

(No Model.)

C. G. HARSTRÖM & A. K. WESTERDAHL.

DRILLING MACHINE.

No. 324,688.

Patented Aug. 18, 1885.

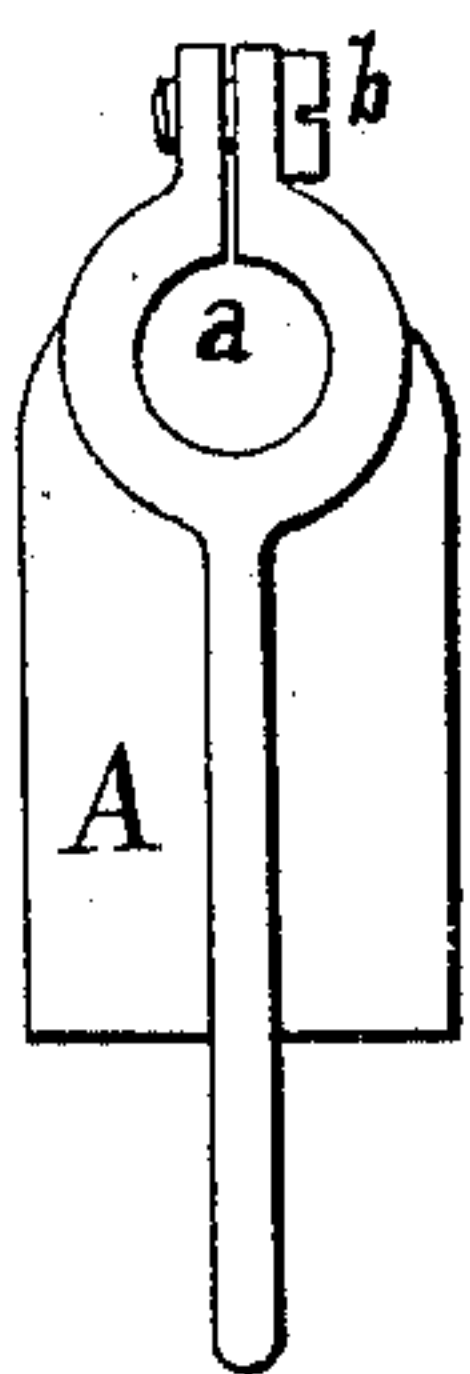


Fig. 2.

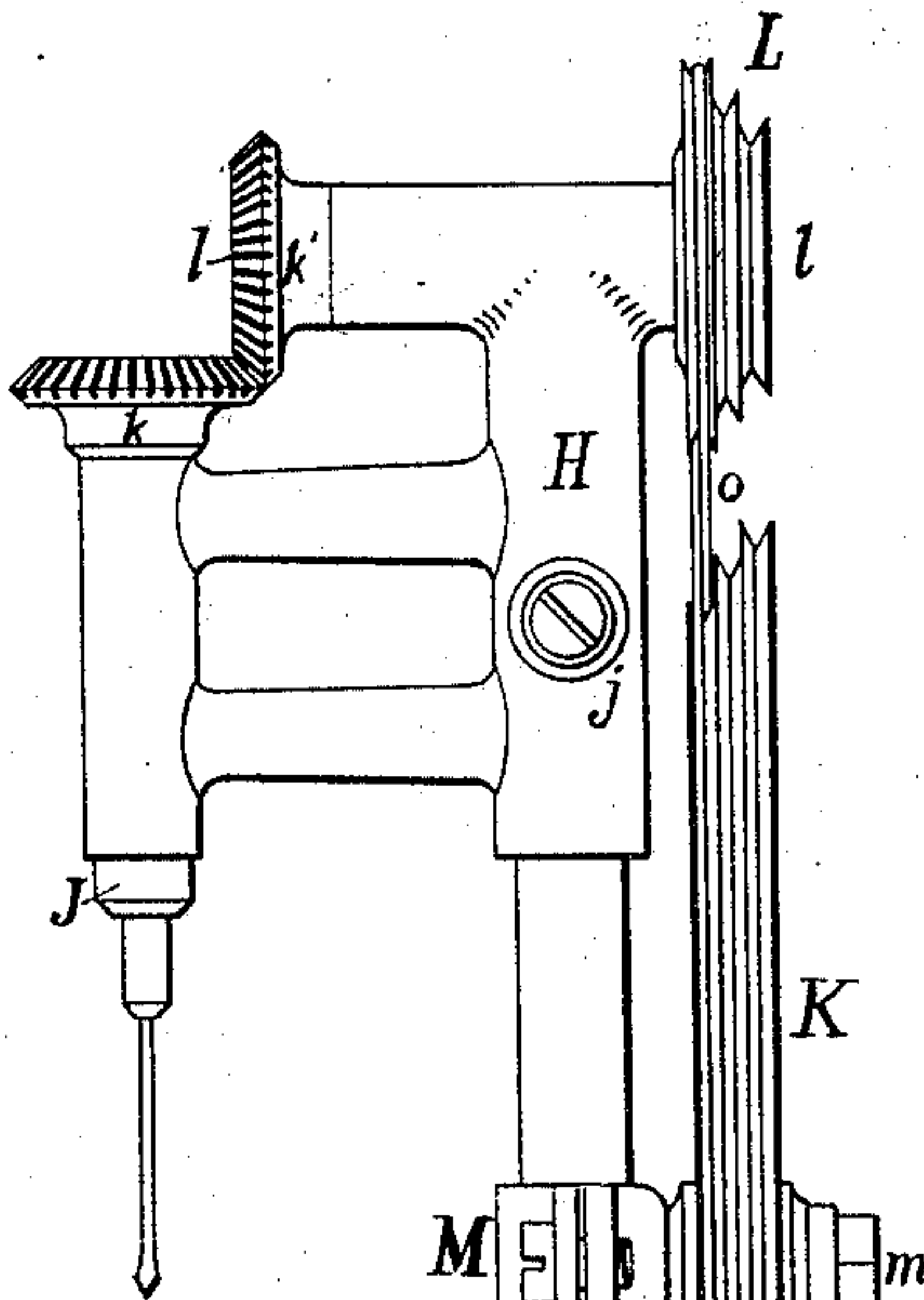


Fig. 1.

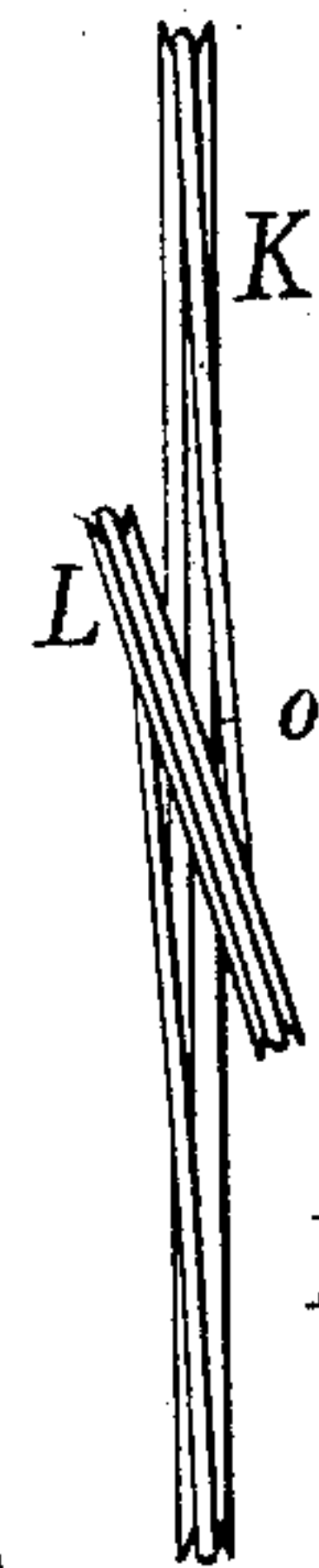


Fig. 4.

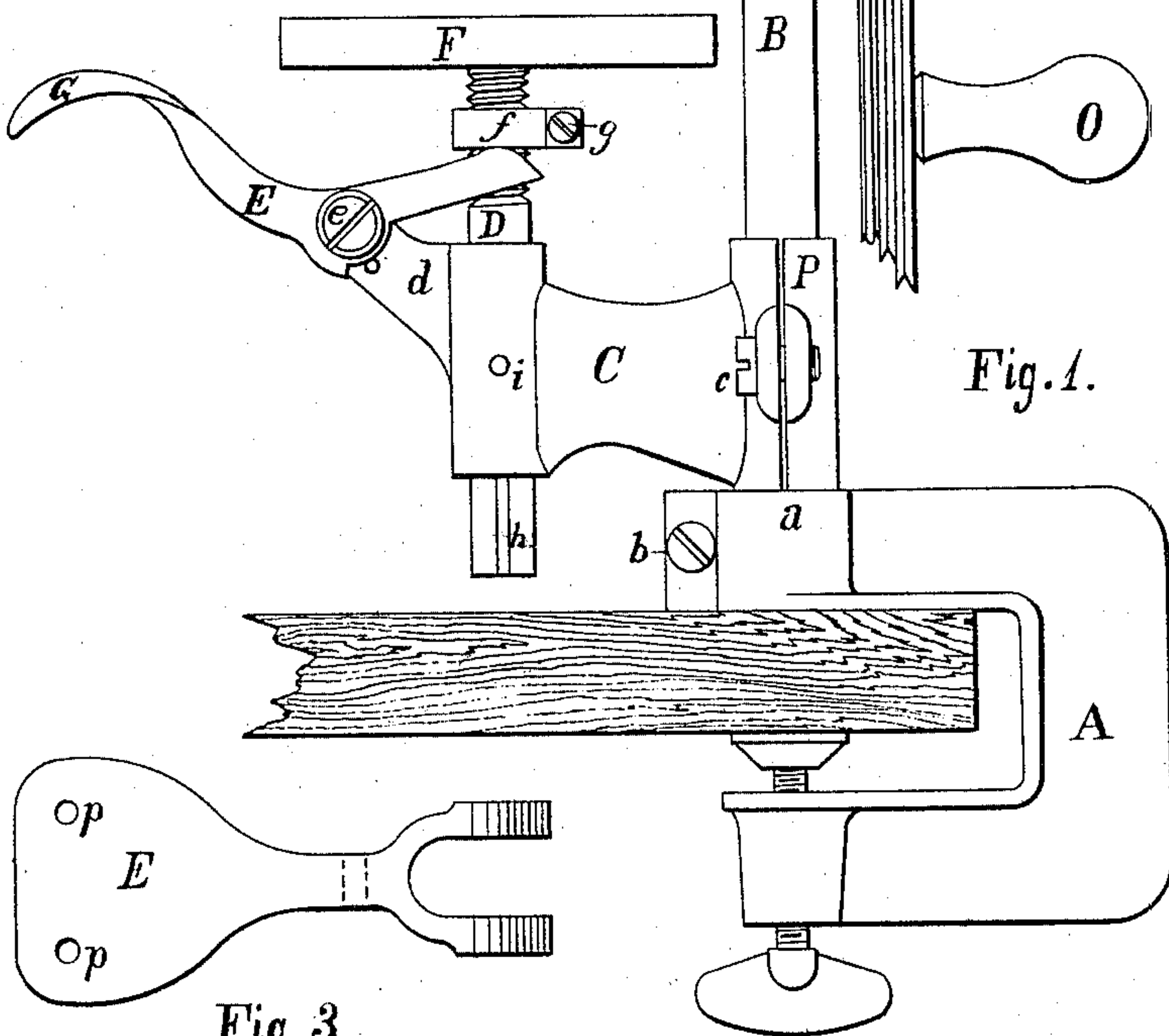


Fig. 3.

Witnesses:

August Peterson  
Chas. M. Hanf

Inventor

Carl G. Harström  
A. K. Westerdahl

# UNITED STATES PATENT OFFICE.

CARL G. HARSTRÖM AND AXEL K. WESTERDAHL, OF PEEKSKILL, N. Y.

## DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 324,688, dated August 18, 1885.

Application filed July 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, CARL G. HARSTRÖM and AXEL K. WESTERDAHL, citizens of the United States, residing at Peekskill, in the county of Westchester and State of New York, have invented a new and useful Hand Drilling-Machine, of which the following is a specification.

Our invention relates to that class of drilling-machines designed only for very small work, and which are clamped to a bench or table when in use, and may be put to one side, out of the way, when they are not needed; and the object of our improvements is to afford a simple drill, chiefly for watch-makers' and jewelers' use, that shall possess advantages not before obtained in any similar tool for such use. The universal swiveling of the parts, the easy driving-gear, and the extremely sensitive method of feeding give a combination of qualities that years of experience as practical watch-makers and jewelers and as mechanics have proved to us is greatly in demand. Nearly all the work that is done with a bow-drill can be performed with this tool, not only in much less time, but in a manner far more satisfactory. We attain these objects by the mechanism illustrated in the accompanying drawings, in which similar letters refer to similar parts throughout the several views.

Figure 1 is an elevation of the entire machine. Fig. 2 represents the construction of a part of the bench-clamp used. Fig. 3 is a top view of the feeding-lever. Fig. 4 is a top view of the driving-pulleys.

The bench-clamp A is provided with a clamping-socket, *a*, constructed as shown in Figs. 1 and 2. In this socket, by means of the tightening-screw *b*, the vertical shaft or post B is securely held.

On the shaft B we place the table-bracket C, which is free to be moved vertically on and swung to the right or left around B. It may also be firmly held in any desired position on the shaft by means of the tightening-screw *c*, as that part of the bracket encircling the shaft is made in the form of a clamp, as shown at P in Fig. 1. This is a common method of holding such brackets. In place of the slot and screw *c*, a set-screw may be inserted to answer

the same purpose. The other end of the bracket is bored to receive the table's spindle D, and it also carries an extension, *d*, to which is pivoted at *e* the feeding-lever E.

F is the table on which pieces to be drilled are placed. On the spindle D, which is firmly and truly fixed to the table F, a screw-thread is cut, and upon it is a clamping-nut, *f*. By means of the screw *g* this nut is held at a desired position. Its object is to regulate the height of the table. As the work to be drilled or tapped or polished is held with the fingers, the ball of the hand rests upon the broad part G of the lever E, so that the operator feels the action of the drill or tap and can feed accordingly. The short end of the lever E is forked to reach up on opposite sides of D, and its ends lie centrally under the nut or clamp *f*. Depressing the outer end of the lever obviously lifts the table. To prevent the table turning, D is provided with groove *h*, which slides upon a pin provided at *i*. Fig. 3 is a top view of the lever E. The object of the holes *p p* in the lever E is to afford means for lifting the lever by foot-pressure. This is done by connecting the lever by a cord or cords in the holes to a small treadle on the floor.

The upper end of the shaft B supports the drill-spindle frame H, its distinctive feature consisting of its adaptability to be raised, lowered, or swung to the right or left. It is held in place by the set-screw *j*; or it may be clamped in a manner similar to that employed for the table-bracket. The drill-spindle J is bored to receive a common form of jeweler's drill-chuck, and is driven in an ordinary manner by miter-gears *k k'*. Gear-wheels may be used to propel the horizontal shaft *l*, to which *k'* is attached; but we prefer the belt method here shown.

L is a small pulley, preferably a cone, as shown, to afford easy changes of speed. K is a driving-pulley, likewise made in the form of a cone. Now, if the belt is passed over these two pulleys, in the usual manner, the actual belt-surface on the small cone is too small for the work to be done. We therefore place the belt as shown in the illustrations—*i. e.*, cross it—obtaining nearly the entire periphery of the pulley as belt-surface; but it gives the



disadvantage of the friction and wear of the belt that follow, the crossing of a belt; but this we overcome, however, by our way of hanging the driving-pulley. Said pulley K is supported on a shaft, *m*, that springs from a clamp, M, which encircles the shaft or post B. From this plan we derive several advantages. If it is desirable to swing frame H from its normal position, the driving-pulley can be swung to a position that would be required by the changed location of the small pulley L; also, by raising or lowering the clamp M the tension of the belt can be varied; also, by swinging shaft *m* slightly out of parallel with shaft *l* the rubbing together of the belt at its point of crossing, *o*, is avoided, as will be more clearly seen in Fig. 4, which is a view looking down upon the two pulleys. As the belt travels in grooves in the pulleys, this vagary of position does not render the belt liable to run off the pulleys.

O is a handle for turning the driving-wheel and propelling the machine. The whole is secured to a bench or table by means of the clamp A, as shown.

We claim the privilege of departing from the details of construction herein represented, so long as we adhere to the essential features pointed out.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hand drilling-machine, the combination, with the feeding-table, of a guiding-spindle provided with a screw-thread and a clamping-nut, substantially as described.

2. In combination with a table having a threaded guiding spindle and clamping-nut, as described, a feeding-lever, substantially as herein shown.

3. In a hand drilling-machine, the combination of the vertical shaft or post and adjustable balance-wheel support, for the purposes set forth.

4. The combination, in a hand drilling-machine, of the adjustable spindle-frame, vertical shaft or post, and adjustable balance-wheel support, substantially as shown and described.

5. In a drilling-machine, the adjustable spindle-frame, vertical shaft, adjustable balance-wheel support, adjustable table-bracket, feeding-lever and its supporting-arm, threaded clamping-nut, threaded table-spindle, and table, all combined as described, for the purposes set forth.

CARL G. HARSTRÖM.  
AXEL K. WESTERDAHL.

Witnesses:

AUGUST PETERSON,  
CHARLES M. HAUF.