

G. C. TAFT.

Drill.

No. 43,372.

Patented June 28, 1864.

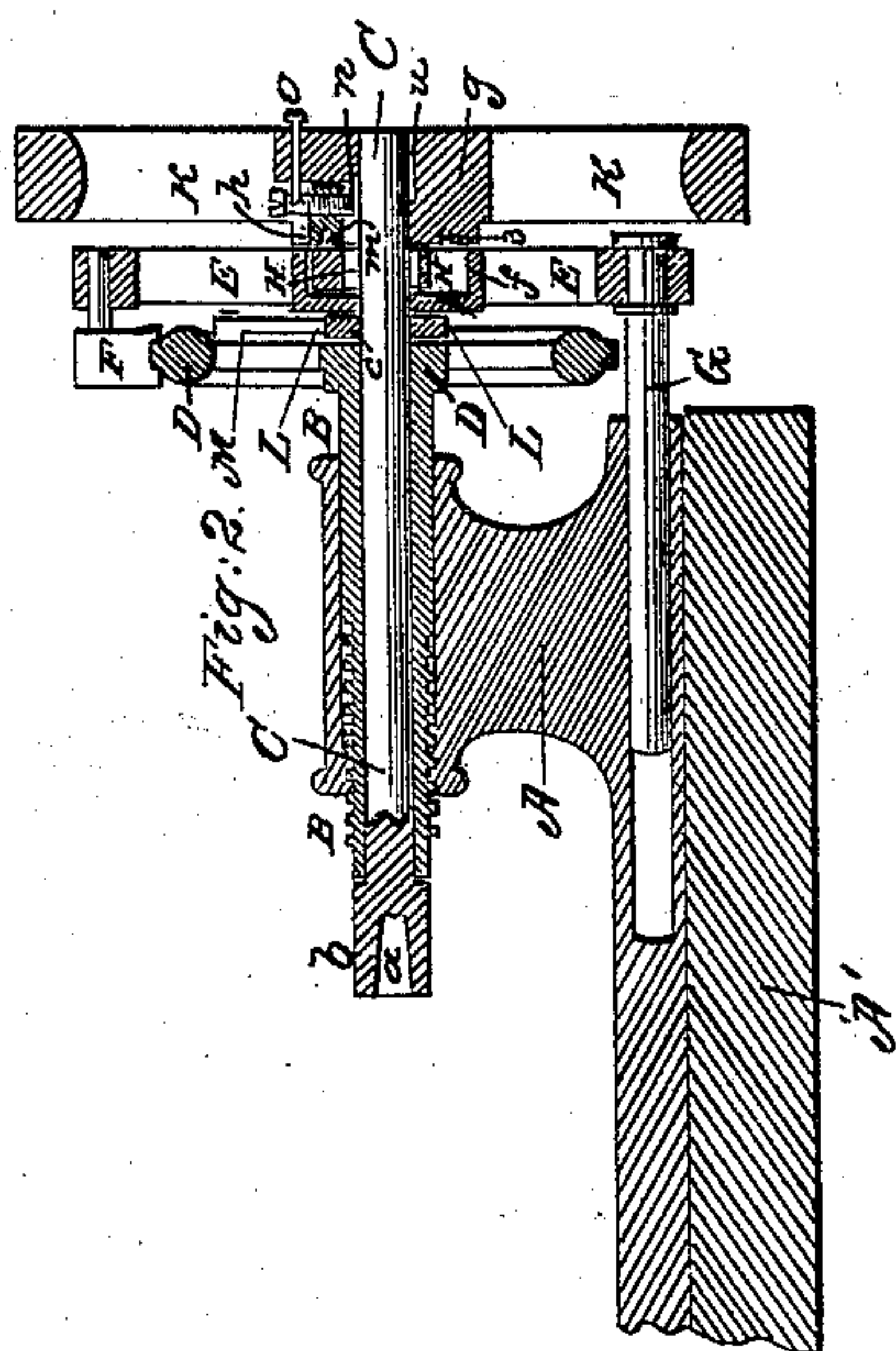


Fig. 1.

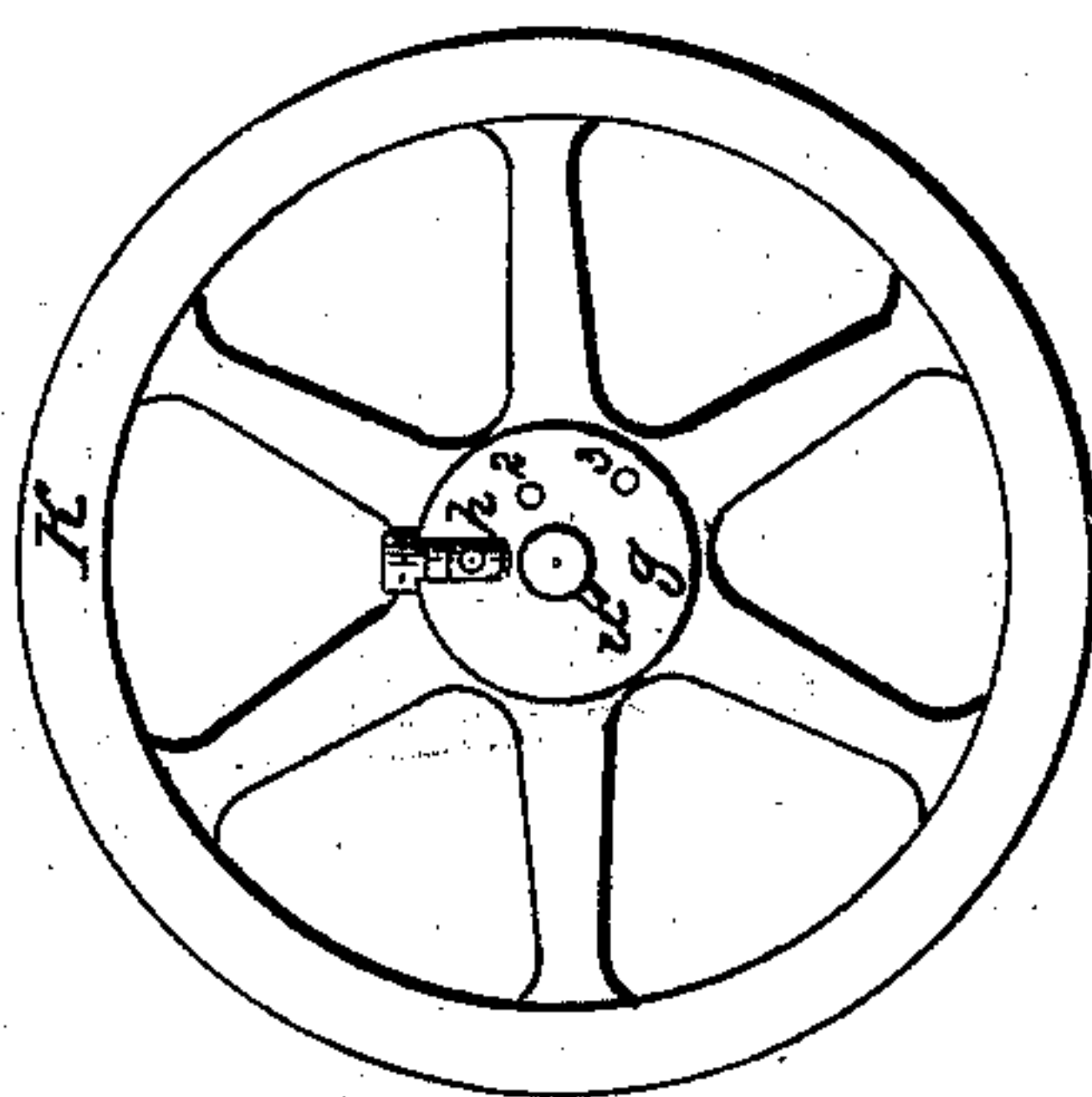


Fig. 2.

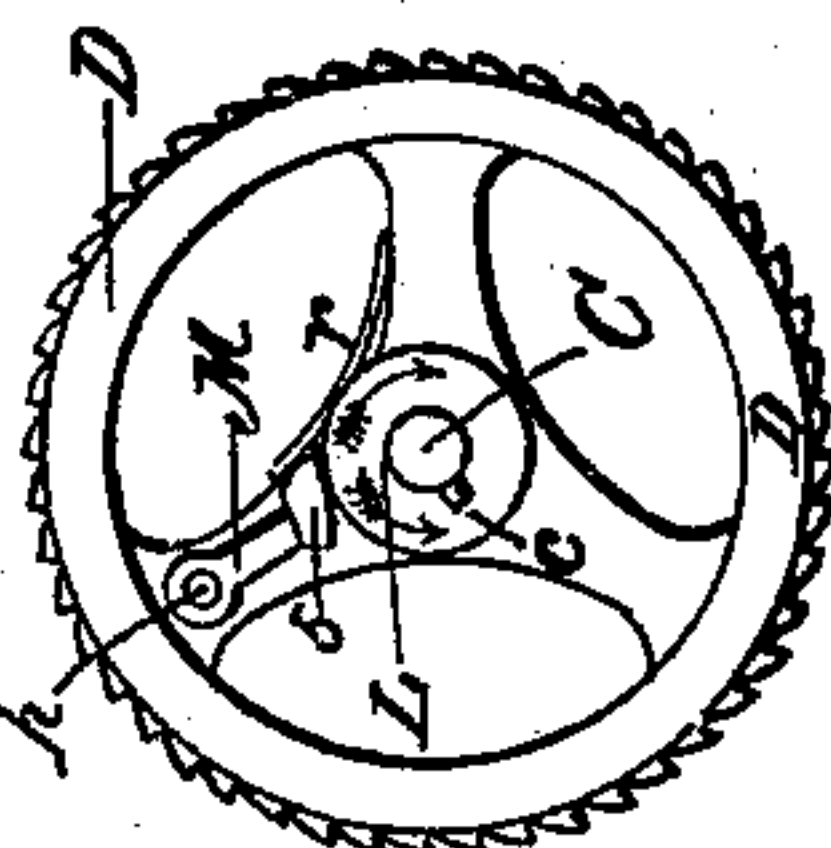


Fig. 3.

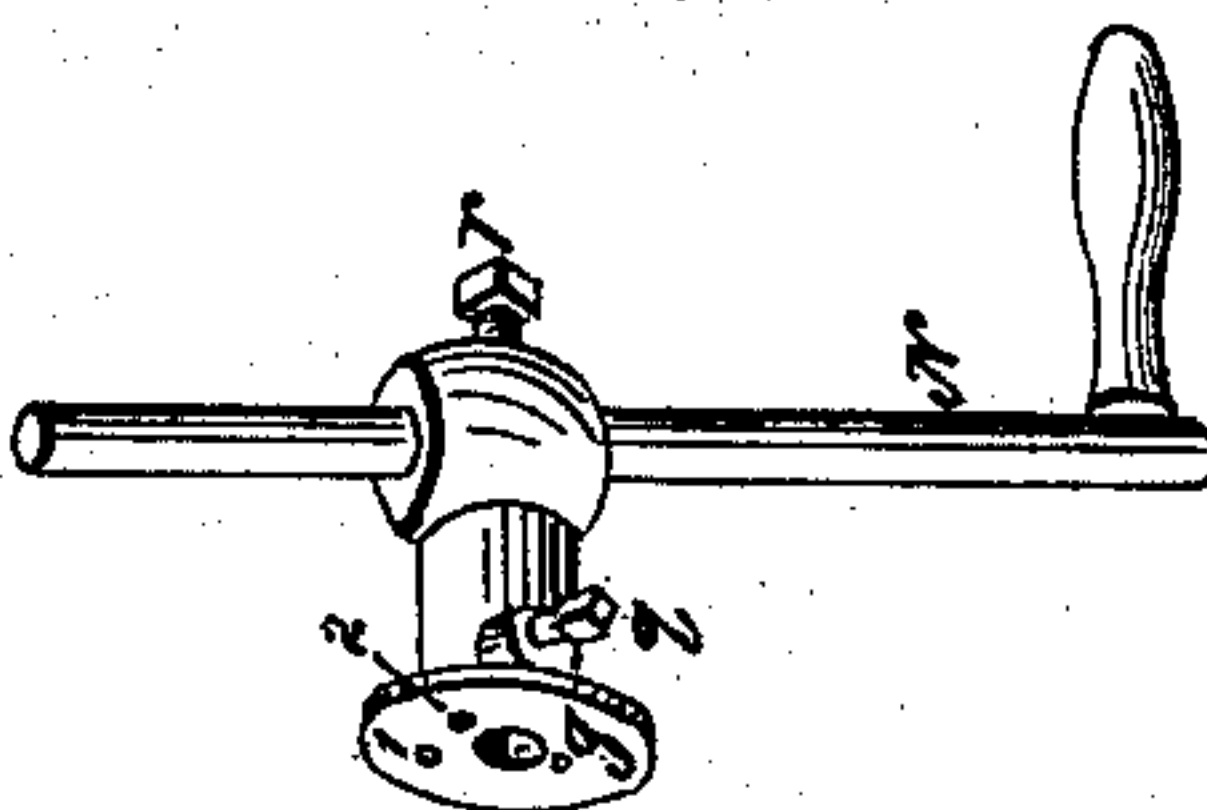


Fig. 4.

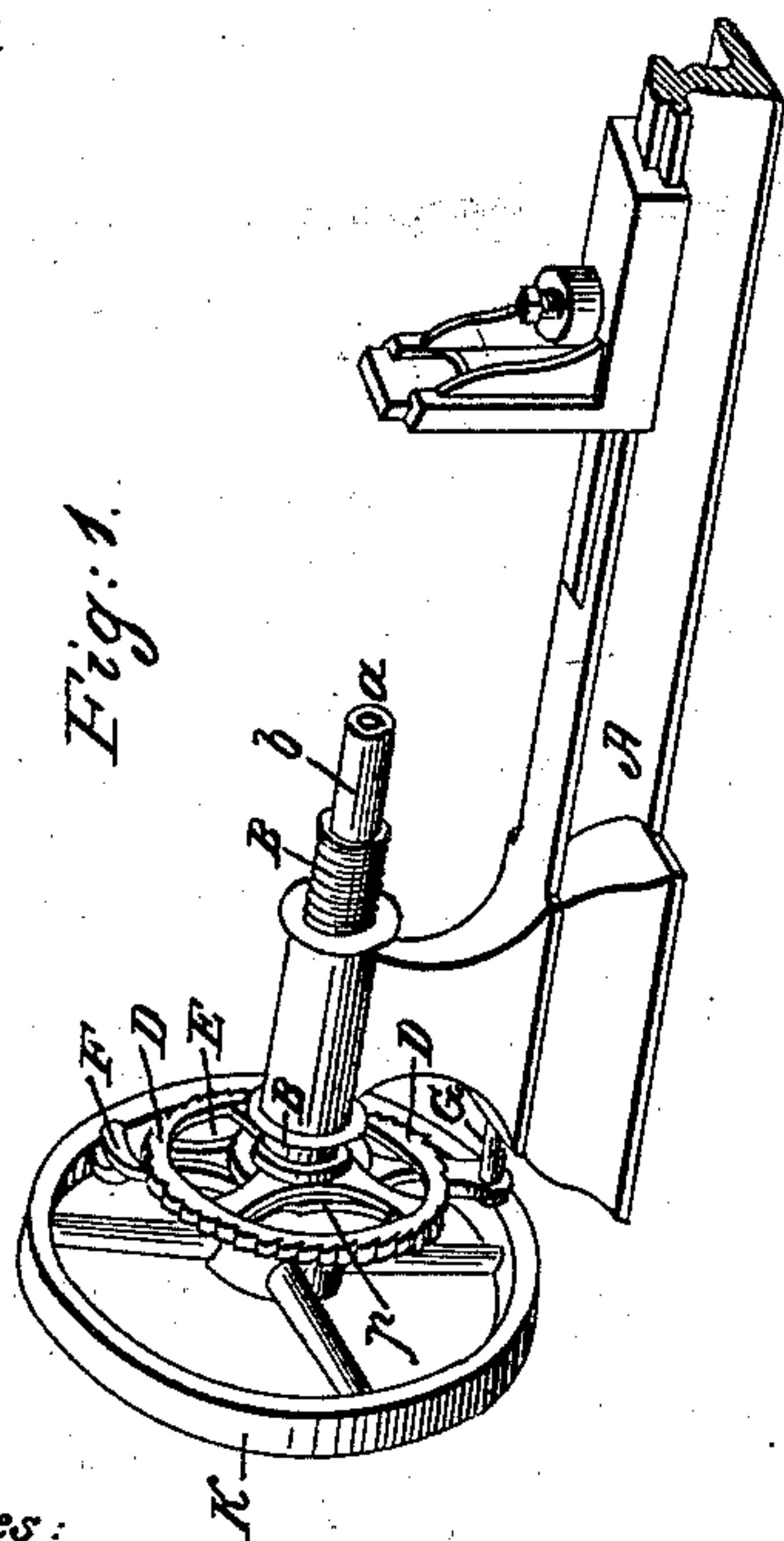
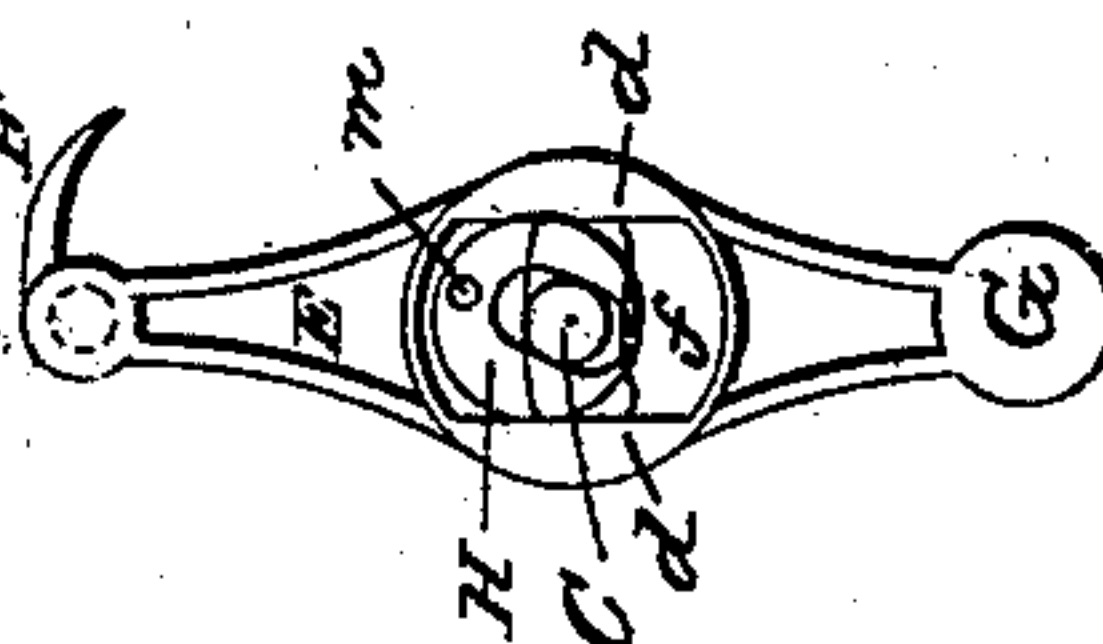


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DRILLS.

Specification forming part of Letters Patent No. 43,372, dated June 28, 1864.

*To all whom it may concern:*

Be it known that I, GEORGE C. TAFT, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Drills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of said drill. Fig. 2 represents a longitudinal vertical section through the same. Figs. 3, 4, 5, and 6 represent detached views, hereinafter to be referred to.

My invention relates, principally, to the application to drills of an adjustable slotted cam in connection with a lever and the feed-wheel of the drill, whereby the bit or drill is fed to the work automatically, and whereby said feed can be regulated to make it faster or slower.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the metal frame of the drill, which supports the working parts.

B represents a hollow screw-spindle which plays within the frame A, and can be operated therein to feed the drill to the work, the ratchet feed-wheel D, by which it is operated, being permanently secured to it. The center spindle, C, is fitted within the hollow screw-spindle B, and can turn therein freely, and the drill or bit is inserted in the square socket *a* of the head *b*. The spindle C is prevented from moving longitudinally within the spindle B by the head *b*, and by the projection *c*, which bears against the hub of the feed-wheel D.

E represents a cam-lever. It is secured at its lower end to the cylindrical rod G, which can slide longitudinally within the frame A, and the cam-lever turns with said rod as a fulcrum. It has a circular slot, *d*, near its center, through which the spindle C passes while it oscillates on its fulcrum G. The upper end of the cam-lever E is provided with a hinged pawl, F, which turns the feed-wheel D a certain space to feed the screw-spindle B and the bit to the work.

H represents a slotted cam which is set in a recess, *f*, of the cam-lever, and which im-

parts to the latter the motion by which it actuates the feed-wheel. The cam H is provided with a pin, *m*, which fits into one of the holes, 1 2 3, Fig. 6, on the inner side of the hub *g* of the fly-wheel K. The cam H is thus turned as the fly-wheel revolves, and acts upon the sides of the recess *f* of the cam-lever E, and causes the latter to oscillate on its shaft G, and to operate the ratchet feed-wheel D. It is very essential that said feed should be adjustable to make the machine adapted to working various sizes of drills. This may be done by making the holes 1 2 3 at unequal distances from the center of the fly-wheel K, whereby the eccentricity of the pin *m*, and consequently of the cam H, is adjusted by inserting the pin *m* into one of said holes; but to avoid the removing and adjusting of the fly-wheel for said purpose I use a movable pin-support of the following description: A recess is cut out in the hub of the fly-wheel K and a pin-support, *h*, is set therein, which is operated radially by a set-screw, *n*. The latter is held in position by another set-screw, *o*, the end of which extends into a neck on the screw *n*, and on turning the latter the pin-support *h* is adjusted radially and the pin *m* of the cam H, which is inserted therein, is moved with it, and consequently the eccentricity of the cam H, and the length of the stroke of the cam-lever E and pawl F, is adjusted, whereby the feed of the drill is regulated.

L represents a friction-wheel, Figs. 2 and 5, which is secured to the center spindle, C, by means of the projection *e*, and M is a friction-pawl, which is pivoted at 4 to one of the arms of the ratchet feed-wheel D. The head 5 of the friction-pawl is pressed against the friction-wheel L by means of the spring *p*, and it is so shaped that when the wheel L is turned in the direction of the black arrow, Fig. 5, no pressure is exerted upon the pawl M, but when turned in the direction of the red arrow the pawl M is pressed upon and binds firmly on the wheel, so as to be coupled to the same. Thus the wheel D and spindle B are coupled to the wheel L, and consequently to the spindle C, when the driving-pulley K is turned backward and the drill is withdrawn from the hole to renew the operation.

The operation of the drill is as follows: On turning the pulley K, which is secured to the



spindle C by means of the projection *u*, said spindle and the drill are turned. The slotted cam H is operated by being coupled to the hub of the pulley, and operates the cam-lever E, pawl F, and feed-wheel D, the latter turning the screw spindle B to feed the tool. When the hole is drilled, the pawl F is reversed and the motion of the pulley K is also reversed. The friction-wheel L thus firmly binds the pawl M, and is thus coupled to the feed-wheel D and to the screw-spindle B, and the latter is turned back to withdraw the tool preparatory to a new operation.

Fig. 4 represents a hand-lever which is to be used in place of the pulley K when the drill is to be operated by hand. It is also provided with a hub, *g*, and adjusting-holes 1 2 for the insertion of the cam-pin *m*, and with the set-screws *q r* to secure it to the spindle C and to secure the hand-lever N to it.

When a very large balance-wheel is to be used on this drill, the spindle B may be supported by friction rolls to avoid the friction of said spindle within the frame A.

Having thus fully described the nature of

my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. The movable slotted cam H within the recess of the lever E, to impart to said lever an oscillating motion, substantially as and for the purposes herein described.

2. In combination with the feed wheel D, the friction-wheel L and pawl M, for the purpose of coupling and releasing the screw-spindle B from the driving-pulley, substantially as herein described.

3. In combination with the adjustable slotted cam H within the recess of the lever E, the adjustable pin-supporter *h*, as and for the purposes described.

4. The combination of the driving-pulley K, cam-lever E, slotted cam H, friction-wheel L, pawl M, feed-wheel D, and spindles B C, when constructed and operated as herein described.

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Witnesses:

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