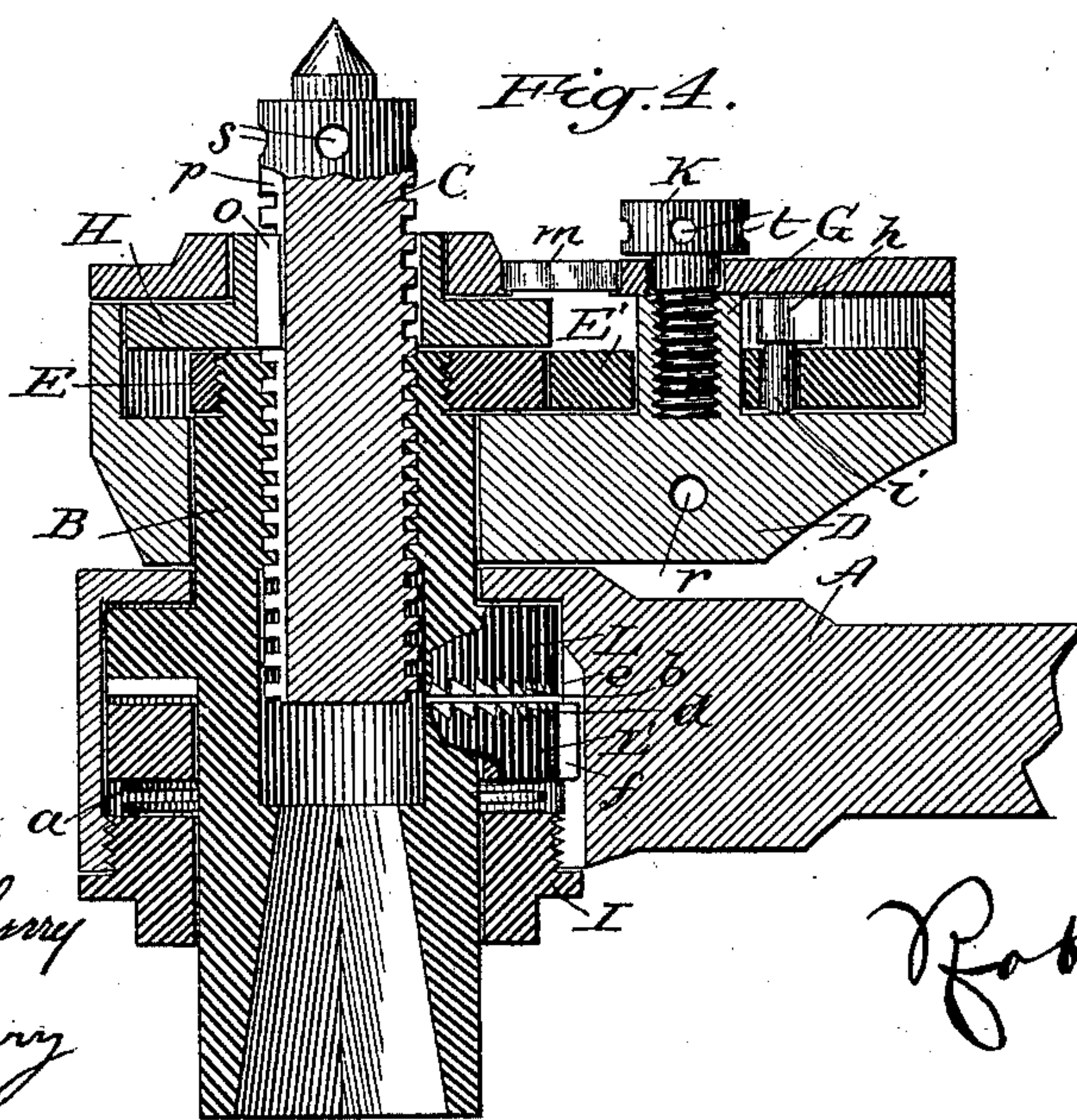
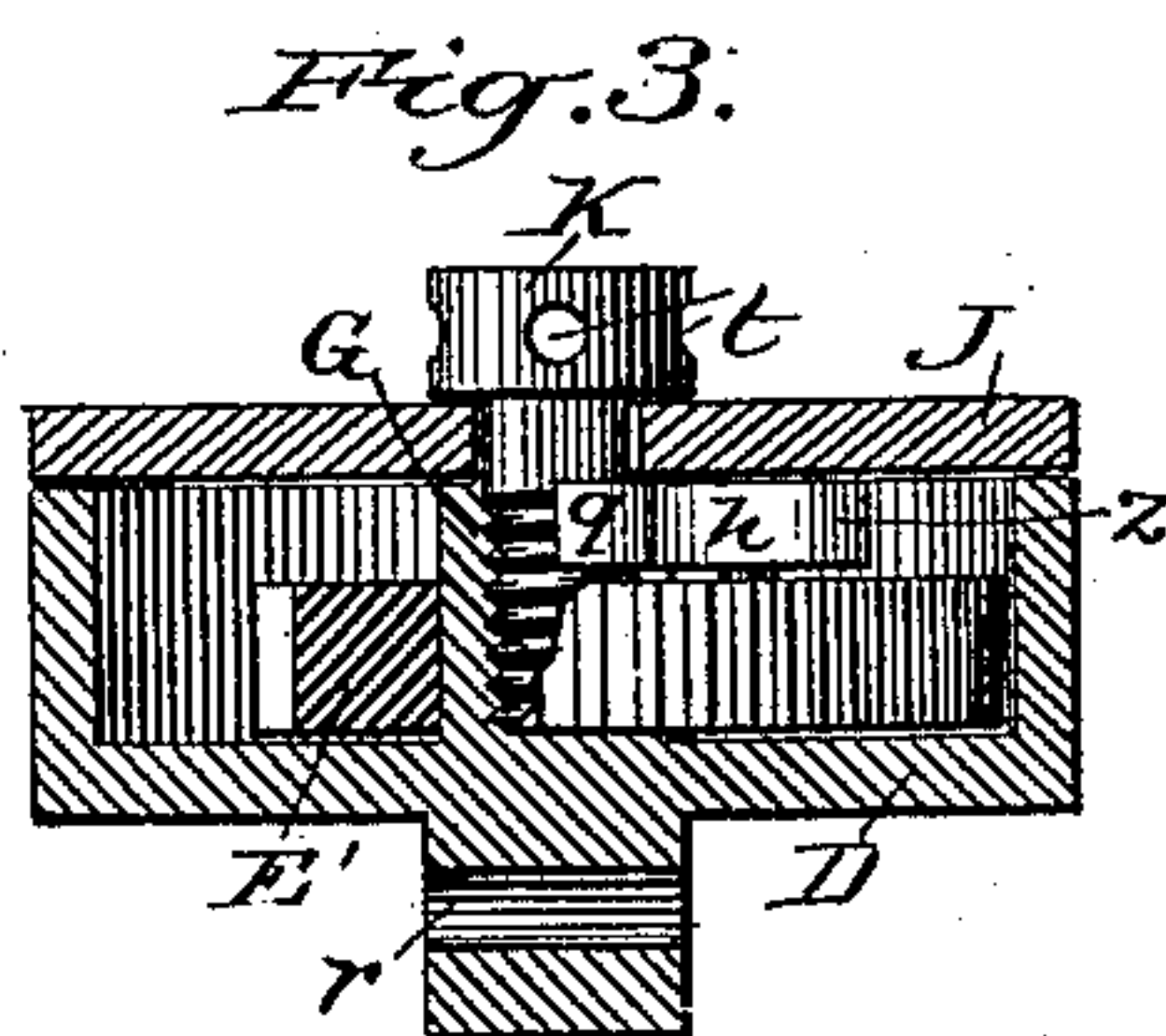
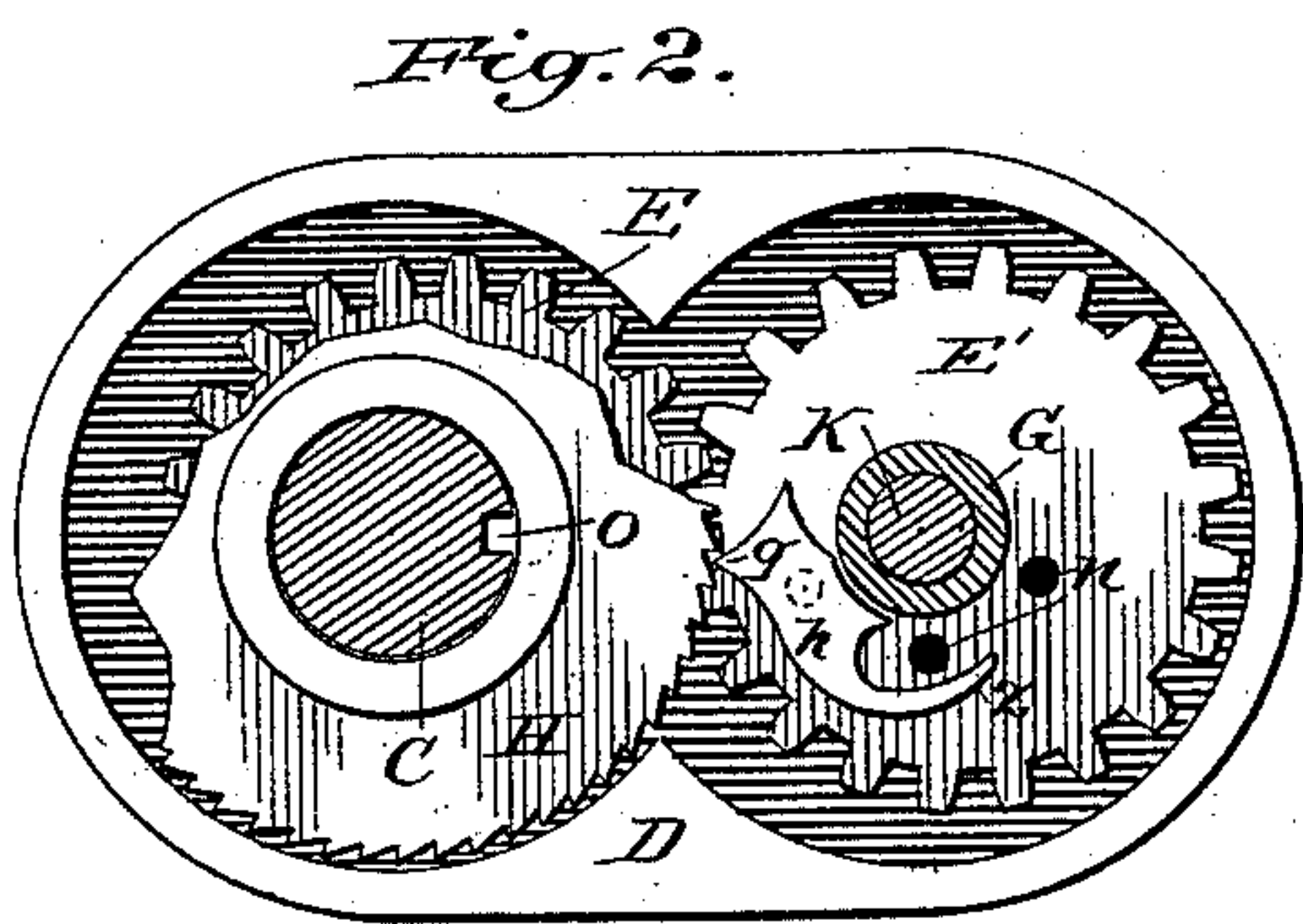
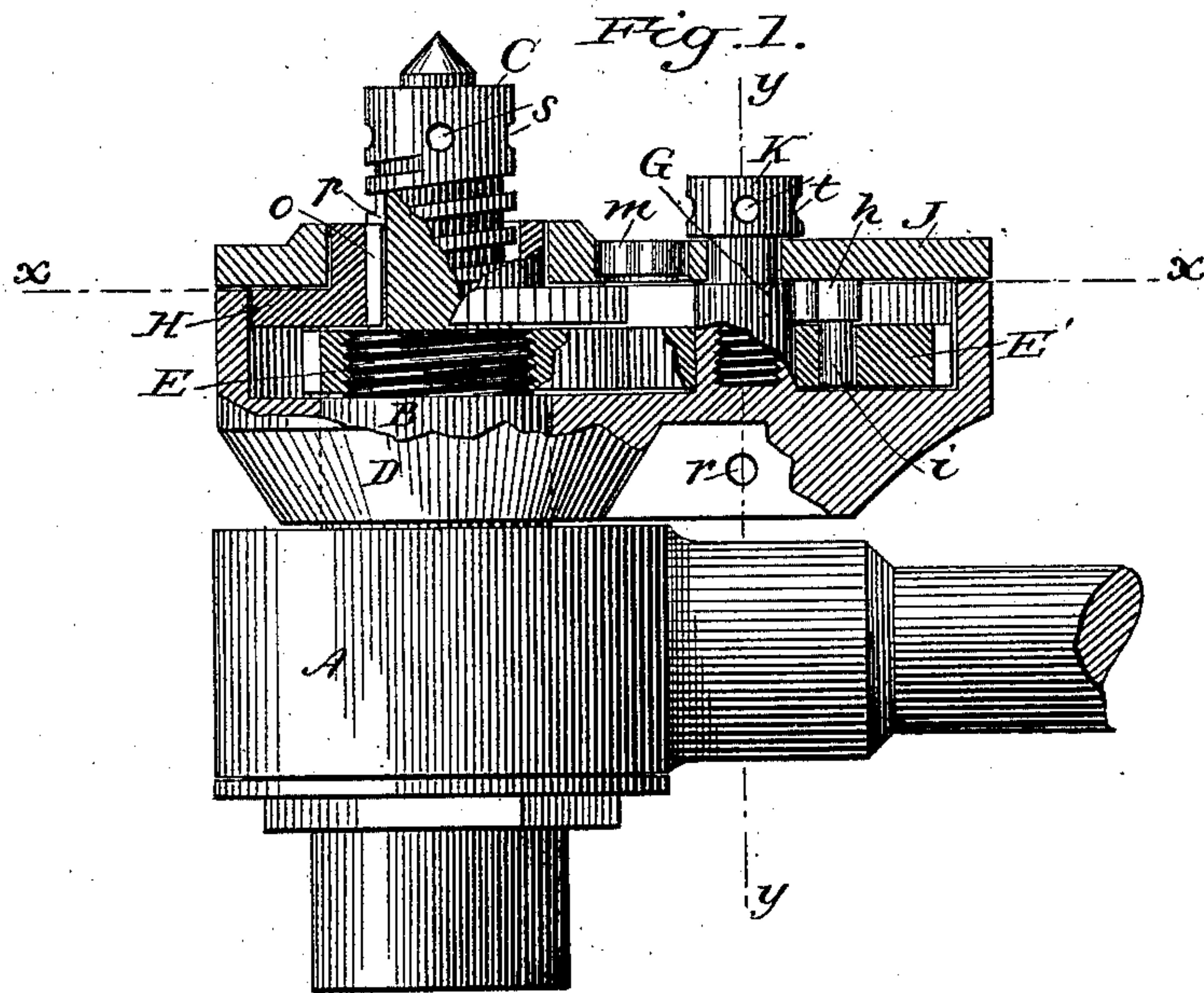


(No Model.)

R. N. CHERRY.  
SELF FEEDING RATCHET DRILL.

No. 296,924.

Patented Apr. 15, 1884.



Witnesses: a

Reuben Behney  
John M. Cherry

Inventor

R. N. Cherry



# UNITED STATES PATENT OFFICE.

ROBERT N. CHERRY, OF JERSEY CITY, NEW JERSEY.

## SELF-FEEDING RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 296,924, dated April 15, 1884.

Application filed November 15, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT N. CHERRY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Self-Feeding Ratchet-Drill, of which the following is a specification.

My invention consists in a device for automatically operating the feed-screw of an ordinary ratchet-drill. I obtain this result by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of that part of the tool to which my invention relates. Fig. 2 is a sectional plan on line *x x* of Fig. 1. Fig. 3 is a section on line *Y Y* of Fig. 1, showing the contour of the casing *D*. Fig. 4 is a vertical central section of a drill containing my improvement.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, *A* is the wrench, *B* the stock, and *C* the feed-screw, of an ordinary ratchet-drill.

*e* is a groove cut in the inner face of the wrench *A*.

*L* is a crown ratchet-wheel formed on the stock *B*.

*L'* is a crown ratchet-wheel having a circular opening about its axis, by which it is slipped upon the stock *B*.

*f* is a rib formed on the ratchet *L'*. The rib *f* slides freely in the groove *e*. It will be seen that the wheel *L'*, through the rib *f* sliding in the groove *e*, will partake of motion from the wrench *A*.

*d* are teeth formed on the wheel *L'*, adapted to engage with the teeth *b*, formed on the wheel *L*.

*a* is a spring resting upon the nut *I*, and bearing on the under face of the wheel *L'*. The spring *a* operates to keep the teeth *d* in engagement with the teeth *b*, and at the same time to permit the teeth to play past each other during the operation of the wrench.

*D* is a casing fitted loosely on the stock *B*, the stock being free to revolve in the same.

*E* is a spur-gear screwed rigidly on the end of stock *B*. *E'* is a spur-gear meshing with *E* and carried on the stud *G*. The wheels *E*

and *E'* are bored eccentrically, for a purpose to be hereinafter shown.

*H* is a ratchet-wheel having a feather, *o*, sliding in the spline *p*, cut in the feed-screw *C*.

*h* is a pawl carried by a pin, *i*, the pin being stepped in either of the holes *n* in wheel *E'*.

*J* is a plate held by the screw *K* for the purpose of inclosing the works.

*m* is a glass plate or disk, to be hereinafter explained.

*s s s* are holes in the feed-screw, to be used for inserting a small rod for the purpose of slacking down the screw when a hole is to be drilled part way through a piece of metal.

*r* is a hole in the casing *D*, for a purpose to be hereinafter explained. The holes *t* in the screw *K* are to enable it to be crowded snugly to the plate *J* by passing a rod through the holes. The feed-screw *C* is threaded into the upper end of the stock *B*, so as to be rotated by the stock; but the pawl *h* acts against the ratchet *H* to give the screw *C* a slower movement than the stock *B*.

Operation: By vibrating the wrench *A* the stock *B* is caused to revolve, carrying with it the eccentric-gear *E*, feed-screw *C*, and ratchet-wheel *H*, all at a uniform speed. The eccentric wheel *E* engages with and drives the eccentric wheel *E'*, which in turn carries the pawl *h* through a complete circle. At each revolution the pawl *h* engages with the ratchet *H* and retards its speed. The toe *q* of the pawl *h* leaves the ratchet-wheel *H* in the proper position to engage with the ratchet at its next revolution; but should the pawl lose its proper position by turning on its axis while the wheel *E'* is making a revolution, then the heel *z* of the pawl *h* will tread on the face of the ratchet *H*, thereby placing the toe of the pawl in position to again engage with the wheel *H*. The radius of the ratchet *H* being greater than the radius from the holes *n* to the center of the wheel *E'*, it is obvious that the teeth of the ratchet *H* travel faster than the toe *q* of the pawl *h*; hence when the toe *q* of the pawl *h* is in engagement with the teeth of the ratchet *H* it follows that the ratchet-wheel, with the feed-screw *C*, will revolve slower than the stock *B*, thus feeding the drill to its work; and, further, the wheels *E* and *E'* being eccen-

tric, the wheel E being carried at a uniform speed with the stock B, it follows that the speed of E' will vary at every point between its least and greatest radii; hence by shifting  
5 the pawl h in the holes n a slow, medium, or fast feed is obtained. The glass plate m is to enable the operator to see without removing the plate J in which of the holes n the pawl is placed.

10 To operate the tool, place it in an ordinary brace or clamp; then pass any small rod through the hole r and allow the rod to bear against the brace or clamp, thus preventing

the casing D from revolving with the stock B, and thereby producing the feed. 15

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

The combination of the eccentric wheels E and E', the ratchet H, pawl h, feed-screw C, and stock B, substantially as herein shown 20 and described.

ROBT. N. CHERRY.

Witnesses:

JOHN M. CHERRY,  
REUBEN B. CHERRY.