

(No Model.)

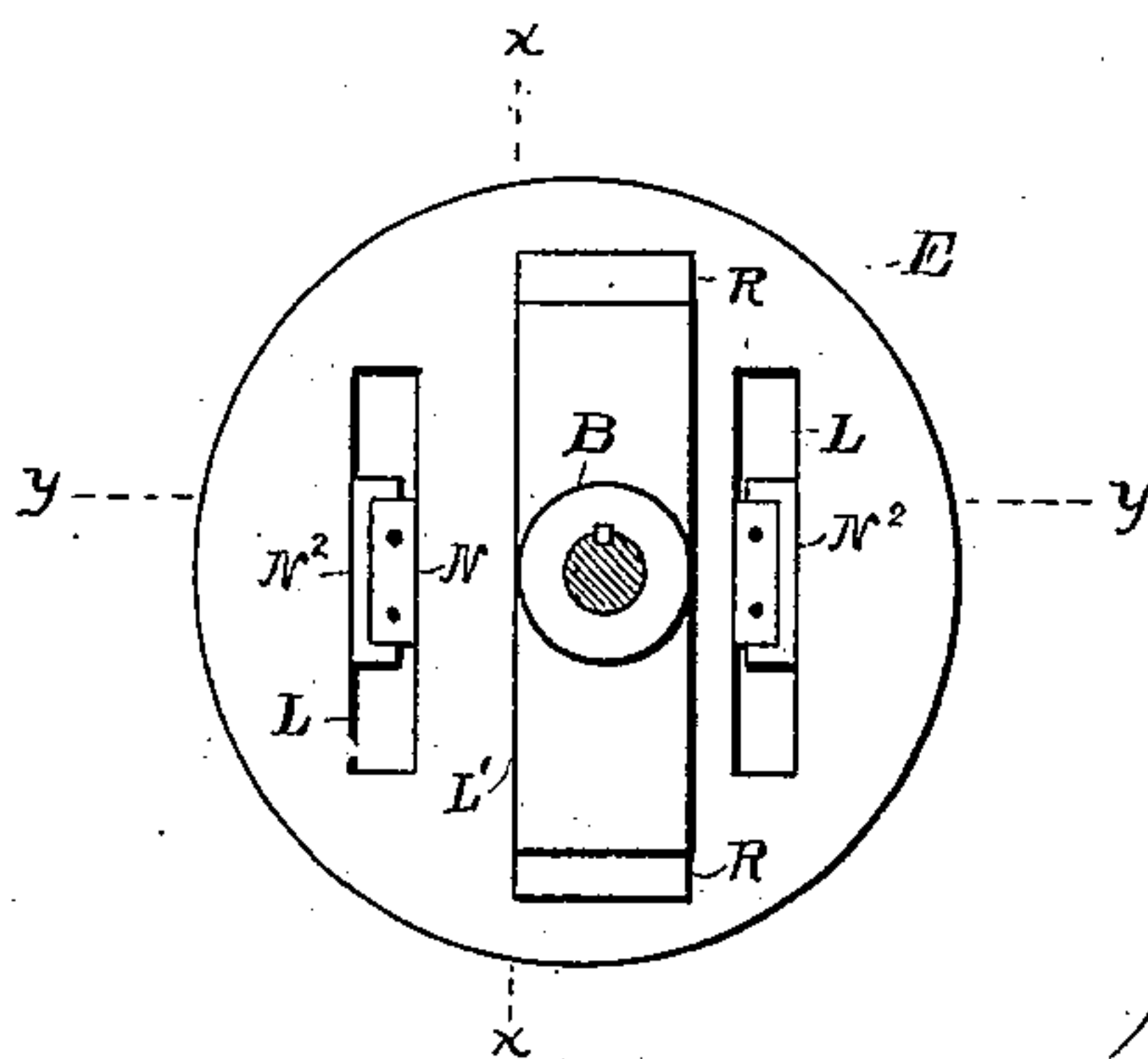
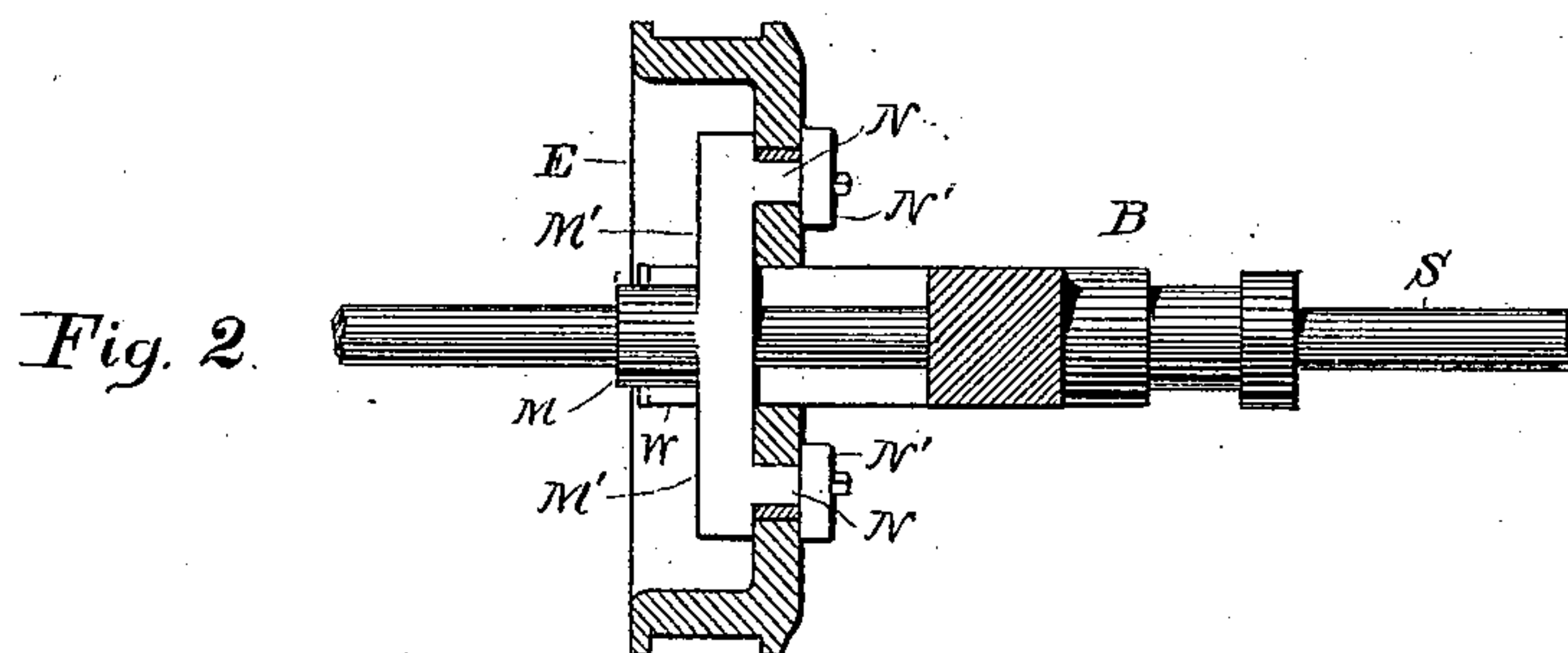
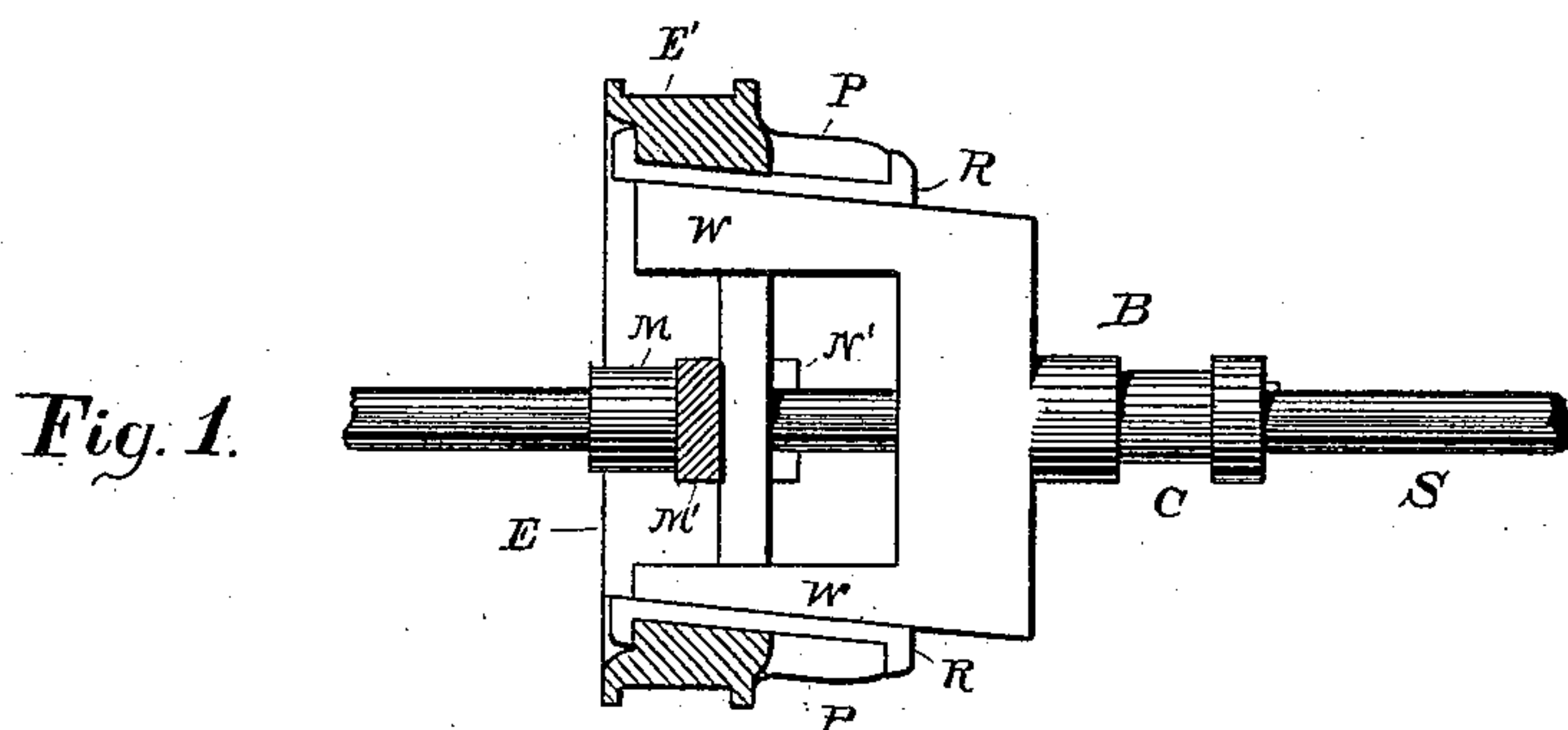
2 Sheets—Sheet 1.

E. PY.

VARIABLE ECCENTRIC.

No. 308,377.

Patented Nov. 25, 1884.



Witnessed;

F. F. Thompson  
H. W. Wells

Inventor,

Emil Py;

per A. B. Upham  
His Attorney.

(No Model.)

2 Sheets—Sheet 2.

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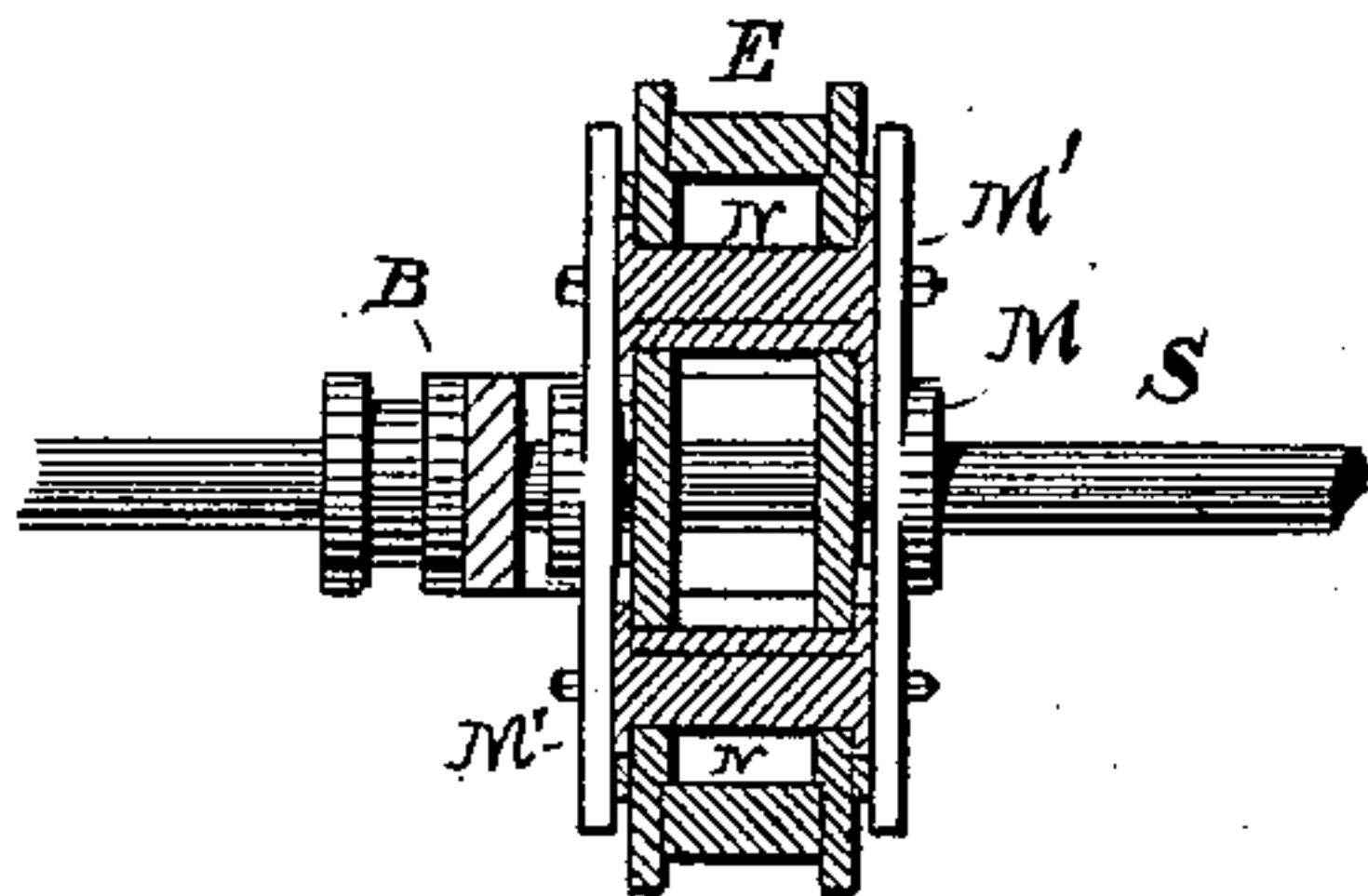


Fig. 4.

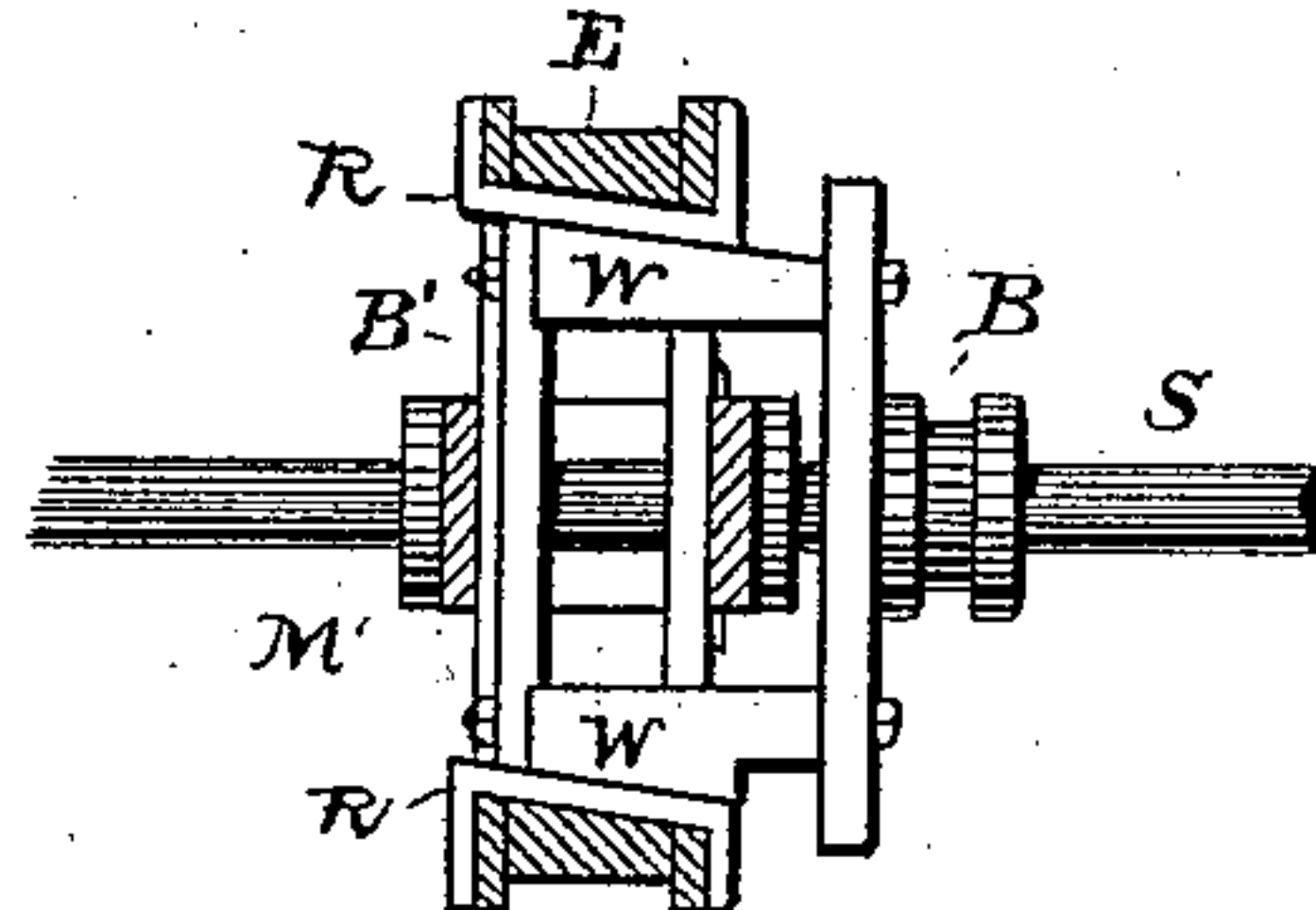


Fig. 5.

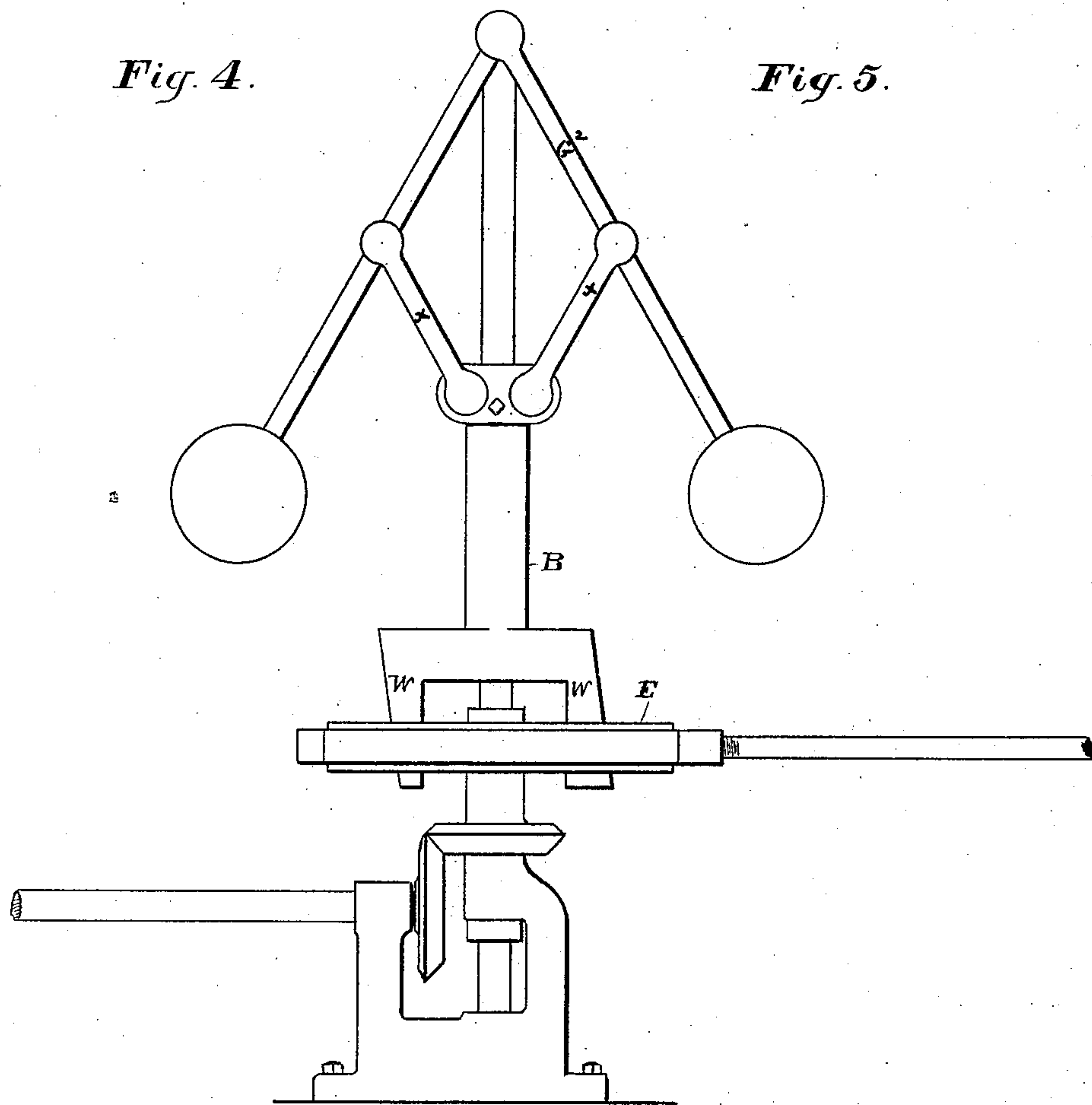


Fig. 6.

Witnesses;

*F. F. Thompson*  
*H. W. Wells*

Inventor,

*Emil Py,*  
per *A. B. Upham,*  
His Attorney.



# UNITED STATES PATENT OFFICE.

EMIL PY, OF PEORIA, ILLINOIS.

## VARIABLE ECCENTRIC.

SPECIFICATION forming part of Letters Patent No. 308,377, dated November 25, 1884.

Application filed April 16, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL PY, of Peoria, in the county of Peoria, in the State of Illinois, have invented an Improved Variable Eccentric; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a longitudinal section at the line *xx* of Fig. 3; Fig. 2, a longitudinal section at *yy*; Fig. 3, an end view; Figs. 4 and 5, modified forms of my variable eccentric; Fig. 6, an elevation of my eccentric adapted for use with a governor.

This invention is in the line of eccentrics having a slot therein through which passes the shaft, and provided with means whereby the eccentric can be transversely shifted upon its shaft, and thereby change either the degree of its throw or its position.

My invention pertains to the means whereby such a slotted eccentric may be transversely shifted upon its shaft; and it consists, essentially, of two wedges rigidly fixed to bearings longitudinally removable upon the shaft containing the slotted eccentric, whereby such eccentric is moved from side to side by the pressure against the ends of the slot thereof of the external faces of the wedges when the same are longitudinally shifted upon the shaft. I have also designed means whereby to retain the eccentric in place upon the shaft and yet permit it sufficient transverse adjustment. Another important point—the taking up of the wear of all bearing-surfaces—I likewise provide for.

In the drawings, S is the shaft, and E the eccentric, in the web of which are three slots, L L L'. The eccentric-strap by which the connecting-rod is secured thereto I do not show, although the annular groove E' in the face of the eccentric is the place designed to receive it.

W W are the two wedges, one end of each of which is fast to the collar B. Longitudinal motion upon the shaft S is given to the collar B by means of a lever, one of whose ends is made to play in the neck C. This is not particularly new, and I do not, therefore, show or

describe it further. This collar B is kept from rotary displacement upon the shaft by means of a feather, F. The wedges W, which may be cast as an integral part of the collar B, or formed separately and secured thereto, are made to be of the same width as is the slot L' of the eccentric. The external faces of these wedges bear against lugs P, formed as a part of the eccentric E. Between said external faces of the wedges and the inner faces of said lugs I introduce friction-plates R. By means of screws setting through the lugs against said plates, or by inserting under the plates thin sheets of paper, felt, &c., the wear consequent upon the reciprocation of the wedges against the plates R can be entirely taken up. The collar M is made fast to the shaft-S, and has two opposite radial arms, M', projecting therefrom. From these arms two broad lugs, N, project into the slots L L of the eccentric. Caps N' are fastened to the ends of said lugs, as shown in Fig. 2. By means of these arms, lugs, and caps thereon the eccentric E is held securely in place upon its shaft, and still permitted transverse adjustment thereon. The friction-plates N', which I insert between one side of each slot and the adjacent side of the lug N therein, permit me to take up all wear which might occur between the said surfaces.

In using this variable eccentric, looking at it as shown in Fig. 1, a movement of the collar B and its wedges W toward the left lowers the eccentric and decreases its throw. If moved a little farther in the same direction, the eccentricity is changed to the other side of the shaft. Moving the said wedges toward the right increases the throw of the eccentric by carrying its center still farther from the center of the shaft.

The primary use for which I design this variable eccentric is in connection with reciprocating engines, the slide-valves being operated thereby. It may serve either as a variable cut-off, a governor controlling the longitudinal movement of the wedges W, or it may be used as a reversing-gear for locomotives, traction-engines, hoisting-engines, &c.

When using this eccentric for a variable cut-off, I design to have the shaft S thereof placed vertically and connected to the main shaft of the engine by bevel-gears or other mechanism.



The governor - arms  $G^2$  being pivoted to the upper end of the shaft S, and links connecting said arms to the collar B, the upward and downward movements which the governor  
 5 gives to said collar shifts the eccentric, and thus varies its throw. This latter-described construction is shown in Fig. 4.

In Figs. 4 and 5 is shown an improved form of my variable eccentric. In case there is but  
 10 little room upon the shaft for the eccentric and its mechanism, this construction permits the contraction of the same.

To shorten the collar B and still enable the wedges W to be held with sufficient rigidity  
 15 upon the shaft S, the free ends of said wedges are supported by being bolted to the bar  $B'$ , at the center of which is an opening through which passes the shaft. The same bolts which serve to secure the wedges to this bar  $B'$  pass  
 20 through the arms  $B^2$ , projecting from the collar B, as well as through said wedges and bar, and thus hold all together.

Instead of a single web for the eccentric, I have two therefor, and true up their outer  
 25 sides alone. I also fasten a collar, M, having arms  $M'$  at the outer side of each web, and between the corresponding arms,  $M'$ , are fastened the lugs N by a bolt passing through each pair of arms and the lug between. Each web is of  
 30 course correspondingly slotted. In this construction I form the eccentric itself simply of the two webs having the annular ring E between them. The outer edges of these webs project beyond the ring E, and so form the  
 35 annular groove for the eccentric-strap.

What I claim as my invention is—

1. In a variable eccentric, two parallel faces rigidly fixed to a collar longitudinally movable  
 40 upon a shaft, said faces being at an acute angle with the shaft, in combination with a slotted

eccentric upon said shaft, and a lever or equivalent device for moving said collar, as set forth.

2. The shaft S, slotted eccentric E thereon, and a collar for preventing longitudinal displacement of the same upon the shaft, in combination with the wedges W, rigid upon the  
 45 longitudinally-movable collar B, substantially as described.

3. The shaft S, slotted eccentric E, having a collar, M, for retaining it in longitudinal position upon said shaft, and the wedges W, having one or more collars, B, in combination with a lever for moving said collars upon the shaft,  
 50 substantially as set forth.

4. The shaft S, slotted eccentric E, having lugs P, and friction-plates R, in combination with the collar M, having arms  $M'$  and lugs N, and the wedges W, having one or more  
 55 collars for supporting the same, as and for the purpose specified.

5. The shaft S, doubly-webbed eccentric E, having slots L L L', lugs P, and plates R, in combination with the collar M, having arms  $M'$ , lugs N, plates  $N^2$ , and caps  $N'$ , and the  
 60 wedges W, having collars B, substantially as and for the purpose described.

6. A slotted eccentric having a vertical shaft, and the wedges W, having sustaining-collars B, in combination with a ball-governor whose arms are pivoted to said shaft and the links  
 70 therefrom are secured to said wedges or its collars, for the purpose set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand this 11th day of March, 1884.

EMIL PY.

Witnesses:

H. W. WELLS,  
 L. D. BENSON.