

(No Model.)

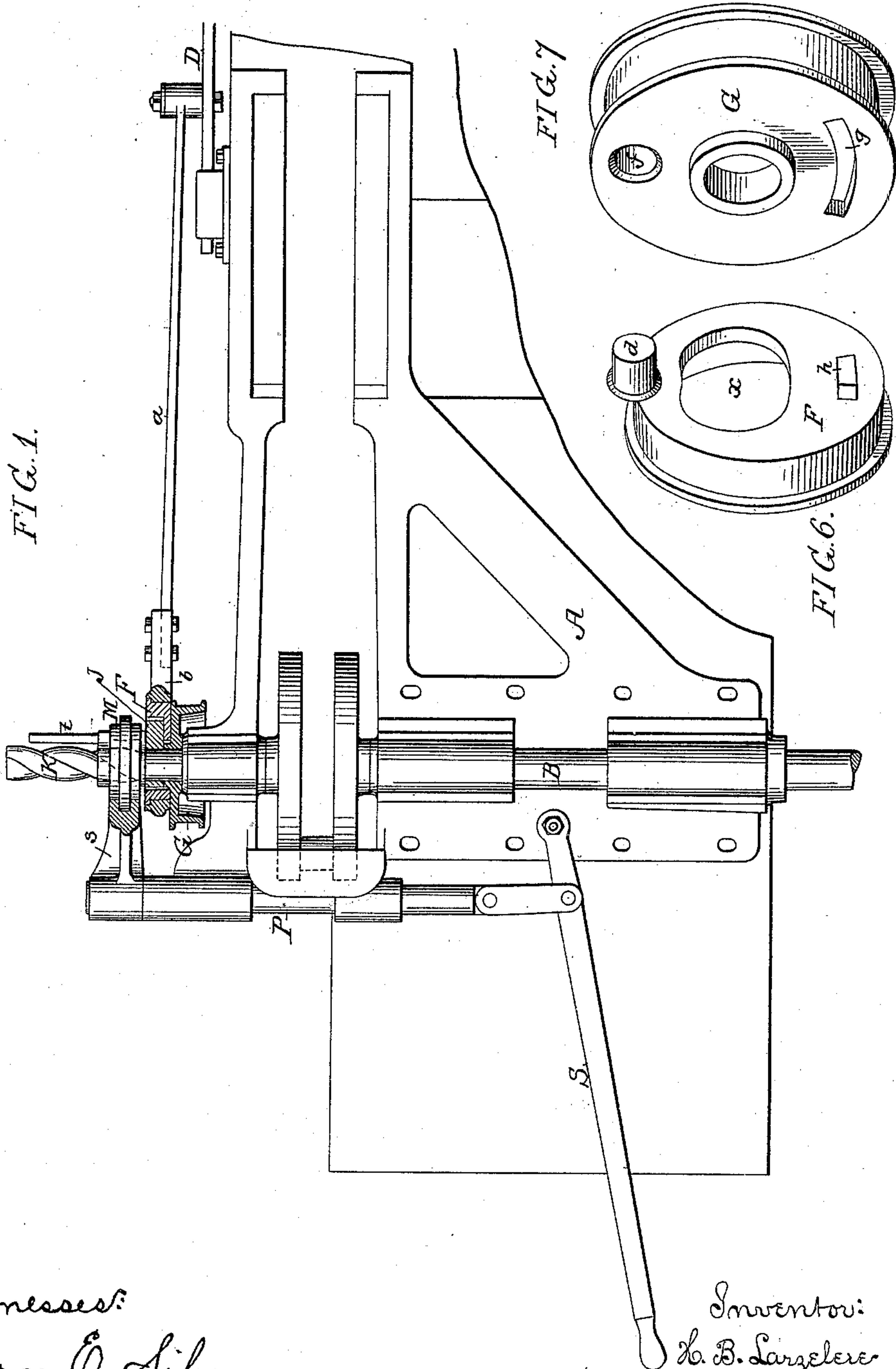
2 Sheets—Sheet 1.

H. B. LARZELERE.

REVERSING GEAR FOR ENGINES.

No. 331,069.

Patented Nov. 24, 1885.



Witnesses:
George O. Libson.
Harry Drury

Inventor:
H. B. Larzelere
by his Attorneys:
Howson & Sons

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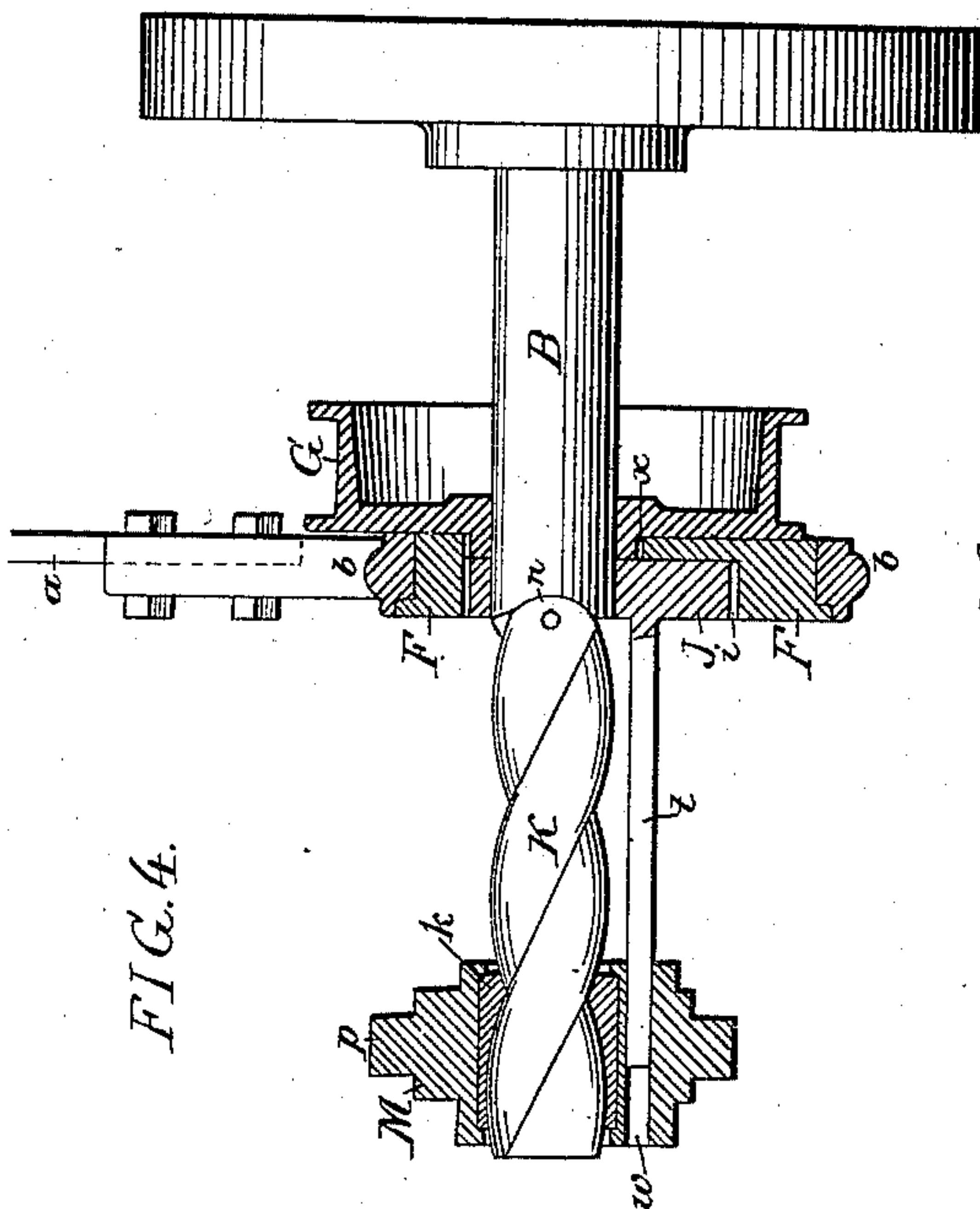


FIG. 4.

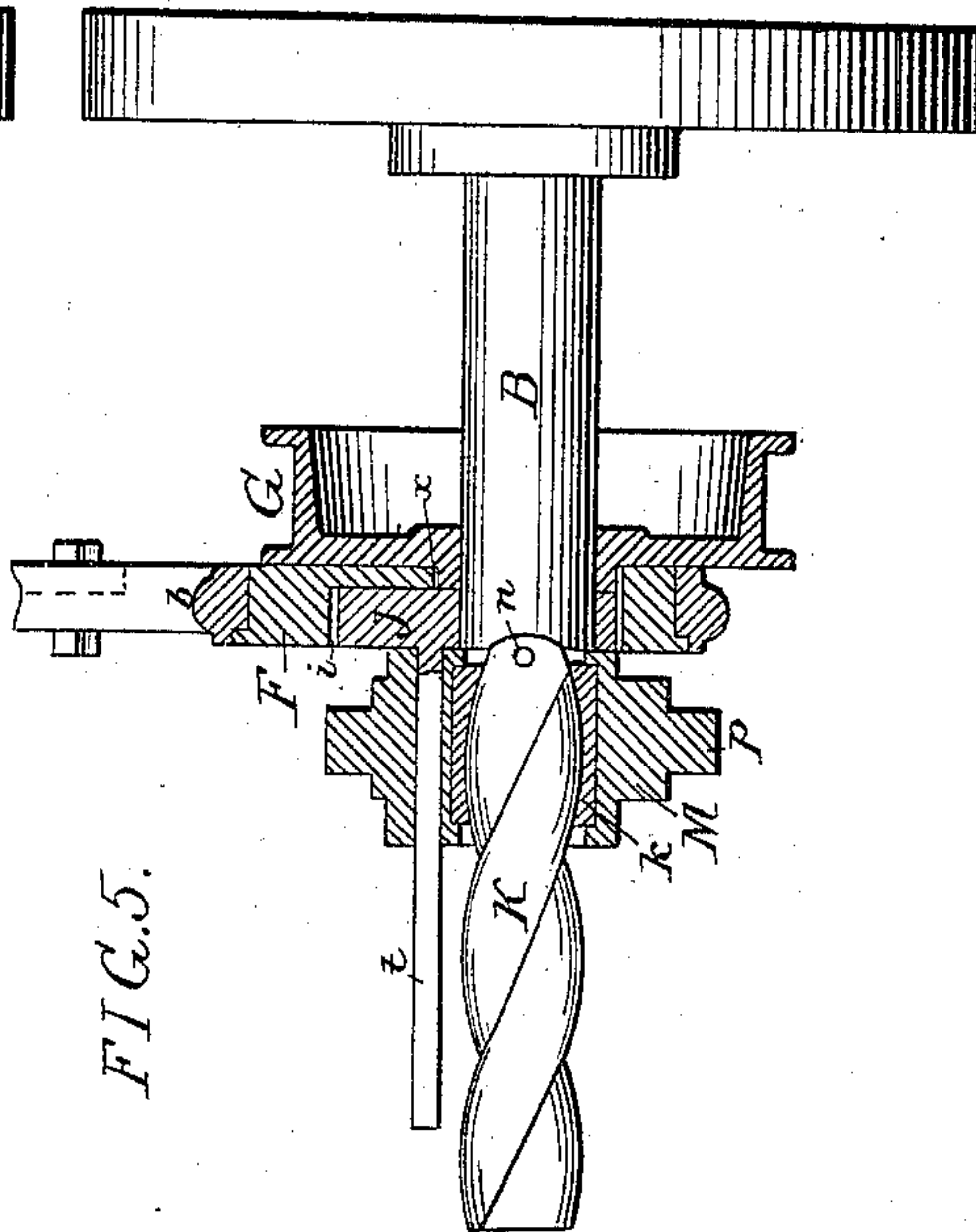


FIG. 5.

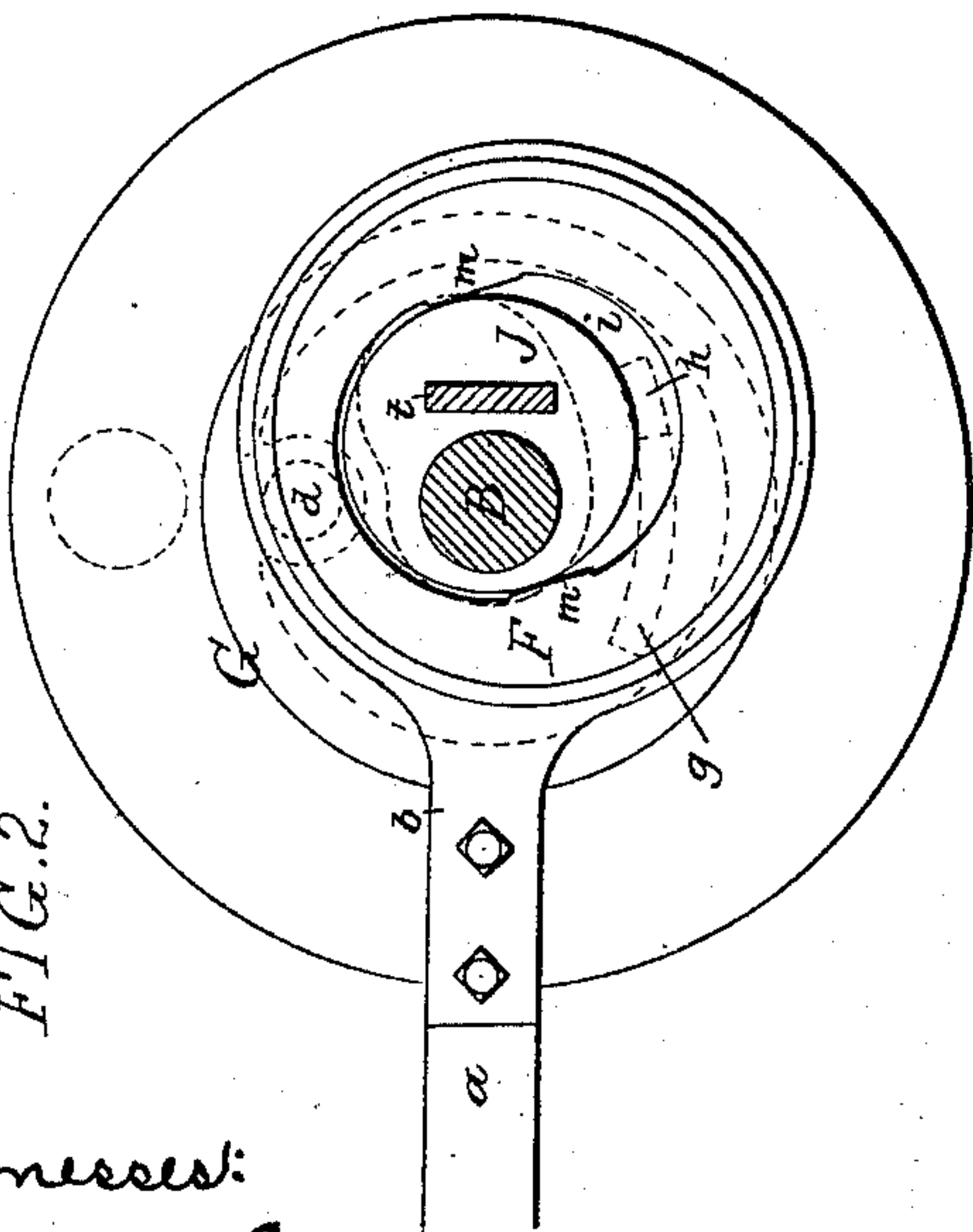


FIG. 2.

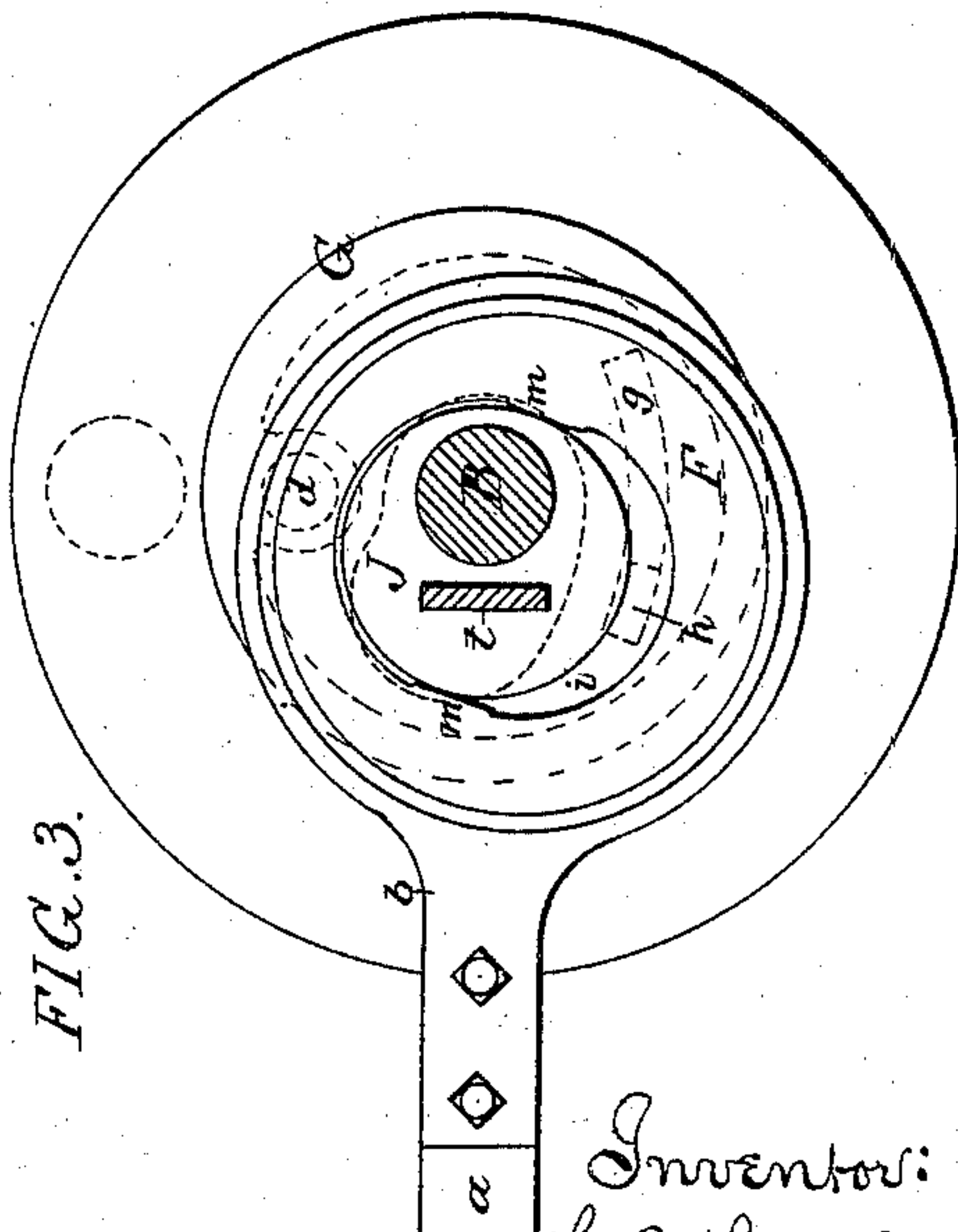


FIG. 3.

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UNITED STATES PATENT OFFICE.

HENRY B. LARZELERE, OF GREENCASTLE, PENNSYLVANIA.

REVERSING-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 331,069, dated November 24, 1885.

Application filed August 14, 1885. Serial No. 174,369. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. LARZELERE, a citizen of the United States, residing in Greencastle, Franklin county, Pennsylvania, have
5 invented certain Improvements in Reversing-Gear for Engines, of which the following is a specification.

My invention relates to that class of reverse-gear in which the valve-operating eccentric is
10 adjustable in respect to the axis of the shaft from which it derives its rotating movement, the object of my invention being to provide simple means for readily shifting the eccentric when it is desired to reverse the engine.

15 In the accompanying drawings, Figure 1 is a plan view, partly in section, of sufficient of the engine to illustrate the application of my improved reverse-gear thereto; Figs. 2 and 3, end views, partly in section, of my improved
20 reverse-gear in different positions; Figs. 4 and 5, longitudinal sections, partly in elevation, of the reverse-gear in different positions; and Figs. 6 and 7, detached perspective views of parts of the gearing.

25 In Fig. 1, A represents part of the frame of the engine, having bearings for the crank-shaft B and for the valve-rod D, the latter being connected by a rod, *a*, to the strap *b* of an eccentric, F, which has a pin, *d*, adapted to
30 an opening, *f*, in a pulley, G, secured to and rotating with the crank-shaft B, said pulley also having a segmental slot, *g*, for the reception of a lug, *h*, on the eccentric, so that while said eccentric is compelled to rotate with the
35 pulley it can have a movement within certain limits independent of said pulley, the pin *d* serving as the fulcrum on which the eccentric swings in making this independent movement. The eccentric F has an elongated opening, *x*,
40 for the reception of the shaft B and the hub of the pulley G, the front portion, *i*, of this opening being enlarged for the reception of a small eccentric, J, which bears at opposite points, *m m*, on the eccentric F, and is free to
45 turn on the crank-shaft, being confined laterally thereto by a transverse pin, *n*. (See Figs. 4 and 5.) The outer end of the crank-shaft is twisted so as to form a screw-thread, K, to which is adapted a nut, *k*, carried by a sleeve,

M, a flange, *p*, on said sleeve being embraced 50
by the forked end of an arm, *s*, on a rod, P, which is guided in suitable bearings on the frame of the engine, and is under control of a reverse-lever, S. Secured to and projecting
55 from the eccentric J is a bar, *t*, rectangular in cross-section, and adapted to an opening, *w*, in the sleeve M, through which opening the bar can slide freely. In the ordinary running of the engine the eccentric J rotates
60 with the shaft B and eccentric F, and the sleeve M occupies a position either at the outer or the inner end of the screw K; but when it is desired to reverse the engine the sleeve is moved longitudinally on the portion
65 K of the shaft B, whereby a movement of partial rotation independent of the shaft is imparted to said sleeve; and this movement is transmitted through the medium of the bar
70 *t* to the eccentric J, a partial turn on the shaft B being thus imparted to said eccentric, so as to cause the eccentric F to swing on the fulcrum-pin *d* from the position shown in Fig. 1 to that shown in Fig. 2, or vice versa, this
75 shifting of the eccentric effecting such a movement of the valve-rod and valve as will cause a reversal in the direction of the movement of the engine.

The device described forms a compact and simple reverse-gear, the pulley G being the
80 usual pulley for the reception of the governor-belt of the engine, although, if desired, the pulley for this purpose may be independent of the reverse-gear, and the carrier for the eccentric may consist of an arm or disk on the shaft instead of the pulley, as shown. 85

I claim as my invention—

1. The combination of the shaft B, the eccentric F, hung to a carrier on said shaft, and having a lug adapted to a slot in said carrier, and the eccentric J, hung to the shaft B, and
90 adapted to a recess in the eccentric F, as specified.

2. The combination of the shaft B, having a threaded or twisted portion, K, the valve-operating eccentric F, hung to a carrier on
95 said shaft, the eccentric J, hung to the shaft, adapted to a recess in the eccentric F, and having a projecting bar, *t*, and the longitudi-

nally-adjustable sleeve M, having a nut adapted to said threaded portion of the shaft, and a recess, *w*, for the reception of the bar *t*, as specified.

- 5 3. The combination of the shaft B, the pulley G, secured thereto, the valve-operating eccentric F, hung to said pulley, and the eccentric J, hung to the shaft, and adapted to a recess in said eccentric F, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY B. LARZELERE.

Witnesses:

WM. E. CANTNER,
S. B. GERHARDT.