

E. J. MANVILLE.

Friction-Clutch Counter-Shafts.

No. 152,043.

Patented June 16, 1874.

Fig. 3.

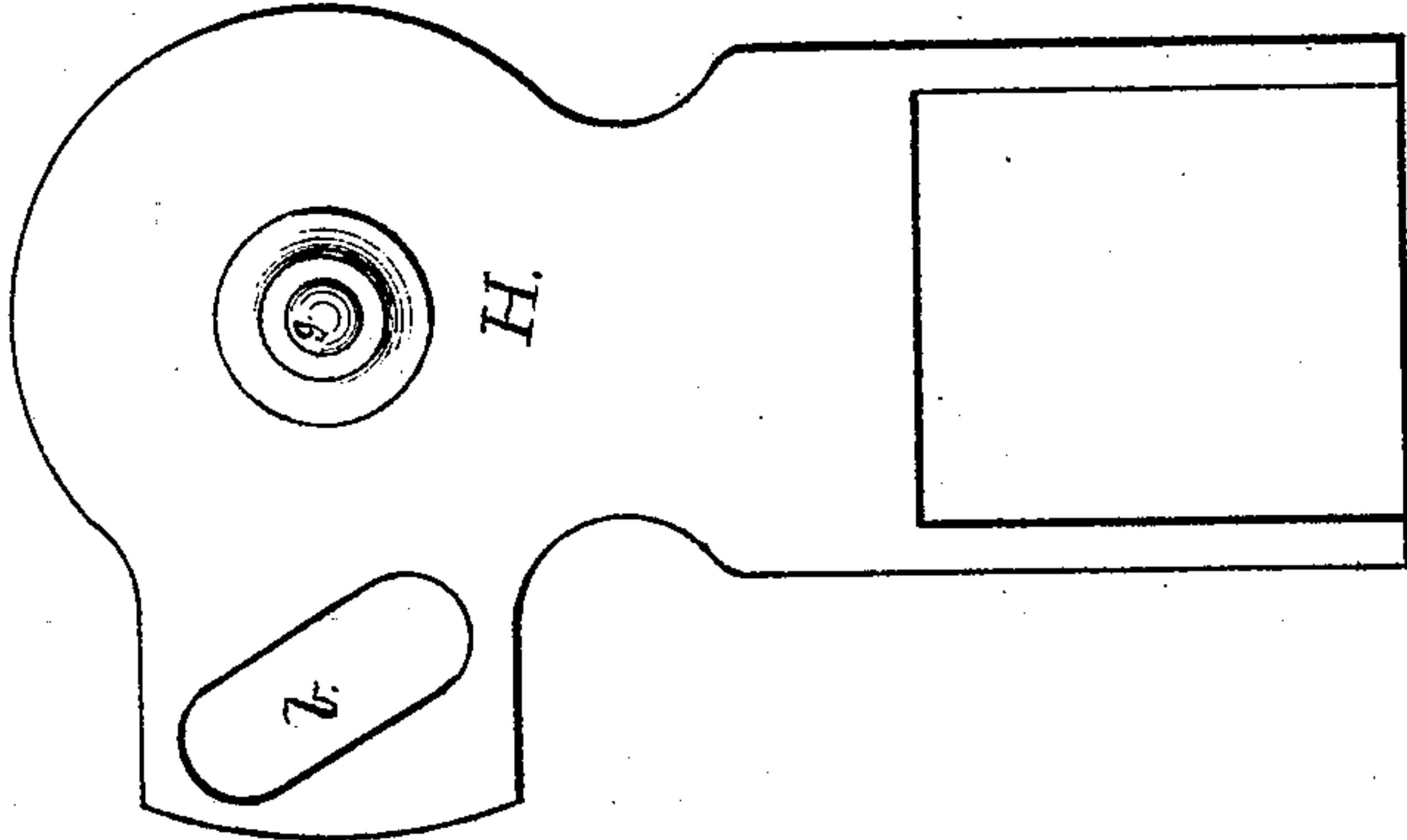
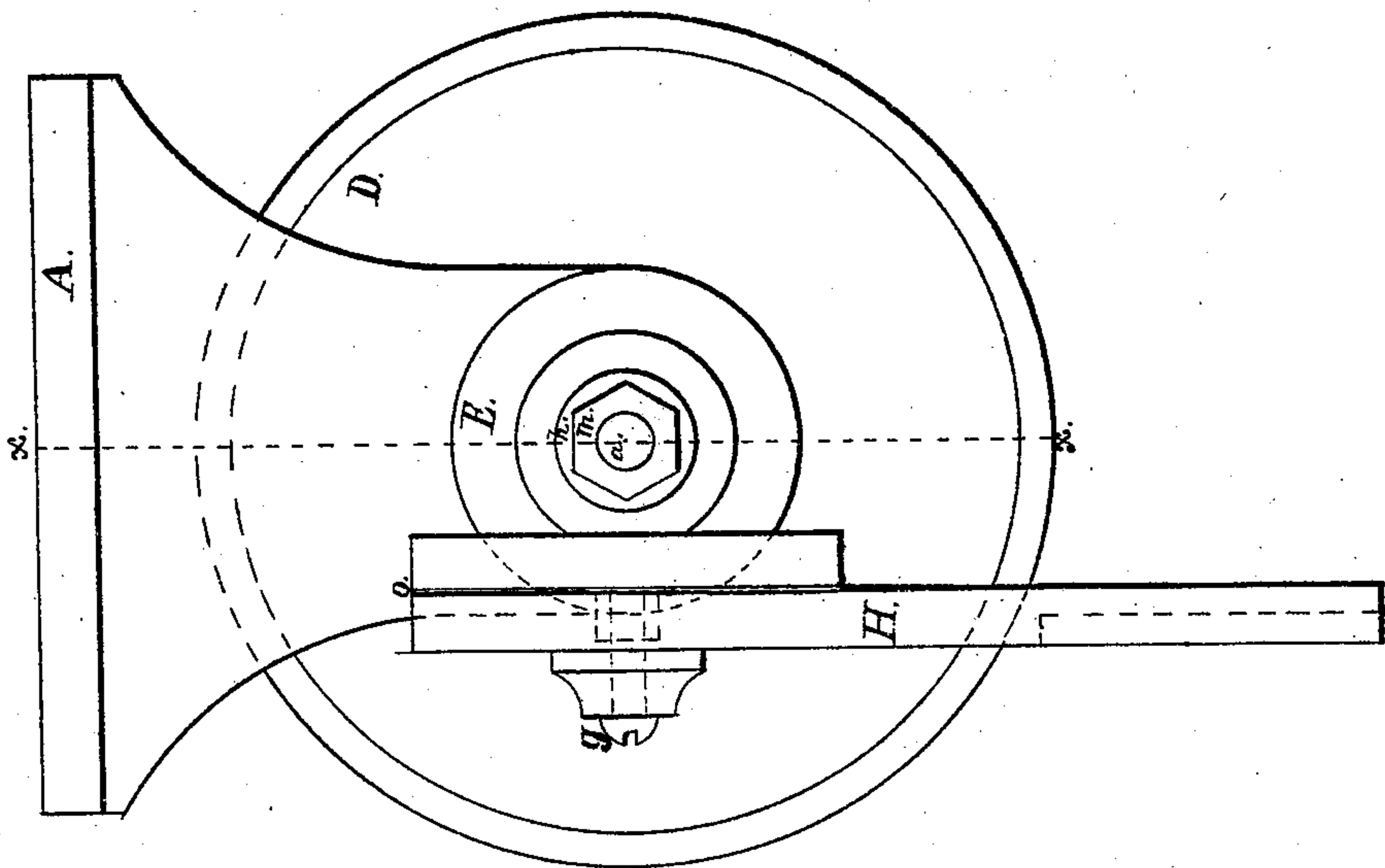


Fig. 1.



Witnesses

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Geo. B. Lamb

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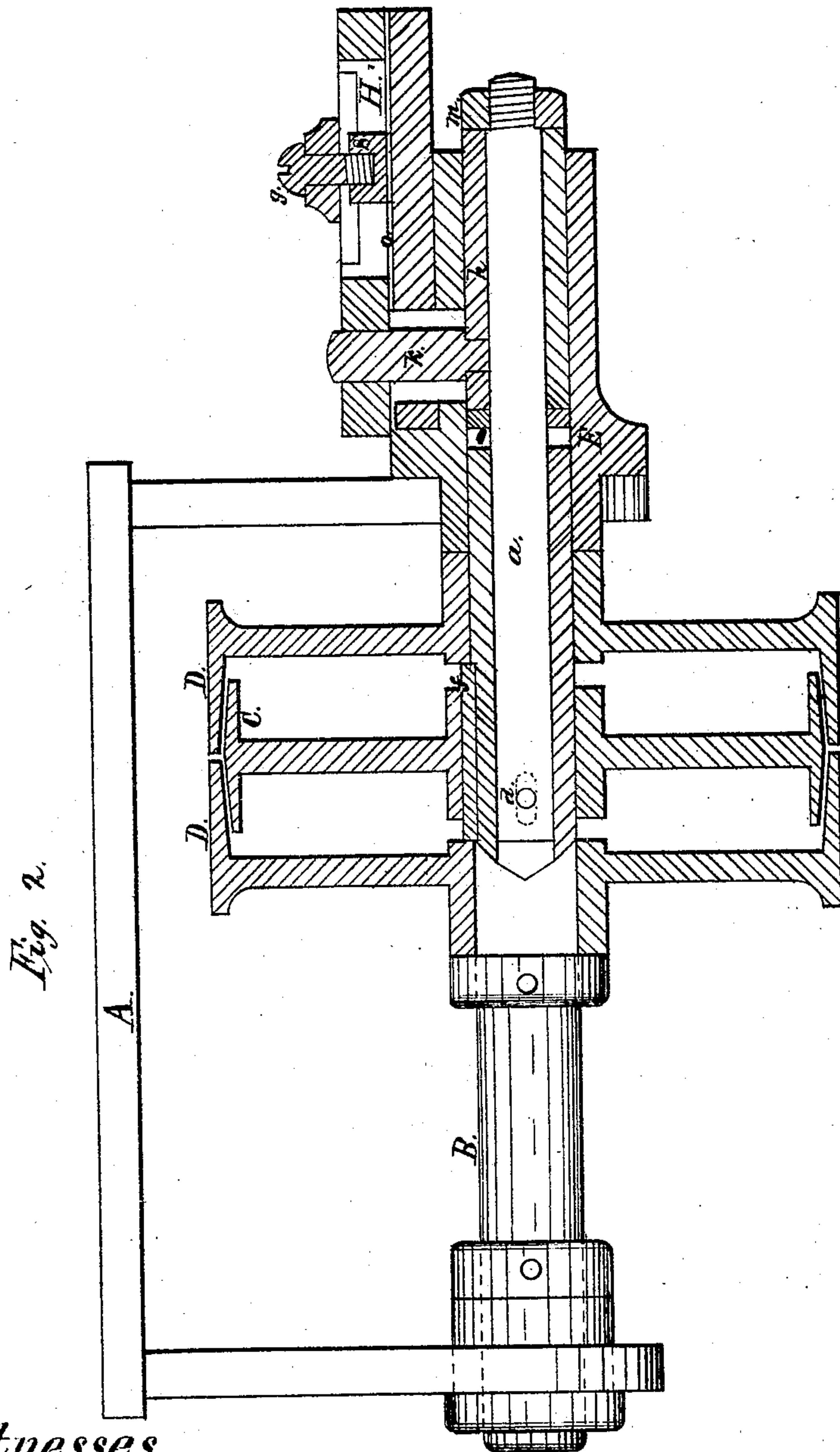
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# UNITED STATES PATENT OFFICE.

ELI J. MANVILLE, OF WATERBURY, CONNECTICUT.

## IMPROVEMENT IN FRICTION-CLUTCH COUNTER-SHAFTS.

Specification forming part of Letters Patent No. **152,043**, dated June 16, 1874; application filed October 4, 1873.

*To all whom it may concern:*

Be it known that I, ELI J. MANVILLE, of the city of Waterbury and county of New Haven, and in the State of Connecticut, have invented a new and useful Improvement in Friction-Clutch Counter-Shafts; and the following is declared to be a full, clear, and correct description of the said invention.

A great difficulty has been experienced in the use of this mode of reversing the motion of screw-cutting lathes and other kinds of machines, because of the uncertainty of producing the desired effect, owing to depending on their being self-operating, or depending on the uncertainty of various kinds of springs to that extent that they become inoperative.

The object of my improvement herein described is to obviate all of these difficulties, and, consequently, to render them more serviceable and easier to operate by producing a prompt and positive action in the reversing parts of the machine.

Figure 1 is an end view of the machine. Fig. 2 is a longitudinal sectional view with the shaft through the line *x x*, and Fig. 3 is a detail of the lever-arm.

A is the frame of the machine, upon which all of the working parts are run and supported. B is the shaft, which may carry any kind of a pulley that may be required. Fitting loosely on the shaft B is a sliding disk, C, which has a longitudinal movement on the said shaft, and sliding over a key, *f*, firmly embedded in the shaft B. Surrounding the sliding disk C and running loose upon the shaft B are two loose pulleys, D D, also running in opposite directions to each other by two driving-belts. This sliding disk C has two beveled faces turned upon its periphery, and exactly corresponding in shape to the inner surfaces of the driving-pulleys D and D.

Motion is communicated to the sliding disk C by means of the rod *a*, which passes through the hollow end of the shaft B, and is attached to the said disk by means of the pin *d* passing through the hub of said disk and through the shaft B, and also through the end of the

rod *a*. The shaft at the point where the pin *d* goes through has a slot made in it, so that the movable disk may slide freely along the shaft.

At one end of the frame A is a box or sleeve bearing, E, in which the hollow end of the shaft B runs. This said box is fitted into the frame A, so that it will move in its place around, so as to give any desired slant or incline to the shipping-lever that is attached to the lever-arm H, and is secured in place by any competent means. At the extreme end of the box E is a hollow slide, *h*, that moves freely in the said box, and through the said slide *h* the rod *a* runs freely, having a shoulder at one end of the slide *h*, and on the opposite end of said slide it is provided with a nut, *m*. Firmly secured to the slide *h* is a stud, *k*, which projects through an elongated opening in box E. This said box is made smooth and flat on one side, and in the center of its circle is a stud, S, on which the lever-arm H swings. An elongated and angular opening, *b*, is made in the horizontal end of the lever-arm H, that corresponds in width to the diameter of the stud *k* in the hollow slide *h*, so that as the lever-arm is made to swing on its center at S it will cause the hollow slide *h* to traverse in either direction, as may be desired, thus compelling the disk C, through the rod *a*, to move in a positive manner.

Placed between the two flat surfaces of the box E and the lever-arm H is secured a thin piece of leather, paper, or other similar substance, *o*, in order to produce a sufficient amount of friction between the two flat surfaces of E and H, so that by screwing up the set-screw *g* the lever-arm H can always be made to stay at any place or position that it may be placed, and at the same time prevent the possibility of the working back of the disk C from the pulleys D and D.

The vertical portion of the lever-arm H has a recess made in it to receive a wooden handle that is bolted to it, and can be made to extend down within reach of the operator.

Thus it will be clearly seen that by the

swinging of the lever-arm to the right or to the left, a positive engagement and disengagement of the sliding disk with the driving-pulleys take place.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the box E with the frame A, shaft B, connecting-rod *a*, tubular slide *h*, and stud *k*, substantially as shown and described.

2. The combination of the box with the angular slotted lever H, substantially as shown and described.

3. In combination with the connecting-rod *a*, the tubular slide *h* and stud *k*, operating together substantially as set forth.

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Witnesses:

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