

(No Model.)

2 Sheets—Sheet 1.

J. C. DEBES.

REVERSING GEAR FOR ENGINES.

No. 313,579.

Patented Mar. 10, 1885.

Fig. 1.

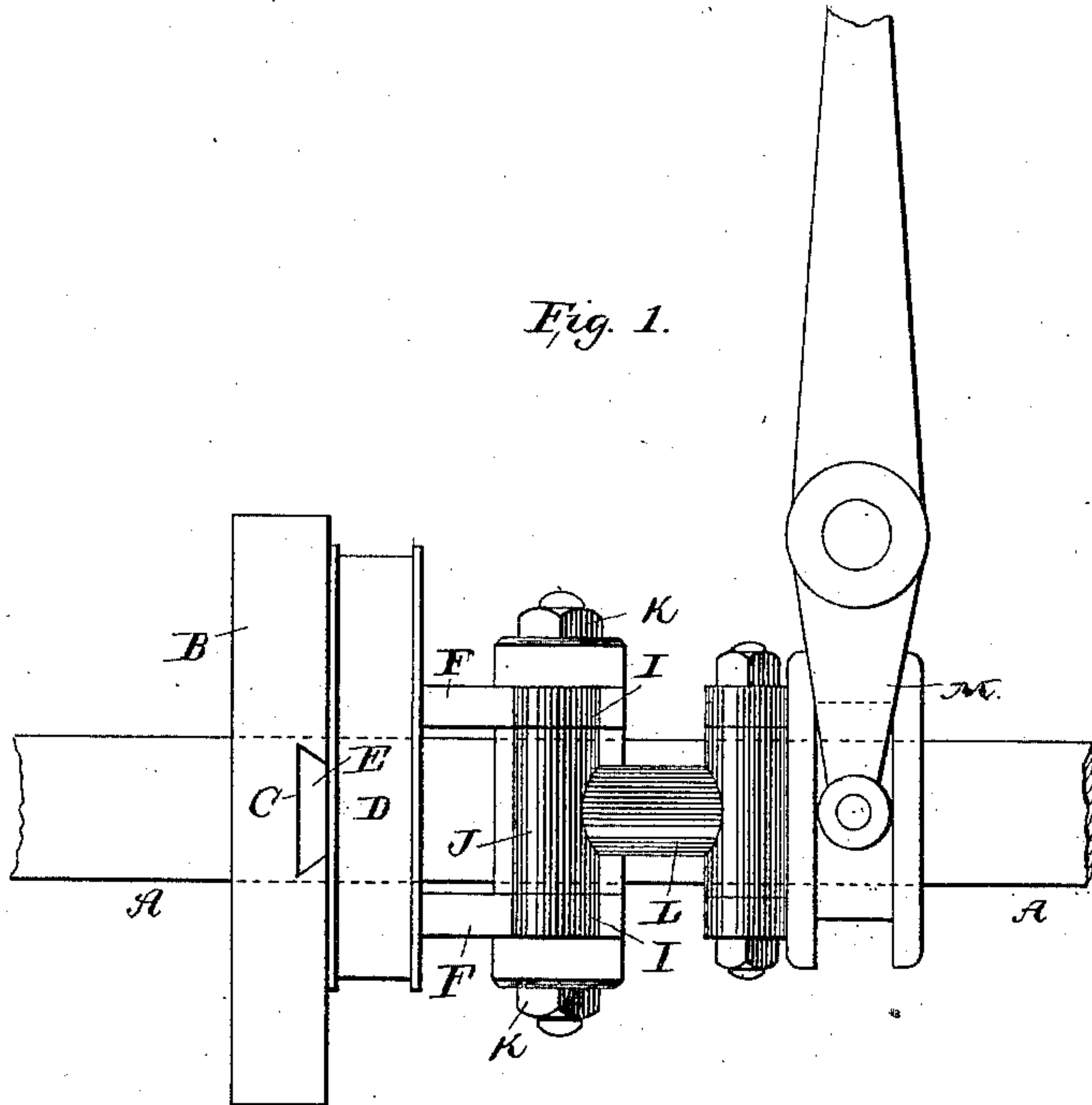
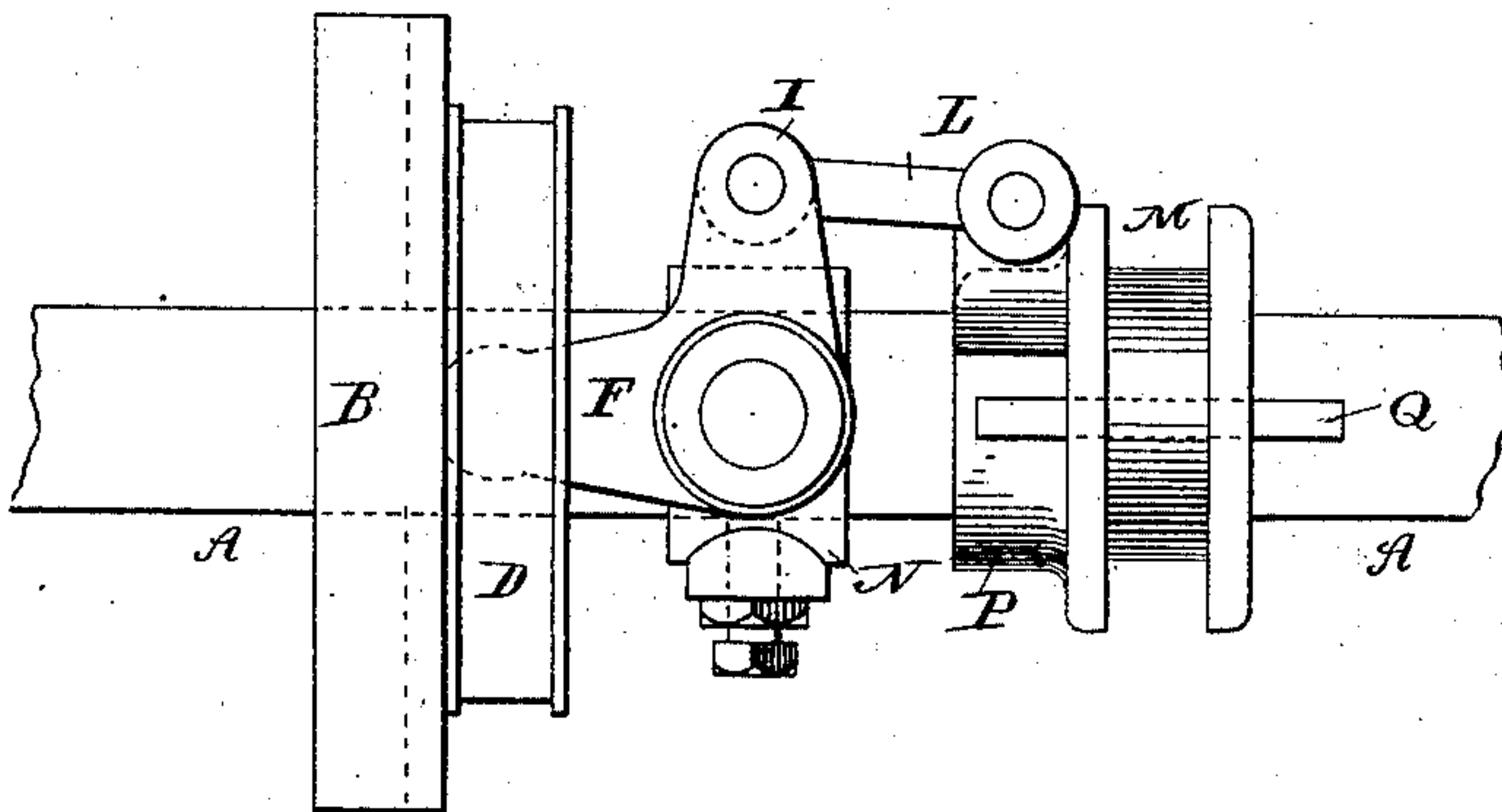


Fig. 2.



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(No Model.)

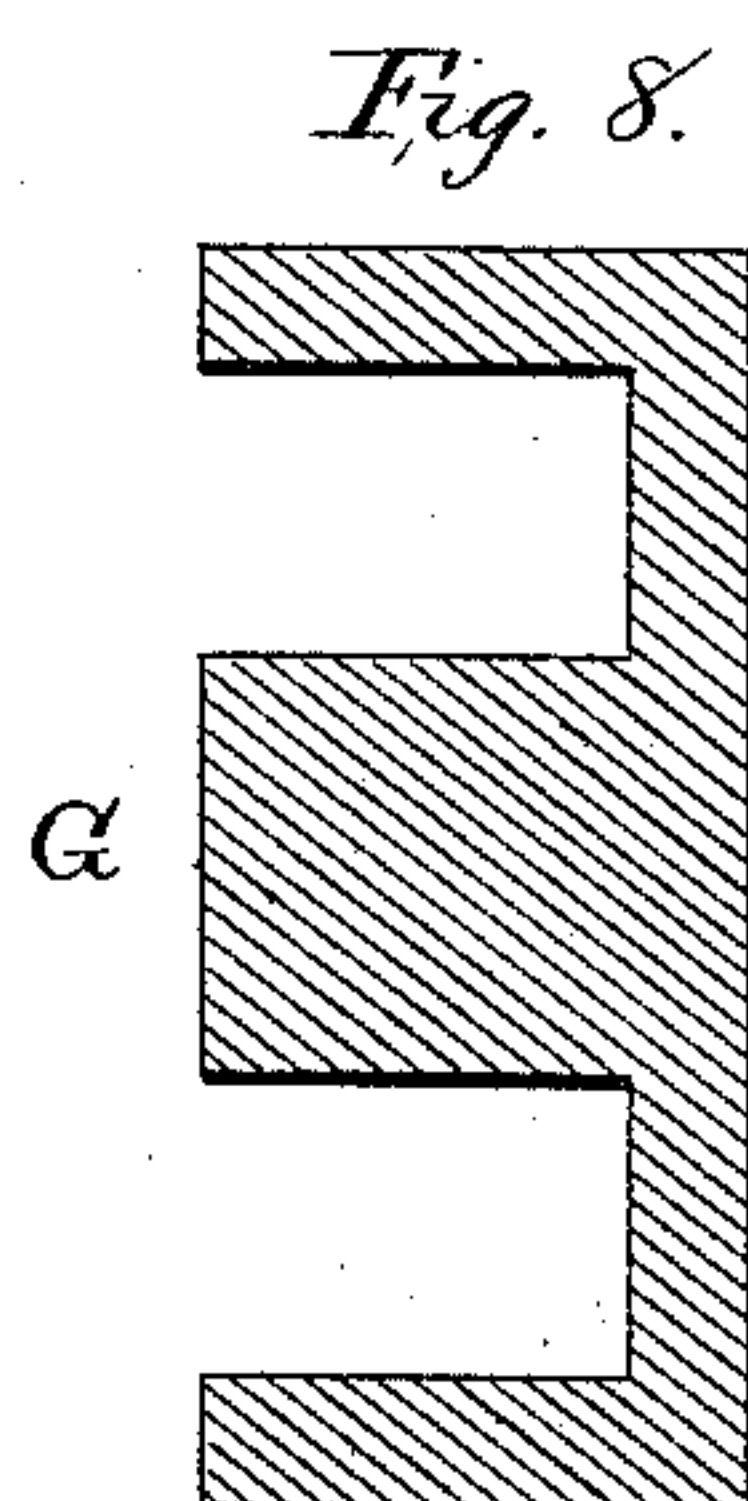
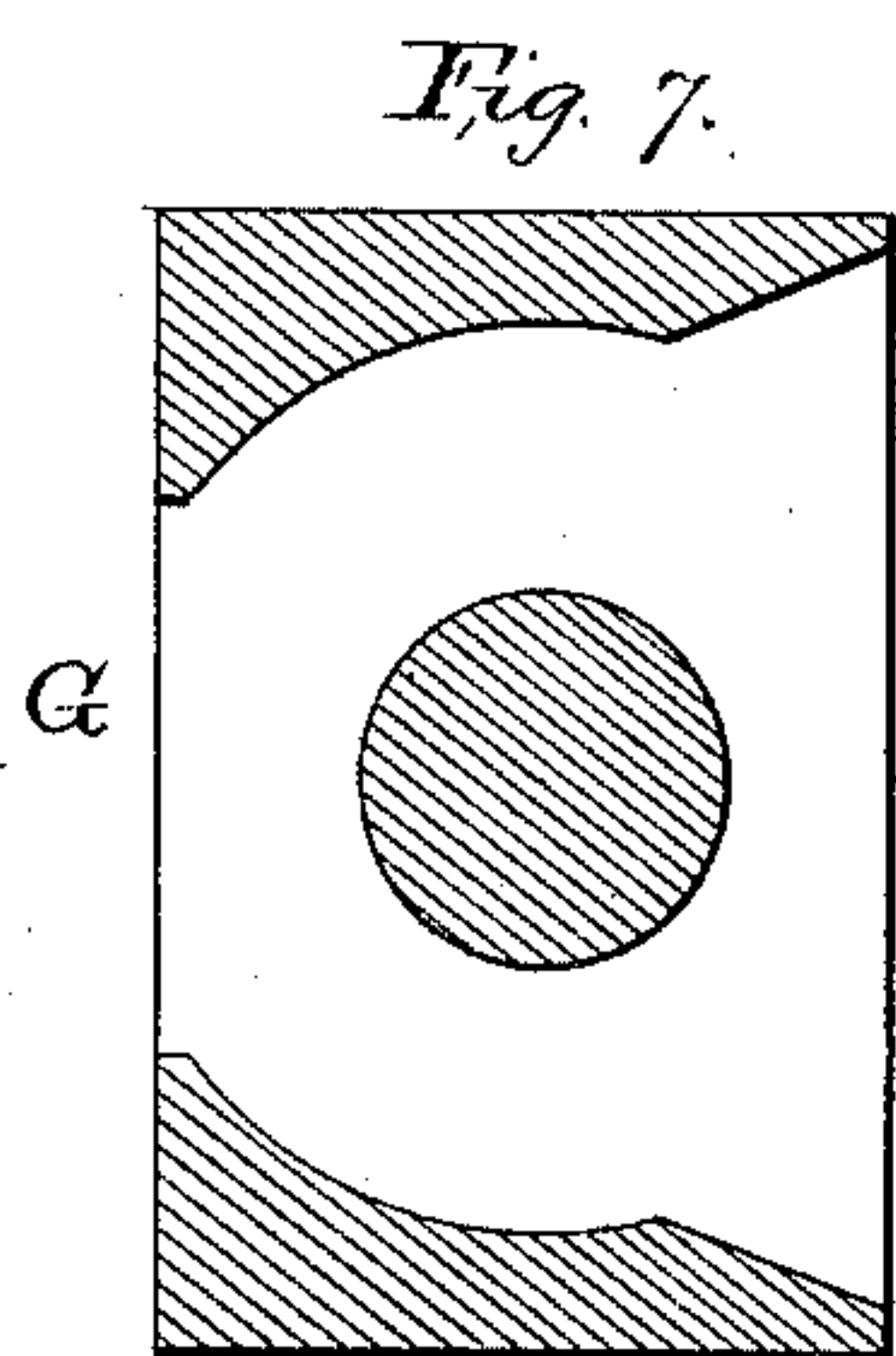
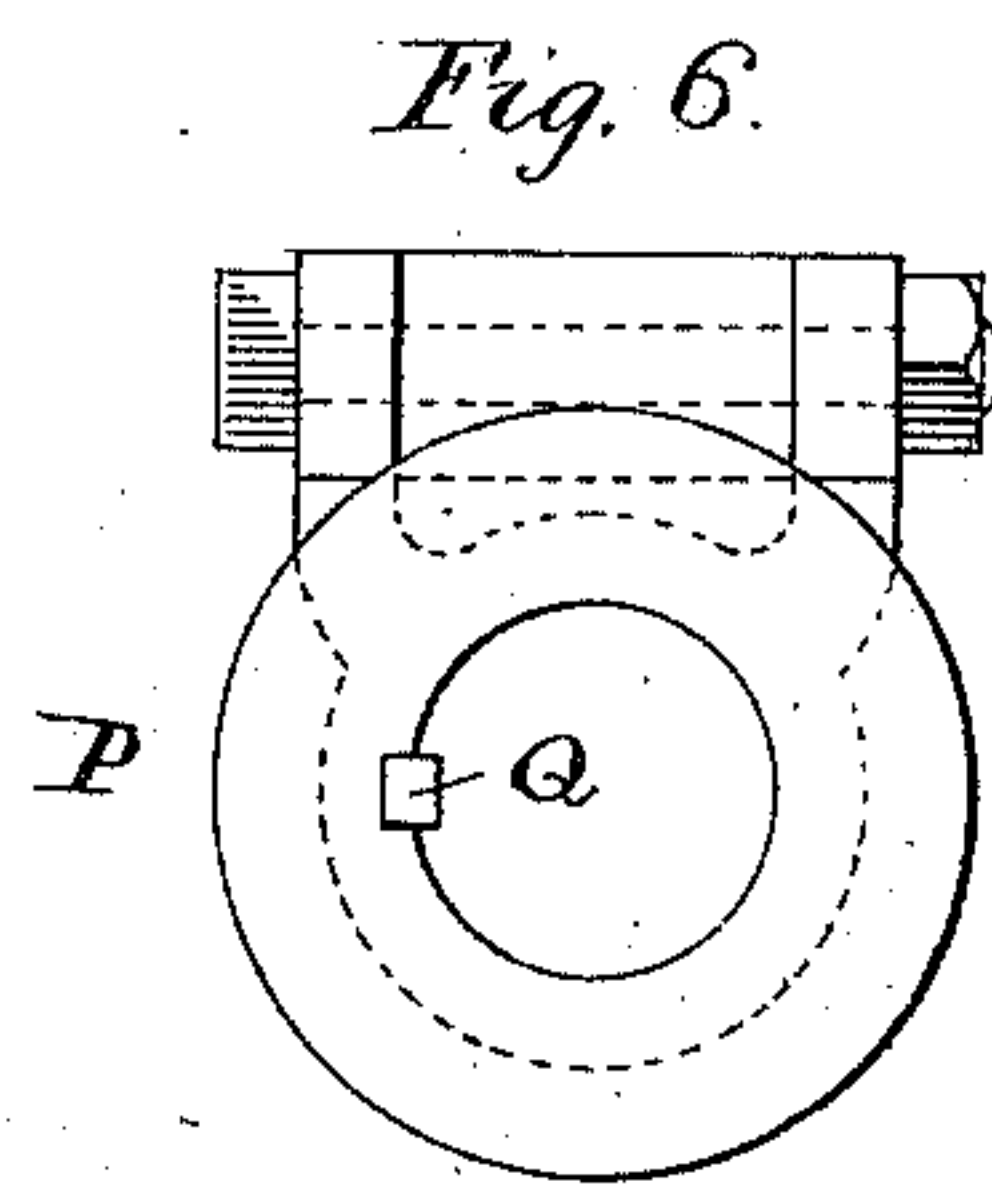
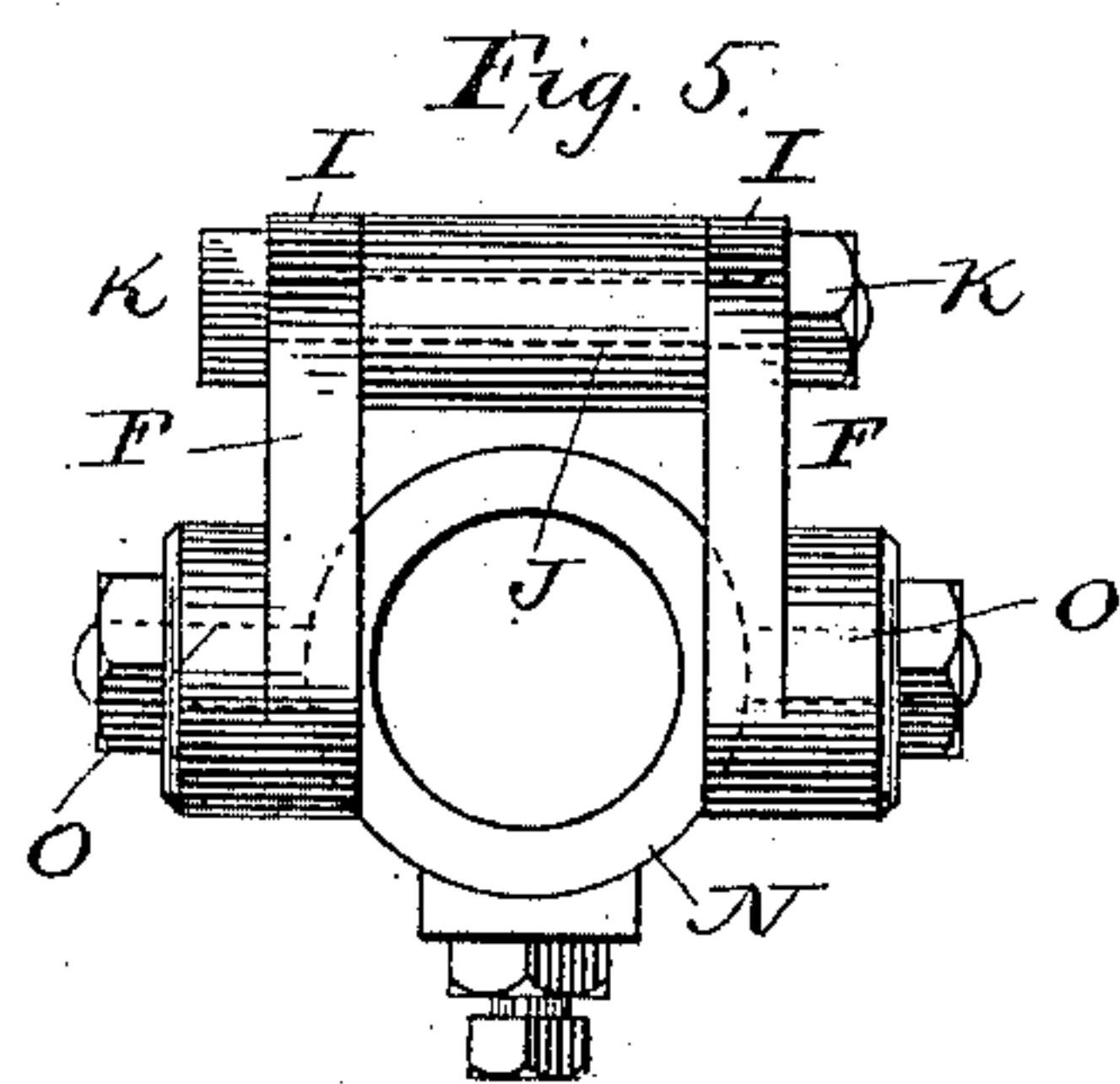
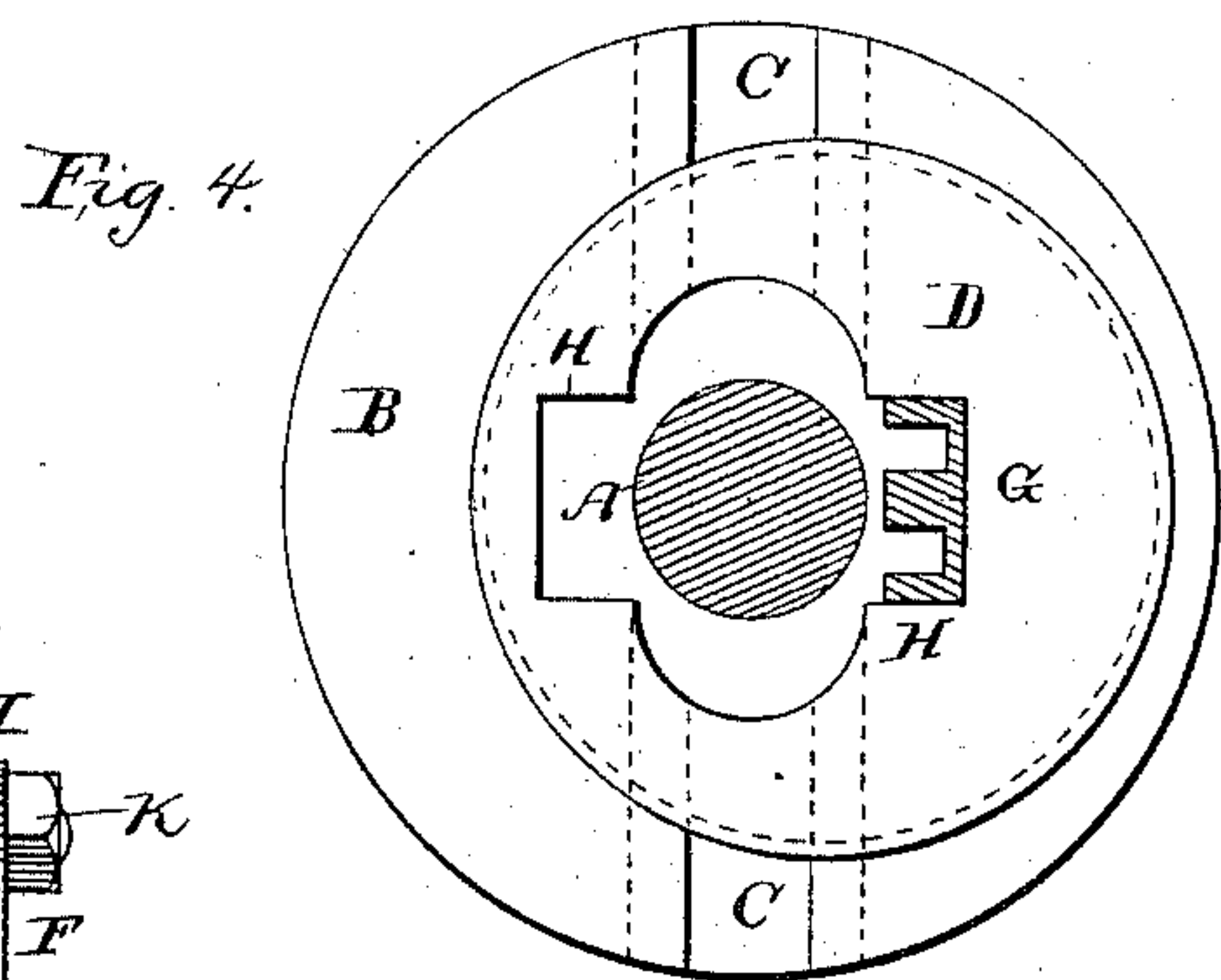
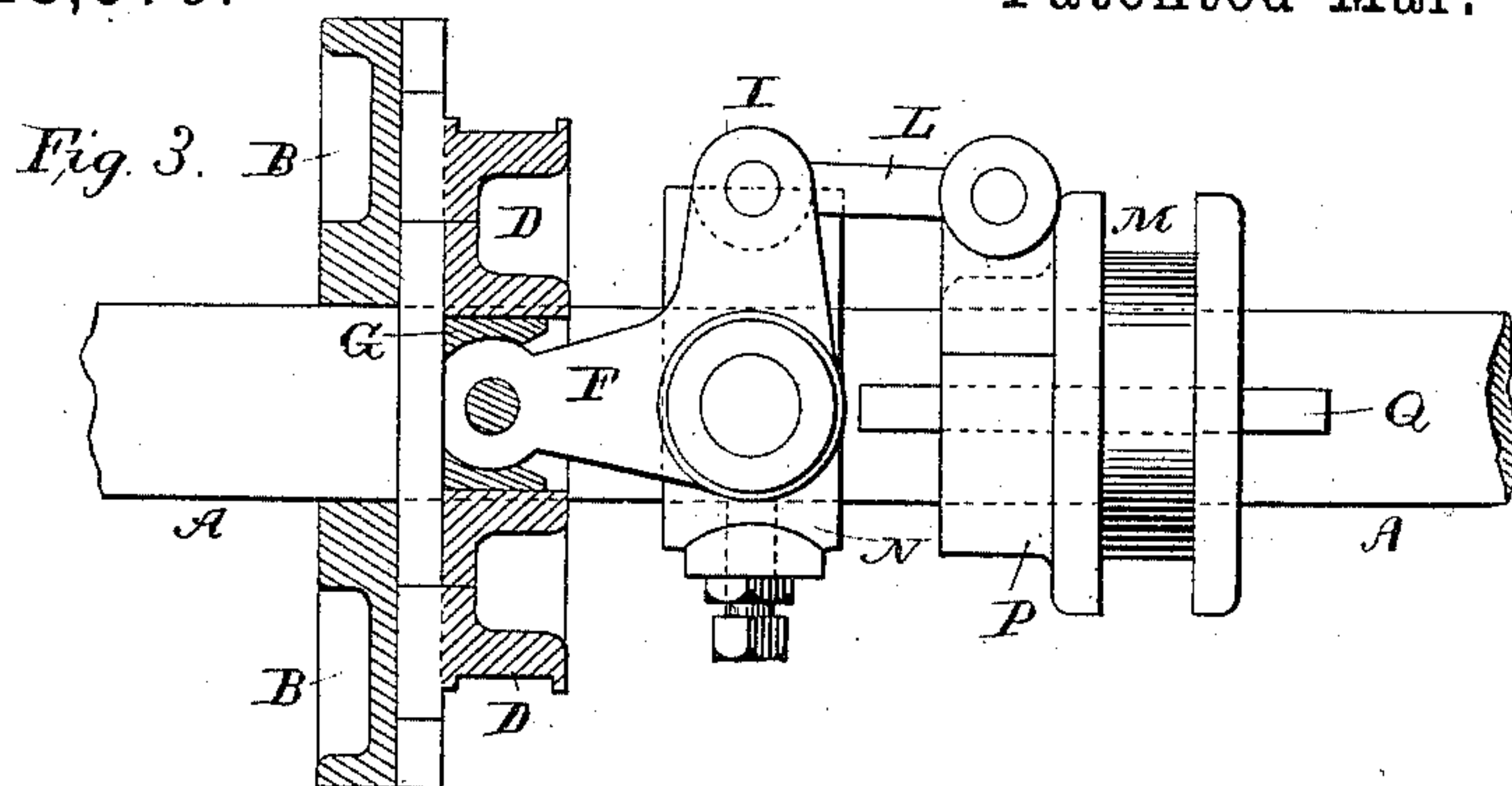
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UNITED STATES PATENT OFFICE.

JULIUS C. DEBES, OF MOUNT VERNON, OHIO.

REVERSING-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 313,579, dated March 10, 1885.

Application filed October 22, 1884. (No model.)

To all whom it may concern:

Be it known that I, JULIUS C. DEBES, a citizen of the United States of America, residing at Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Reversing-Gear for Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention consists in certain improvements, as hereinafter described and claimed, in gearing for reversing engines and cutting off steam at different points of the stroke without changing the lead.

15 In the accompanying drawings, Figure 1 is a top plan view showing the eccentric, clutch, and lever, and parts connected therewith. Fig. 2 represents a side elevation thereof. Fig. 3 represents a longitudinal section on the line 3 3 of Fig. 2. Fig. 4 represents an end
20 view of the eccentric and the circular disk wherein it slides, with one of the sliding blocks in position. Fig. 5 represents an end elevation of a double lever or bell-crank for operating the eccentric in either direction and holding the same stationary in either position. Fig. 6 represents an end elevation of the movable clutch. Fig. 7 represents a front sectional view, and Fig. 8 a side sectional view,
30 of one of the sliding blocks, to be presently described.

As heretofore constructed, reversing-gear for engines has possessed several objectionable features. When eccentrics have been employed, the mechanism for lifting or operating the same has usually been of a complicated character, and has resulted in more or less binding and side dipping. By my improvements I avoid these objections and secure advantages in the operation of the devices not
40 securable by any other arrangement of which I am aware.

45 A represents the engine-shaft, to which is securely attached a disk, B, formed with a dovetailed, T, or other suitably-shaped groove, C.

D represents the eccentric, which has a large central opening, and is mounted loosely upon the engine-shaft A.

50 E represents dovetailed or other suitably-shaped projections upon the eccentric, adapted

ed to fit and slide within the groove C, in the disk B. By this construction the eccentric will be held to the disk with freedom to slide across the face thereof.

F represents a double side lever or bell-
55 crank, by means of which the eccentric D is slid across the face of the disk B, its movement governed, and by which said eccentric can be held in any desired position. This double lever has at each inner end fitted a
60 sliding block, G, of steel or other suitable material, to allow for vibration and insure good wear. These blocks rest within side grooves, H H, in the center of the eccentric D, as clearly shown in Fig. 4 of the accompanying
65 drawings, and have straight outer faces, which fit the side faces of the grooves H, and furnish a lasting wearing-surface. Centrally from these sliding blocks G projects a boss or projection, with each of which the inner ends of
70 the bell-crank connect, by which arrangement the operation of the bell-crank insures the lifting and shifting of the eccentric right in the center of its own gravity, whereby an easy movement thereof is secured, and all binding
75 is prevented, even when there may be some lost motion.

It will be observed on reference to Fig. 7 of the accompanying drawings that the inner
80 faces of the sliding blocks are circular, to adapt them to receive and form a smooth bearing-surface for the outer faces of the inner ends of the bell-crank. By this construction the bell-crank is permitted to move in an arc, while the eccentric moves in a straight line without
85 any binding of the parts. By forming the eccentric D with central side grooves, H, and connecting the bell-crank therewith by means of the sliding blocks G in the manner shown and described, the bell-crank engages the
90 direct center of the eccentric, thereby balancing the same and preventing any binding or side dipping, which is sure to result when gears, pinions, or quadrants are employed for actuating the eccentric. The upper or outer ends,
95 I I, of the double side lever or bell-crank F are connected by a transverse pin, J, secured in position by bolts and nuts or other suitable means, K, whereby the dual levers are securely connected so as to permit of their op-
100

erating in unison when actuated by a lever or other suitable device, to be presently referred to.

From the connecting-pin J extends rear-
 5 wardly a link, L, by means of which the bell-
 crank or lever F is connected with a lever or
 other suitable device, M, by means of which
 the throw of the bell-crank, and consequently
 10 the movement of the eccentric, is governed,
 notches or other suitable devices being formed
 in or connected with the lever whereby the
 eccentric may be retained in any desired fixed
 position. The double lever or bell-crank is
 15 mounted upon the engine-shaft A, but inde-
 pendently thereof, being secured to and held
 with capability of movement by a collar, N,
 fixed in position by bolt and nut or other suit-
 able means, and having projecting pins O,
 20 which serve as fulcrums or journals for the
 lever F, said collar being capable of ready ad-
 justment upon the shaft to insure the proper
 fitting of the levers to the eccentric whenever
 such becomes necessary.

The collar or ring P is mounted upon the
 25 engine-shaft A, with capability of sliding
 longitudinally thereon, being prevented from
 turning by means of a feather, Q.

Having thus described my invention, what
 I claim is—

30 1. In a reversing-gear, an eccentric having
 side grooves in the center thereof, a double-
 armed bell-crank or lever having pivotal bear-
 ing in a fixed collar capable of longitudinal
 adjustment upon the engine-shaft, and sliding
 35 blocks connected to the inner ends of the bell-
 crank or lever arms, and having straight outer
 faces to adapt them to fit the side grooves in

the eccentric and curved inner faces to re-
 ceive and permit the free movement therein
 of the lever-arms, substantially as and for the 40
 purpose set forth.

2. In a reversing-gear, an eccentric having
 a central opening and side grooves in the cen-
 ter of the axis thereof, a double side lever or
 bell-crank, blocks adapted to fit within the 45
 side grooves in the eccentric and to connect
 with the inner ends of the lever or bell-crank,
 and means, substantially as described, for op-
 erating said bell-crank.

3. In a reversing-gear, the combination, 50
 with the engine-shaft, of a grooved disk, an
 eccentric adapted to engage therewith, and
 having side grooves in the center of its axis,
 a bell-crank or lever adapted to engage said
 side grooves, and a collar rigidly secured to 55
 said shaft, and having journals or bearing-
 pins for said lever, and also having capability
 of longitudinal adjustment upon the shaft,
 substantially as and for the purpose set forth.

4. In a reversing-gear, the combination, 60
 with the shaft A, and disk B, of a shifting
 eccentric having central side grooves, a double
 bell-crank or lever adapted to engage said
 grooves, a longitudinally-sliding non-rotatable
 collar mounted upon the shaft, and a suitable 65
 link and pin for connecting said clutch and
 double bell-crank, substantially as and for the
 purpose set forth.

In testimony whereof I affix my signature in
 presence of two witnesses.

JULIUS C. DEBES.

Witnesses:

HARRY BOYLE,
 JAMES COLE.