

No. 687,025.

Patented Nov. 19, 1901.

B. E. HERVEY.
BORING AND DRILLING MACHINE.

(Application filed May 17, 1901.)

(No Model.)

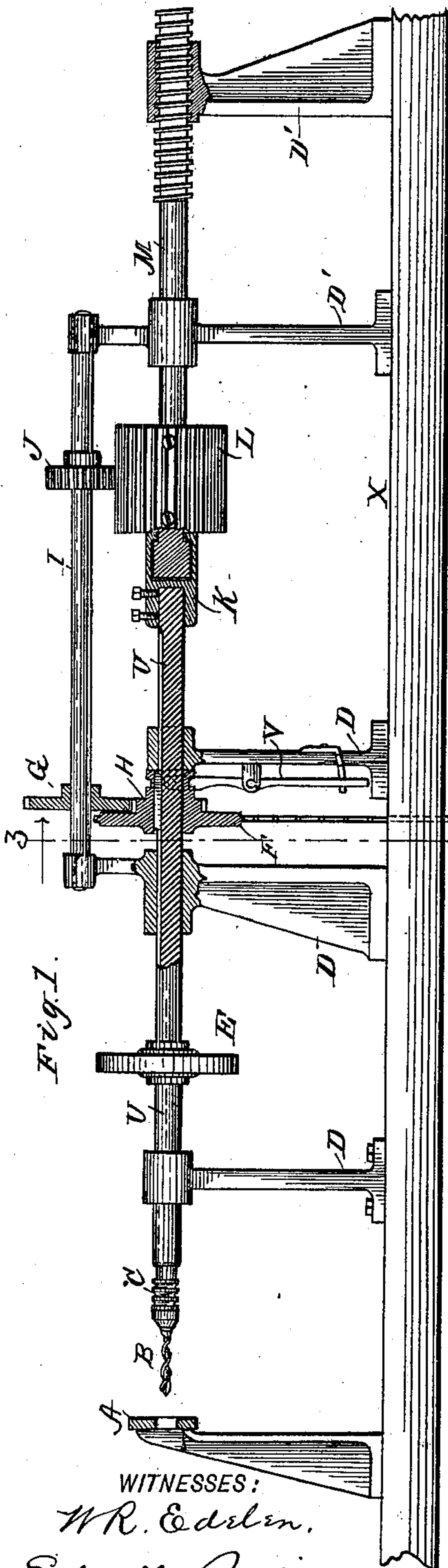


Fig. 1.

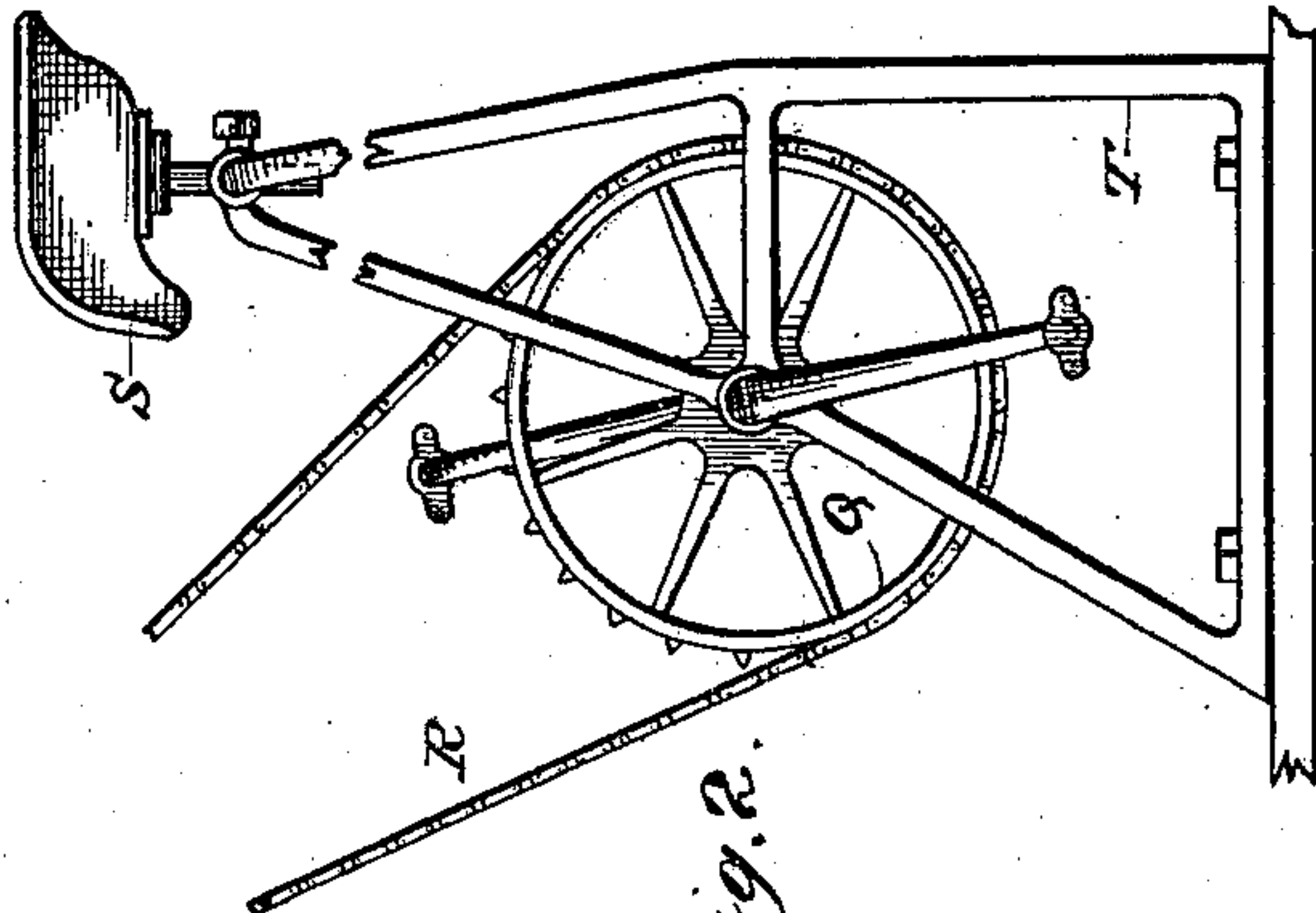


Fig. 2.

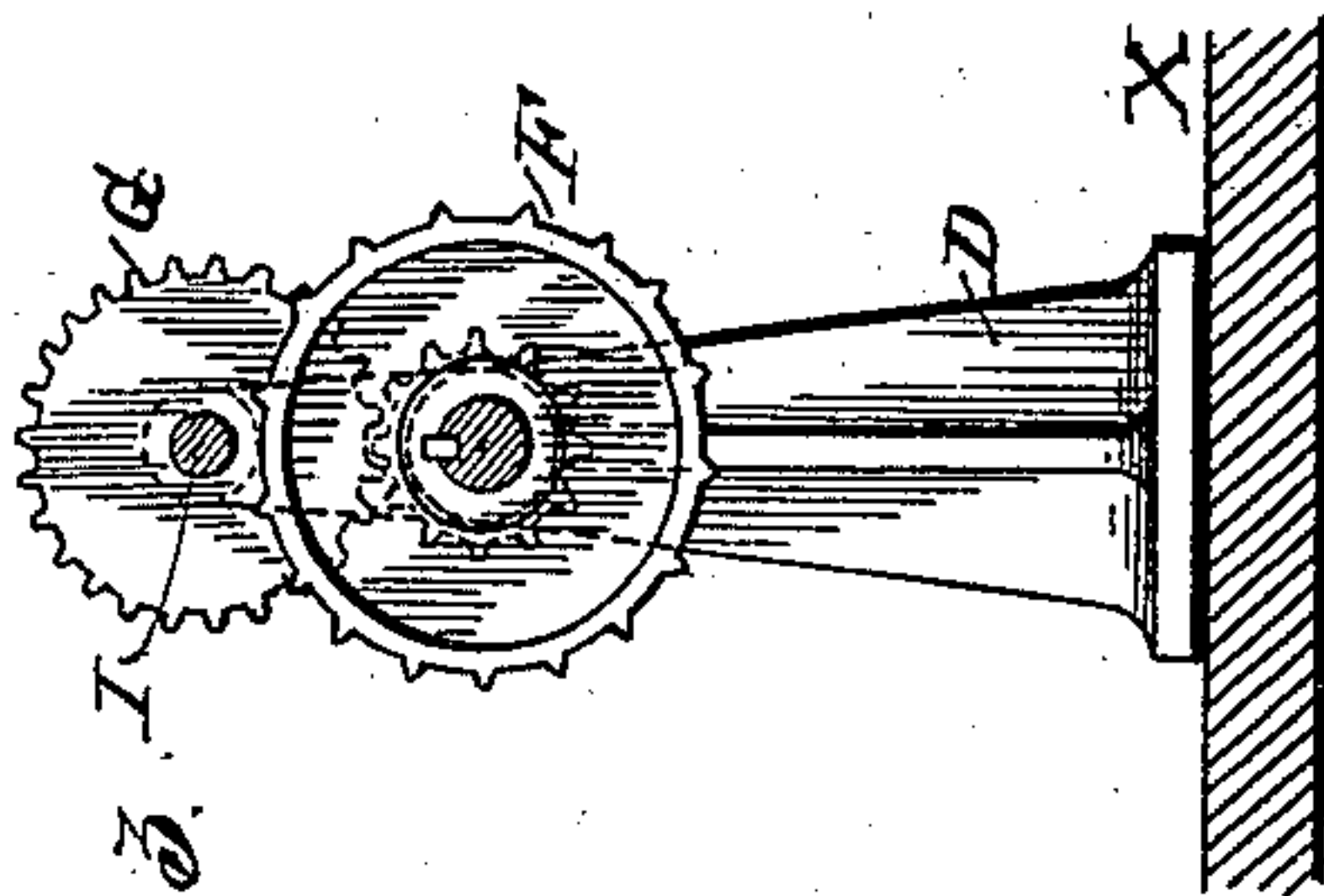
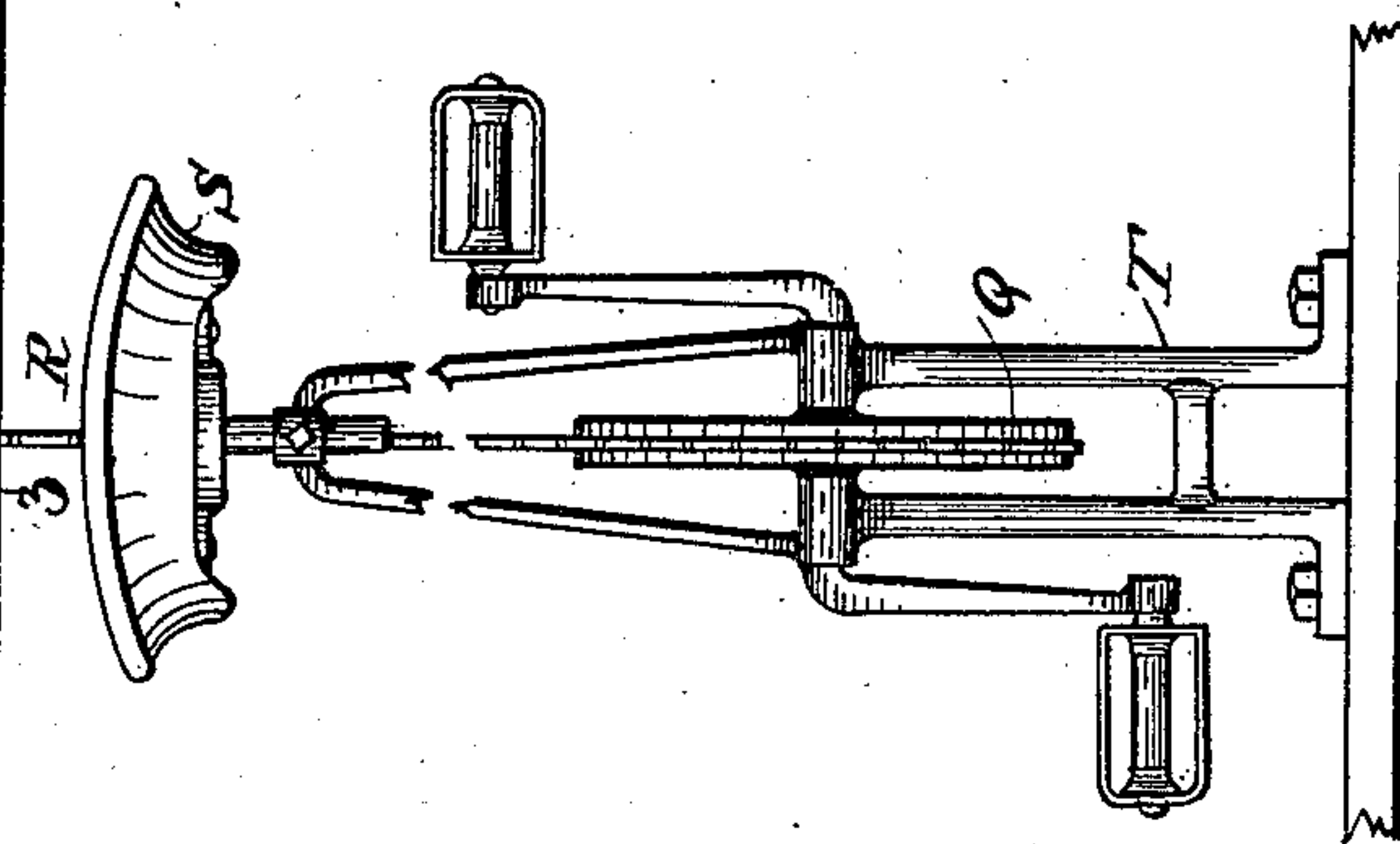


Fig. 3.

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BENJAMIN E. HERVEY, OF RITZVILLE, WASHINGTON.

BORING AND DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 687,025, dated November 19, 1901.

Application filed May 17, 1901. Serial No. 60,665. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN E. HERVEY, of Ritzville, in the county of Adams and State of Washington, have invented a new and useful Improvement in Boring and Drilling Machines, of which the following is a specification.

The object of my invention is to provide a simple, cheap, and practical form of boring and drilling machine designed for the lighter class of work, in which the power is supplied by a treadle and the boring-bit works in a horizontal plane.

It consists in the peculiar construction and arrangement of the parts, which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the entire machine. Fig. 2 is a detail side view of the treadle mechanism, and Fig. 3 is a section on line 3 3 of Fig. 1 looking in the direction of the arrow.

In the drawings, B is the boring bit or drill, held by a chuck C on the end of a horizontal shaft U and adapted to operate upon the object to be bored or drilled, which object is held against a braced back rest A, which has a hole through it in line with the drill.

D D D are three standards firmly bolted or screwed to an elevated bench or table surface X and provided with journal-boxes in their upper ends, in which rotates the drill-shaft U. To drive this shaft, a sprocket-wheel F about four inches in diameter is formed with or rigidly attached to a pinion H, and this sprocket-wheel and pinion are connected to the shaft by a longitudinal groove in the shaft and a key, feather, or spline on the hub of the wheels F H, which spline travels on the groove of the shaft, allowing the shaft to move endwise through the wheels, but be rotated positively thereby. These wheels F and H are arranged between two juxtaposed standards D D, which latter, in connection with devices hereinafter described, restrain the wheels against undue movement sidewise and compel them to remain always in the proper plane.

At the end of the shaft U and in alinement therewith there is another shaft M, which turns in bearings in the two standards D' D'. The shaft M is connected to shaft U by a swiveling joint formed by a coupling-sleeve

K, so that the shafts act as one for movement longitudinally, but are capable of independent rotation at different speeds by reason of the swiveling joint K. On the shaft M next to coupling K there is rigidly attached a gear-wheel L of about three inches diameter and having a long face equal to the longitudinal travel of the boring-shaft. With this gear L there engages a pinion J about two inches in diameter, rigidly fixed to a shaft I, journaled in bearings in the upward extensions of the two adjacent standards D D'. On one end of shaft I there is rigidly fixed a gear-wheel G about three inches in diameter, which meshes with the pinion H. The shaft M is screw-threaded a portion of its length and turns in a corresponding female thread in the box at the top of the outer standard D'.

To drive the sprocket-wheel F, a chain R leads down to a lower and larger sprocket-wheel Q about six inches in diameter and mounted in a framework T and provided with treadles. A seat S is mounted upon the framework in elevated position for the operator to sit on when operating the treadles.

The operation of the machine is as follows: When the sprocket-wheel F and pinion H are rotated through the treadle-driving mechanism, a rapid rotation is imparted to shaft U and the boring bit or drill B, and at the same time a slowly-advancing movement is given to the shaft U in longitudinal direction, which is permitted by the feather-and-groove connection. This slow advance is imparted through the gears H and G, shaft I, and the gears J and L and screw-shaft M. The swivel-coupling K allows the shaft M to turn at a slower speed than U, and as the screw of shaft M advances through the screw-threaded bearing in the outer standard D' the length of the face of the gear L permits this advance in the shafts U and M without disconnecting the gears J and L.

For convenience and facility in grinding, sharpening, or polishing drills and other tools an emery wheel or buffer E is fixed on the shaft U, and gears F and H may have a lateral adjustment out of contact with G whenever the emery-wheel alone is to be driven. This may be effected by a lever V with prongs embracing a grooved collar on the pinion H or by any desired means.

I am aware that in drilling-machines it is not new to have the boring-shaft provided with a screw-threaded feed-shaft arranged behind the boring-shaft in alinement and
 5 having a slower rotation to feed the boring-shaft, and I make no broad claim to this.

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

10 1. A boring and drilling machine comprising a boring-shaft for the bit, driving-gears having a feather-and-groove connection with said shaft, a feed-shaft having a swiveling connection with the boring-shaft and ar-
 15 ranged behind the same in alinement therewith and bearing at one end a screw and at the other end an elongated gear-wheel, a stationary threaded bearing for said screw, and a parallel shaft having at one end a gear-
 20 wheel meshing with and receiving power from the driving-gear of the boring-shaft, and at the other end having a pinion meshing with the elongated gear of the feed-shaft substantially as described.

25 2. A boring and drilling machine comprising a boring-shaft for the bit, driving-gears having a feather-and-groove connection with said shaft, a feed-shaft having a swiveling connection with the boring-shaft and ar-
 30 ranged behind the same in alinement therewith and bearing at one end a screw and at the other end an elongated gear-wheel, a stationary threaded bearing for said screw, a parallel shaft having at one end a gear-wheel
 35 meshing with and receiving power from the

driving-gear of the boring-shaft and at the other end a pinion meshing with the elongated gear of the feed-shaft, a grinding and polishing wheel mounted on the boring-shaft, and a shifting-lever having a swiveling con-
 40 nection with the gear-wheel of the boring-shaft to throw said gear out of mesh with the feed mechanism when using the boring-shaft for rotating the grinding and polishing wheel as shown and described.

45 3. A boring and drilling machine comprising a boring-shaft for the bit, carrying also a grinding and polishing wheel, a sprocket-wheel having a feather-and-groove connection with said boring-shaft, a shifting-
 50 lever for altering the plane of said sprocket-wheel, a feed-shaft having a swiveling connection with the boring-shaft and arranged behind the same in alinement therewith and bearing at one end a screw and at the other
 55 end an elongated gear-wheel, a stationary threaded bearing for said screw, a parallel shaft having at one end a gear-wheel meshing with and receiving power from the adjustable sprocket-wheel of the boring-shaft
 60 and at the other end a pinion meshing with the elongated gear of the feed-shaft, a chain belt, and a sprocket-wheel treadle, stand, and seat located below the boring-shaft substantially as shown and described.

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Witnesses:

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