69,533, dated October 8, 1867; antedated August 27, 1867.

IMPROVEMENT IN DRILLING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE W. BISHOP, of Stamford, Fairfield county, Connecticut, have invented a new and useful Improvement in Self-Feeding Drill-Presses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

Figure 1 is a vertical section of one part of my invention, taken on the plane of the line $x x$, fig. 3.

Figure 2 is a vertical section of the other part, taken on the plane of the line $y y$, fig. 4.

Figure 3 is a transverse section, taken on the plane of the line $z z$, fig. 1.

Figure 4 is a plan view of fig. 2.

My invention consists in the combination, with a screw-rod and arbor, and a friction-wheel attached to the former, of a friction-clamp, so constructed and arranged that the cut of the drill may be regulated as desired. It further consists in the combination, with the bracket on which the metal to be operated upon is placed, of a cam-lever, so arranged that the said bracket may at all times be rigidly held, thereby obviating the shackling of such part occurring in ordinary drills of this character. It further consists in the combination of a pivoted arm, on which the bed-plate for the metal to be operated upon rests, and the said plate with the supporting bracket of the apparatus.

Refer to figs. 1 and 3. A designates a bracket for supporting the working parts of the drill, and B a back plate, by which the bracket is secured to the post or other article which is to support it.

C is an arbor tapped with an internal screw-thread, into which is fitted to work a screw, D. The arbor C carries at its lower end a socket, a , into which the drilling-tool is fitted, and said arbor slides in and is steadied by bearings $b c$ in respective arms $X X'$ of the bracket A. Motion is imparted to the arbor C by means of gear-wheels E F, the former being fitted upon the arbor loosely, and being provided with a pin, d , which slides in a groove cut longitudinally in the arbor; hence the arbor has a free longitudinal movement, and is actuated by said gear-wheel E, working into the wheel F, suitably mounted on a shaft, to which shaft the rotary motion is imparted by hand or other power, as may be desired.

The screw-rod D carries a fixed friction-wheel, G, against which the hand may be pressed in order to regulate the cut. The said rod D is journaled at its top in a suitable journal-box, H, let into an arm, X'' , of the bracket A, said box passing through said arm, and held in position by a nut, e , working on a screw-thread cut upon its top. The said screw-rod D is provided with a collar, f , which rests in a socket in the lower end of said journal-box H. Next this collar a groove is cut, around the screw-rod, of a proper size to receive the jaws of a friction-clamp, I I, which in the present instance is hung upon a pin, g , extending from the arm X'' on one side of the screw-rod, and it is steadied by a pin, h , extending from an arm, X'' , on the other side. The friction of this clamp upon the screw-rod is regulated by a thumb-screw, a , as shown clearly in fig. 3.

It will be seen from the foregoing description that the cut of the tool can be regulated as desired by merely regulating the friction of the clamp upon the screw-rod, it of course being understood that the greater the friction the slower the said screw-rod turns, and consequently the tool makes deeper cuts, whilst, on the other hand, if the friction be considerably removed, the tool will make very shallow cuts; hence the drill, when once properly adjusted to its work, needs no watching; it operates automatically. It will also be seen that the wheel G serves two important functions. First, after the clamp I has been set so as to regulate the cut of the tool as required for the greater part of the metal to be operated upon, it may become necessary, just for an instant or so, to apply a little more friction, so as to cause the tool to make a few deeper cuts, and run slower. This can be accomplished by merely applying the hand at such times against the wheel G, the friction thus caused retarding the revolution of the wheel G. On account of the fact that friction may be applied to the wheel G to regulate to a finer degree the friction already applied to the screw-rod by the clamp I, I have called the said wheel throughout this specification a "friction-wheel." Second, the said wheel G also serves to run the arbor upon the screw-rod in an easy and expeditious manner as will appear obvious from a glance at fig. 1 of the drawing. The advantages of such an apparatus are too apparent to need recital.

I will here remark that I do not limit myself to the style of clamp here shown. My object is to apply to

the screw-rod a friction-clamp or other device in such manner that the revolution of the screw-rod may be regulated as desired.

Refer to figs. 2 and 4. J is a bracket fitted to rest against a back plate, K, by which it is secured to the post or other place. The back plate K has a rib, *k*, cast on its face, and a corresponding groove, *j*, is formed in the vertical faces of the bracket, by which means the bracket is steadied when moving it up and down. The said back plate has a slot, *l*, cut longitudinally through the rib *k* for a certain distance, through which a pin, *m*, passes, whose end passes through the said bracket, its head sliding in the recess at the back of the groove. Pin-holes *n* are made, at short distances apart, through the remaining portion of the rib, into which a pin, *o*, which passes through the lower end of the bracket, is thrust, to steady the said bracket in place. In many machines of this class the bracket is not susceptible of being secured rigidly to the back plate, on account of the fact that it has to be arranged so as to be movable at pleasure, to regulate the distance of the work from the drill. To prevent the shackling of the bracket, usually occurring, I secure to the end of the pin *m* a lever, P, having a cam-shaped end, and so arrange it that by depressing the lever the bracket will be forced up close to the back plate and there remain rigidly until further adjustment is necessary.

L is an arm, pivoted to the horizontal face of the bracket in such manner that its forward end may be swung in either direction. Upon the end of the arm the bed-plate M for the work rests. In the present instance the said plate M is provided with a hollow journal or trunnion, which fits into a hole made in the end of the arm L. This permits of the plate being revolved. It will be seen that should it be desired to drill a number of holes in a piece of metal, the work can be done without shifting the piece, by merely moving the arm L sufficiently far in a lateral direction, and revolving the plate M so as to bring the exact spot at which the hole is to be drilled under the tool. If the drill is cutting a hole over the centre of the plate the latter and the arm may

both be pinned fast by a pin, *p*, passing through them and through a hole in the horizontal arm of the bracket. Some of the advantages of this invention may be briefly stated to be, first, the depth of the cut of the tool may be accurately regulated, and when regulated no further manipulation is required, thereby producing a self-feeding drill; second, the bracket, which in many machines is shackling, thereby producing bad work, is held securely against its back plate; third, a hole may be bored anywhere in the stuff, without the necessity of changing its position on the bed-plate, by merely revolving the said bed-plate and moving the arm in a lateral direction, so as to bring the spot to be drilled directly under the tool. These are important improvements which my invention provides.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the arbor C, screw-rod D, wheel G, and friction-clutch I, arranged and operating as herein shown and described.
2. The combination of the cam-lever P with the bracket J, perforated back plate K, and pins *o* and *m*, arranged substantially as and for the purpose herein specified.
3. The combination of the arm L and plate M with the bracket J, constructed and arranged substantially as and for the purpose specified.

G. W. BISHOP.

Witnesses:

ROBERT FAIRCHILD,
CHARLES E. SEARLES