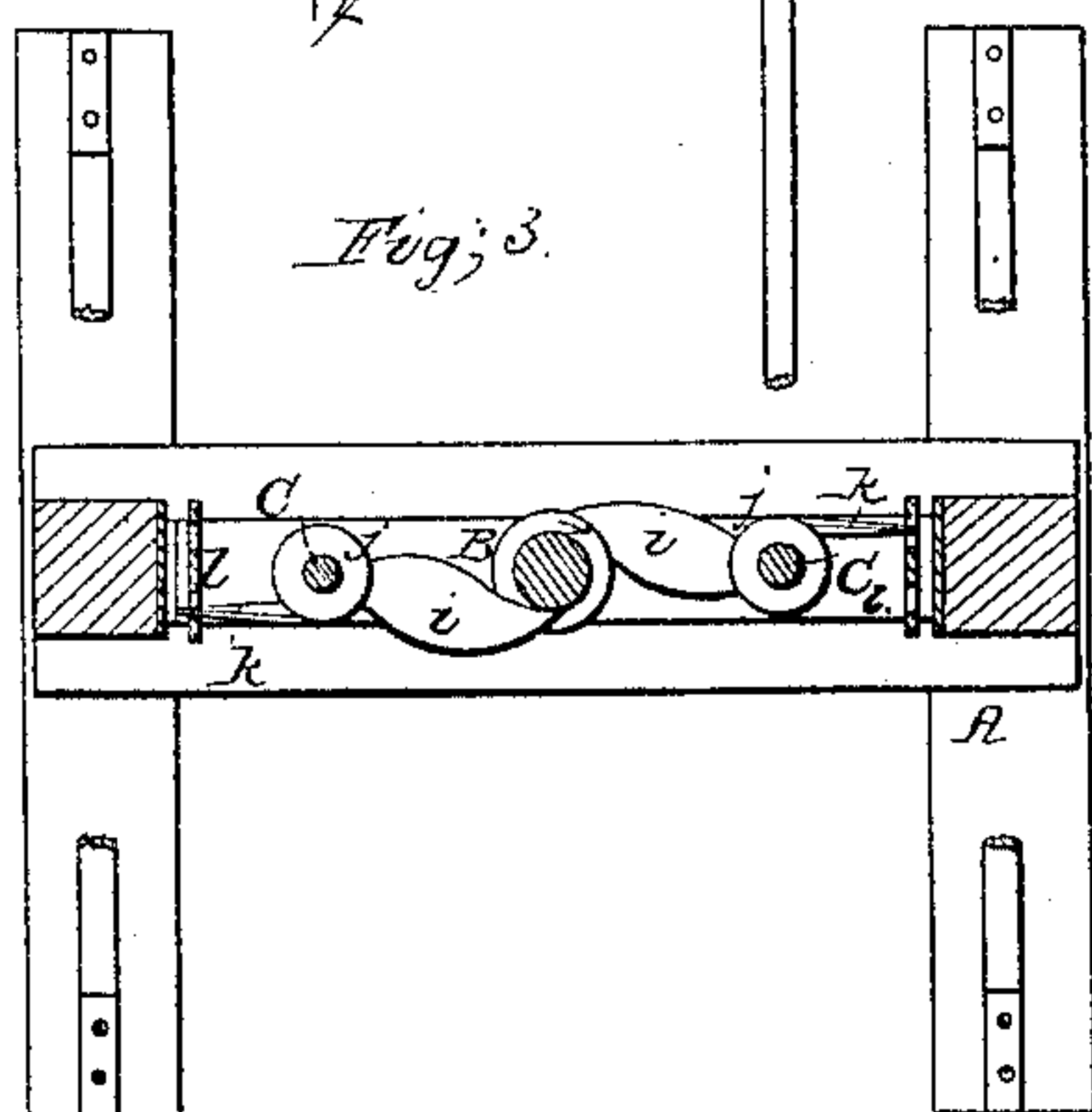
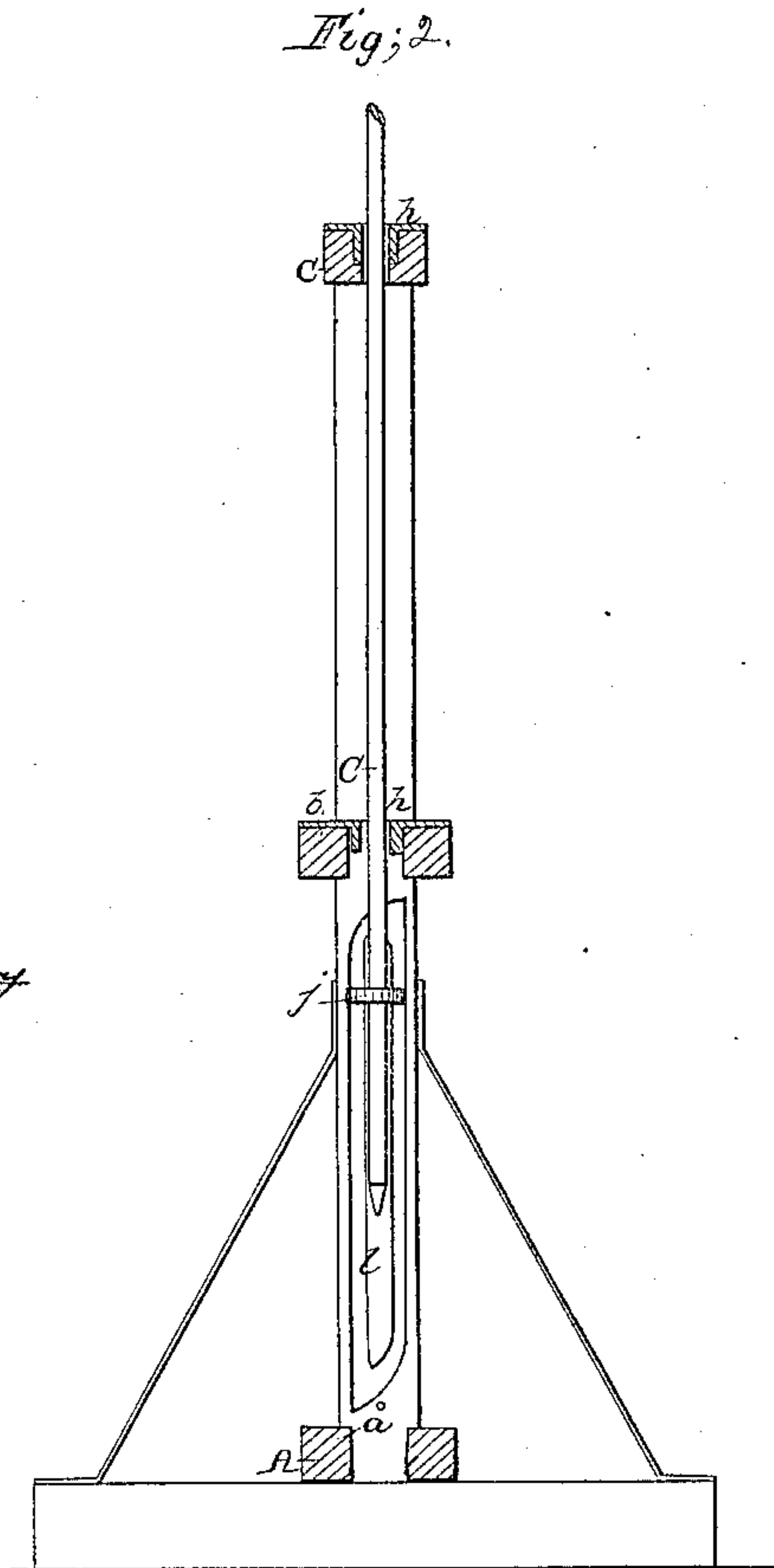
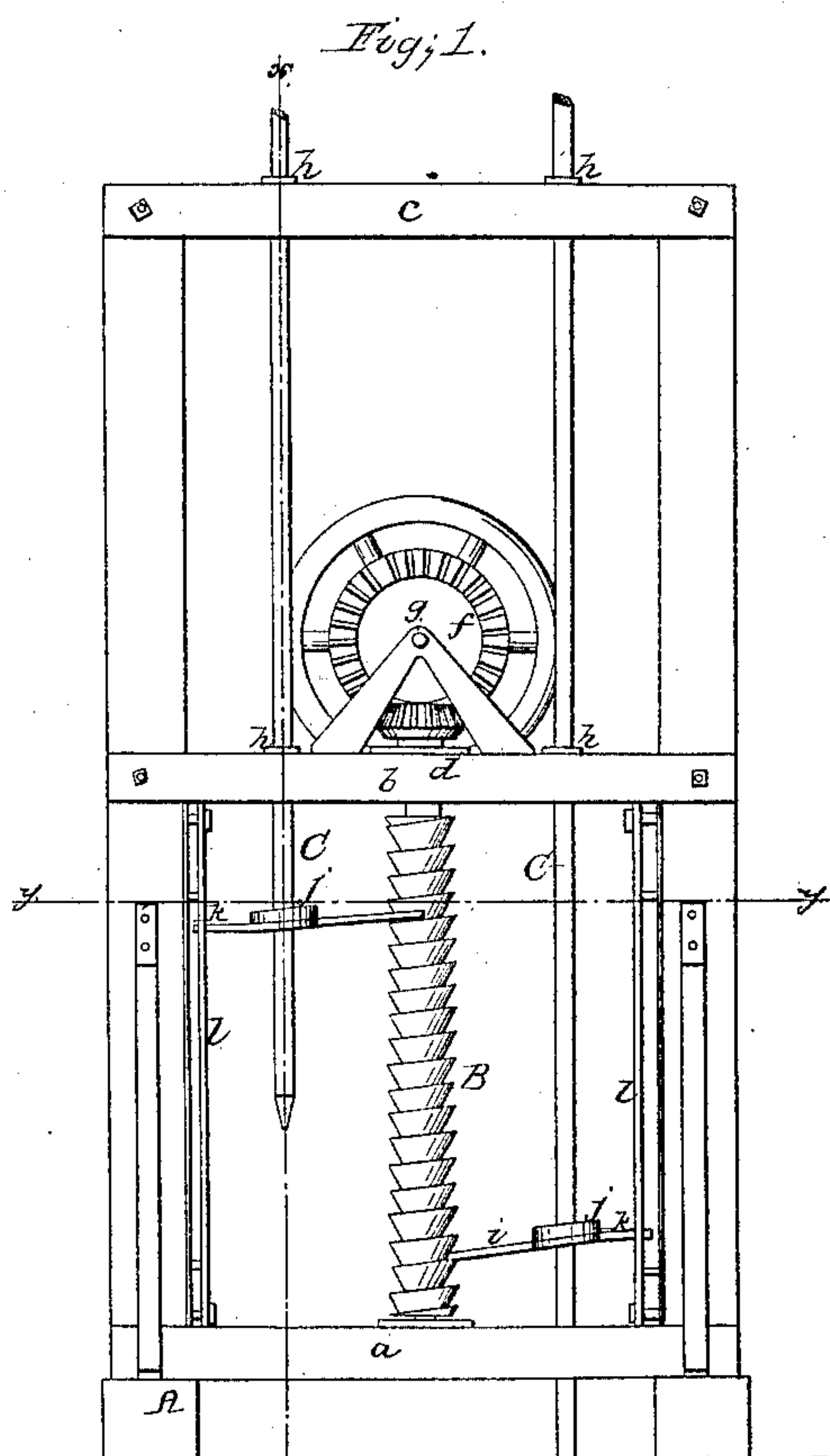


*R. Hood,  
Stone Drill.*

*N<sup>o</sup> 50,001.*

*Patented Sep. 19, 1865.*



*Witnesses;  
Geo. Ingh  
Wm. Green*

*Inventor;  
R. Hood  
By Edmund H. Co.  
Atty*

# UNITED STATES PATENT OFFICE.

ROBERT HOOD, OF DAYTON, OHIO.

## IMPROVED ROCK-DRILLING MACHINE.

Specification forming part of Letters Patent No. 50,001, dated September 19, 1865.

*To all whom it may concern:*

Be it known that I, ROBERT HOOD, of Dayton, in the county of Montgomery and State of Ohio, have invented a new and Improved Machine for Drilling Rocks, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of this invention. Fig. 2 is a transverse vertical section of the same, the line *x x*, Fig. 1, indicating the plane of section; Fig. 3, a horizontal section of the same, taken in the plane indicated by the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in the employment or use of a spiral lifter in combination with a tappet extending from a sleeve fitted on the drill or drill-rod and with an arm extending from said sleeve in a cam-slot, in such a manner that by the action of the cam-slot and arm the tappet is held in contact with the thread of the feeder until it arrives at the end of the stroke, when the same by a curve in the cam-slot is thrown out of contact with the feed-screw and the drill is allowed to drop, and while being thrown out of gear with the feed-screw it is turned, causing it to strike a different spot on each stroke. By this arrangement two or more drills can be operated by means of the same lifter and by the same driving-power.

A represents a frame made of wood or any other suitable material, and constructed of two or more uprights, which rise from suitable bed-timbers, and which are connected by transverse bars *a*, *b*, and *c* at the bottom, in the middle, and at the top. The cross-bars *a* support the step of the feed-screw or spiral lifter B, which is placed in a vertical position, and the upper end of which has its bearings in a box, *d*, secured to the middle cross-bars *b*, as clearly shown in the drawings. A revolving motion is imparted to the spiral lifter by means of a bevel-pinion, *e*, which is mounted on the upper end of the same, and which gears in a bevel-wheel, *f*, mounted on the driving-shaft *g*.

If it is desired to increase the speed of the spiral lifter, this object can be effected by the application of a suitable multiplying-gear.

The spiral lifter serves to raise the drill-rods C, which are situated on opposite sides thereof, extending up through guide-boxes, *h*, secured in the cross-bars *b c*. To the lower ends of these drill-rods the drills are secured, either permanently or by a screw-coupling or any other suitable means, and they are lifted up by tappets *i*, which extend from sleeves *j* fitted loosely on the drill-rods, and which bear on the threads of the spiral lifter. By revolving said lifter in the direction of the arrow marked near it in Fig. 3 the tappets are carried up to the top end of said lifter, or until by some means said tappets are disengaged from the threads of the lifter, and by the action of the lifter on the tappets the sleeves *j* are caused to bind on the drill-rods, and said rods are compelled to rise together with the tappets. These tappets are disengaged from the threads of the lifter by the action of arms *k*, which extend from the sleeves *j* into cam-slots *l*, which are made in plates attached to the inner sides of the uprights of the frame A. These cam-slots may either be made in the form of grooves cast into solid plates, or they may be composed of two parts, as shown in the drawings, though in practice I prefer to use solid plates provided with suitable grooves, and they are so formed that by their action on the arms *k* the tappets, after having been lifted to a certain height, are thrown out of gear with the thread of the spiral lifter and the drill-rods are permitted to drop. In throwing the tappets off from the screw-threads the drill-rods are turned, causing the drills to strike in different directions for each successive stroke, and when the tappets in their descent approach the bottom end of the cam-slot they are turned back so as to be in gear with the spiral lifter, causing them to raise the drills immediately after they have struck. By this arrangement the drills are raised uniformly to the same height independent of the length of the drill-rods or of the depth of the holes already bored, and two or more holes can be bored simultaneously, for it will be readily understood that the number of drills placed round the spiral lifter may be increased to four or six, or perhaps even more, if required.

This machine is applicable for drilling holes in rocks for blasting, and it may also be used with advantage for boring wells. It is simple in its construction, and when properly put up it is not liable to get out of order.



It must be remarked that the tappets *i*, extending from the sleeve on the drill-rods, could be made to bear on the threads of the spiral lifters on those sides of the same next to the drill-rods; but I prefer to arrange the same as shown in the drawings, since by this arrangement the tappets are easily held in place and prevented from getting spontaneously out of gear with the thread of the spiral lifter.

If desired, the spiral lifter and tappets may be employed with advantage in a pile-driver or other machine of a similar construction.

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

1. The use of a spiral lifter, B, in combination with one or more drills or drill-rods, constructed and operating substantially as and for the purposes described.

2. The cam-grooves *l* and sleeves *j*, with arms *k* and tappets *i*, in combination with the spiral lifter B, constructed and operating substantially as and for the purposes set forth.

The above specification of my invention signed by me this 17th day of July, 1865.

ROBERT HOOD.

Witnesses:

M. M. LIVINGSTON,

C. L. TOPLIFF.