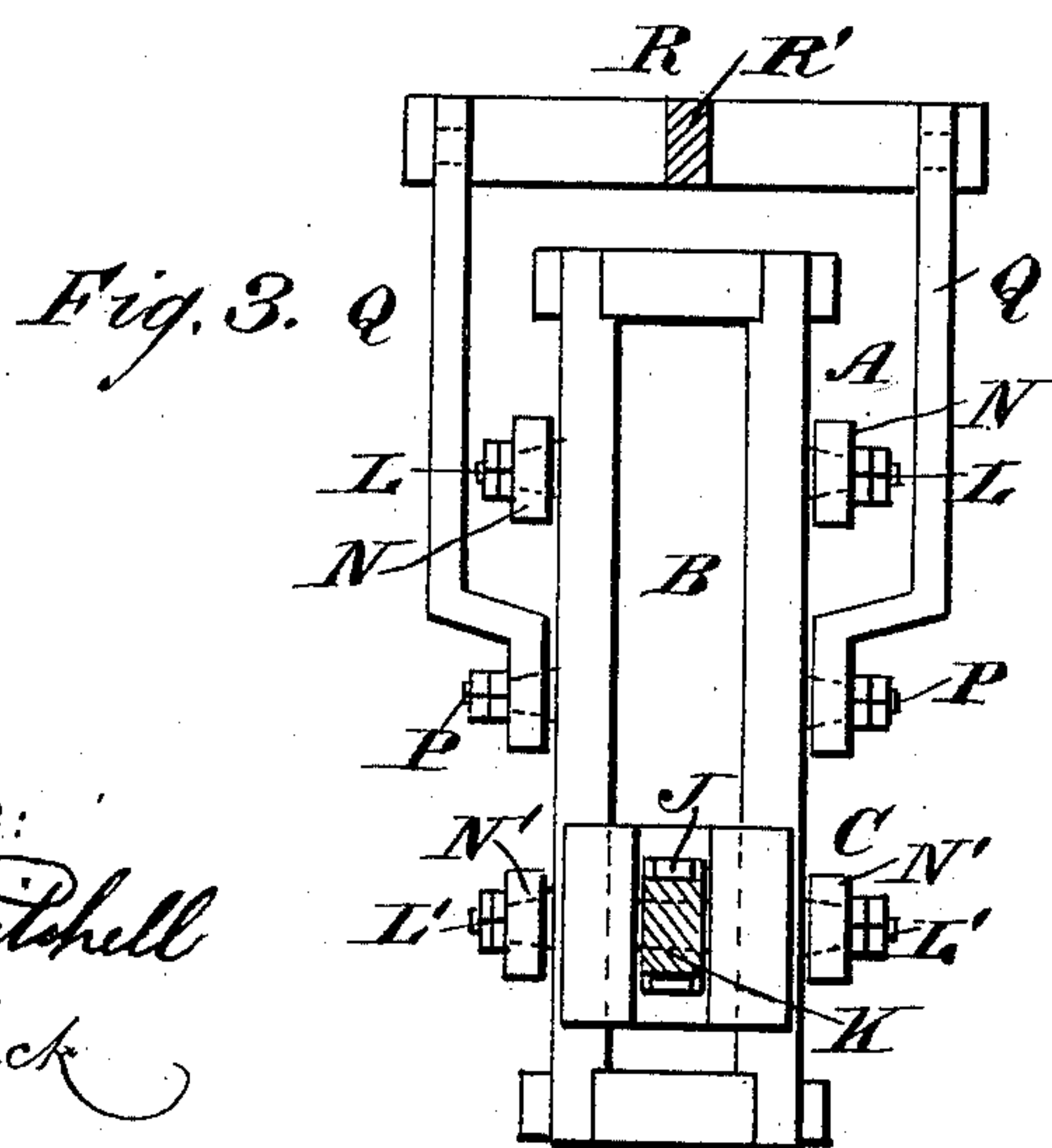
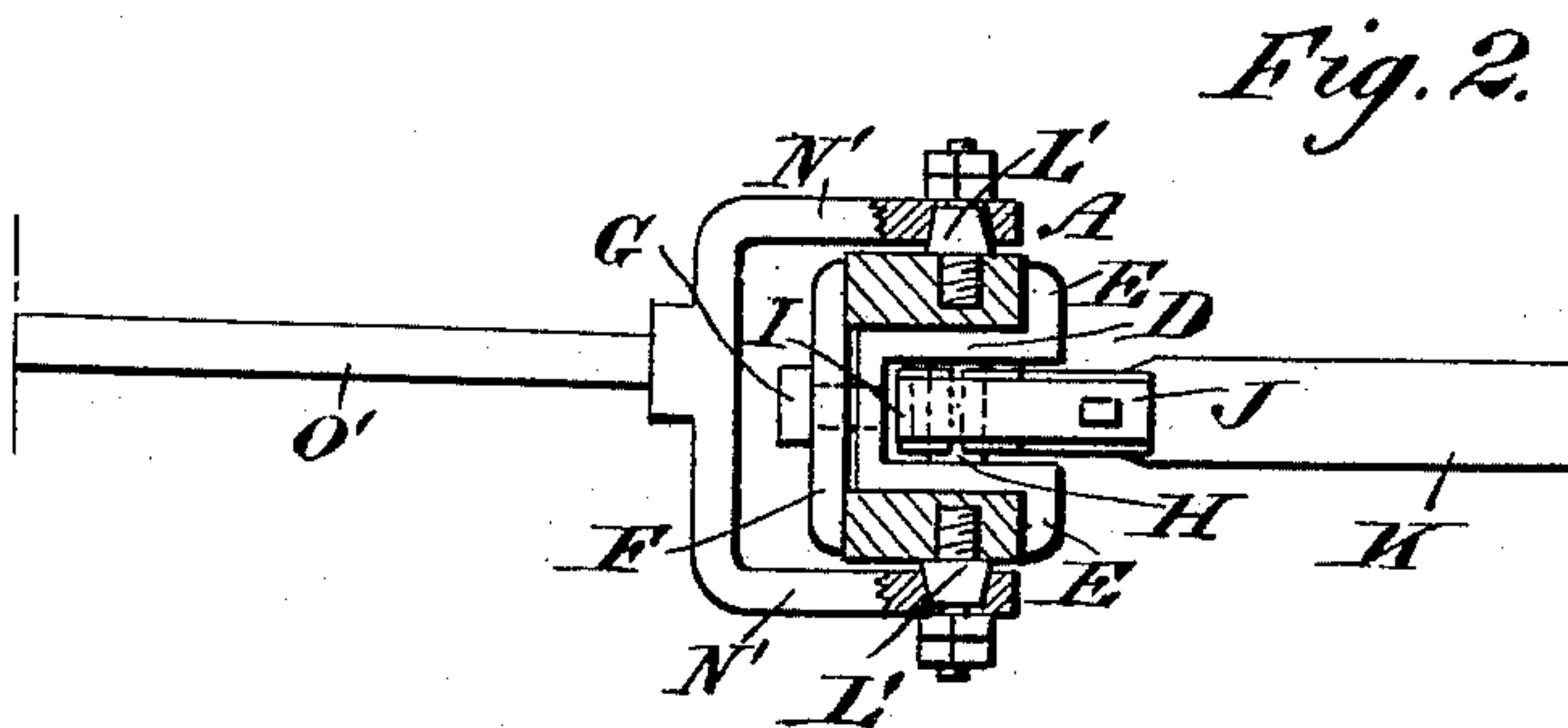
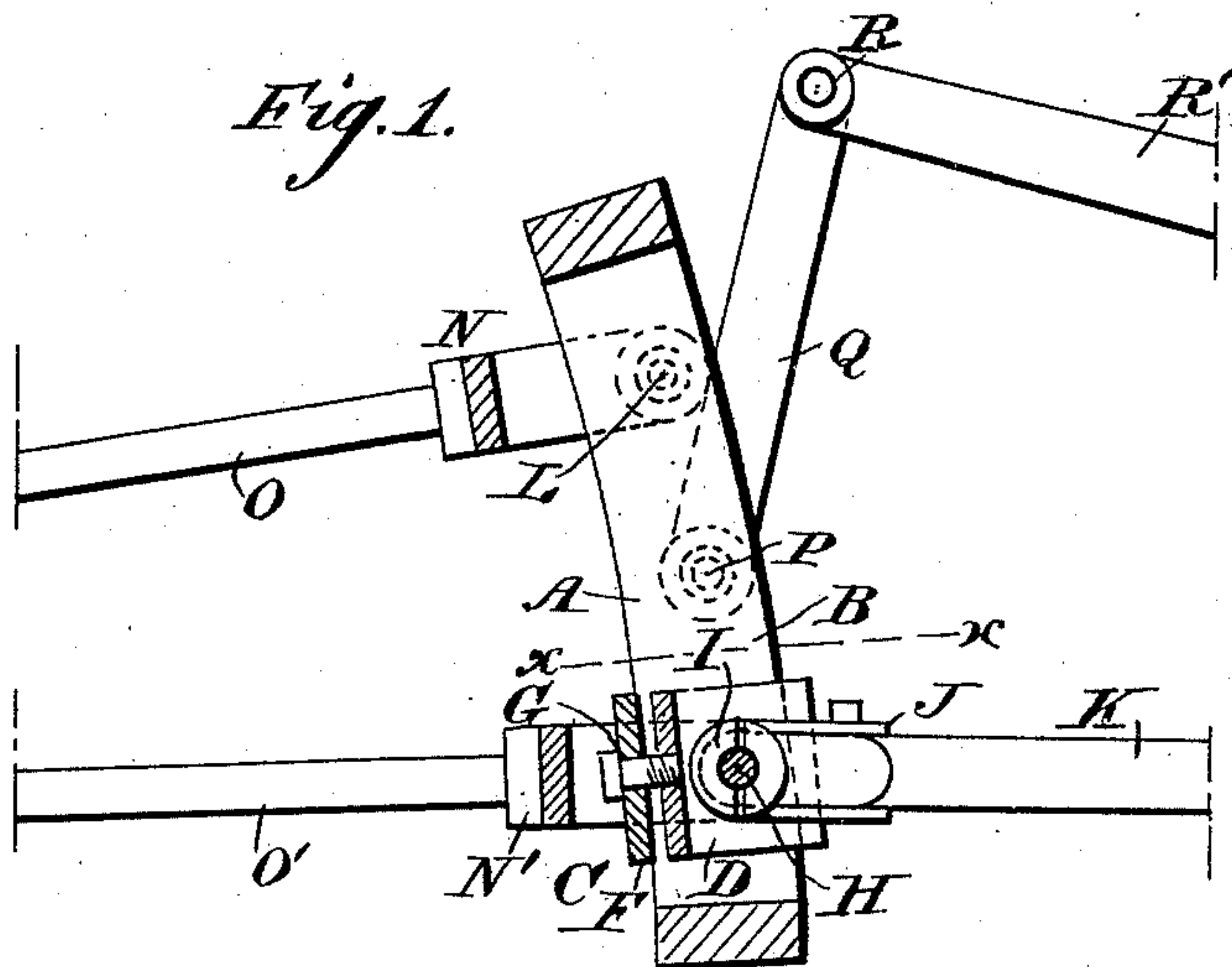


(No Model.)

W. A. WINN.  
LINK VALVE GEAR.

No. 463,018.

Patented Nov. 10, 1891.



WITNESSES:

Horn Twitchell  
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# UNITED STATES PATENT OFFICE.

WILLIAM A. WINN, OF WHITE HALL, ILLINOIS.

## LINK VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 463,018, dated November 10, 1891.

Application filed June 16, 1891. Serial No. 396,472. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. WINN, of White Hall, in the county of Greene and State of Illinois, have invented a new and Improved Link Valve-Gear, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved link valve-gear which is simple and durable in construction, reduces friction and strain to a minimum, and permits of conveniently adjusting the several parts to compensate for wear.

The invention consists of a link formed with a longitudinal slot adapted to receive the block.

The invention further consists of a link-block fitted to slide in the link and comprising a U-shaped flanged body part carrying the wrist-pin for the valve-stem connection, and a cap for holding and adjusting the body part in the link.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of the same on the line  $x x$  of Fig. 1, and Fig. 3 is an end view of the same.

The improved link valve-gear is provided with a link A, formed with a longitudinally-extending slot B, in which is fitted to slide the block C, comprising a U-shaped body part D, fitted into the slot B, and formed at its ends with flanges E, engaging the rear edge of the side of the link A, as plainly illustrated in Fig. 2.

The middle part of the body D extends close to the front edge of the link A, and is attached to a cap F by means of a screw or bolt G, the cap extending across the front edge of the link, as plainly shown in the drawings. In case of wear of the flanges E and the body part D it can be taken up by adjusting the screw or bolt G, so that the block fits snugly on the link A at all times. The sides of the body part D of the block C support the wrist-pin H, engaging a bearing

I, connected by a strap J or other means with the valve-stem connection K.

On the sides of the link A are secured the outwardly-extending sets of tapered pivots L and L', connected with the forked ends N and N', respectively, of the eccentric-rods O and O', respectively, operated in the usual manner from the eccentrics of the main driving-shaft. Midway between the sets of pivot-pins L and L' is arranged a set of similarly-constructed pivot-pins P, extending outwardly from the sides of the link A, and engaging links Q, pivotally connected with the cross-bar R of the arm R', connected with the usual reversing mechanism under the control of the engineer. The engineer by manipulating the usual lever causes a swinging of the arm R', so that the link A is raised or lowered to change the position of the block C above, below, or at the set of pivots P.

It will be seen that by arranging the slot in the link A longitudinally instead of transversely, as is usually done, and having the block C fitted on the edges of the said link, the wearing takes place on the outside edges of the link instead of on the inside, so that the block can be more readily fitted and adjusted to take up all wear and lost motion. It will further be seen that the strain on the link-block and connections is always in the same longitudinal plane, so that all sidewise pull or strain is avoided, and consequently friction of the working parts is reduced to a minimum. The wearing of the eccentric-rod ends and the links Q can be readily compensated for, as the said ends are pivoted on tapering sets of pivots by adjusting the nuts held on the said pivots. It will also be seen that when the engineer throws the reversing-lever in either forward, backward, or central position then the wrist-pin H is brought in line with the tapered pivot-pins L L, L' L', and P P, respectively, so that an accidental shifting of the link-block does not take place.

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

1. In a link valve-gear, the combination, with a link pivotally connected at or near its middle with the reversing mechanism and formed with a slot arranged longitudinally in line with the draft, of a block fitted to



slide in the said slot and pivotally connected with the valve-stem connection, and eccentric-rods pivotally connected with the sides of the said link at its upper and lower ends, substantially as described.

2. A valve-gear provided with a link-block fitted to slide in the link, and comprising a U-shaped flanged body part carrying the wrist-pin for the valve-stem connection, and a cap secured on the said body part, substantially as shown and described.

3. In a valve-gear, the combination, with a longitudinally-slotted link, of a block fitted to slide in the said link, and comprising a U-shaped flanged body part carrying the wrist-pin for the valve-stem connection, and a cap for holding and adjusting the said body part on the link, substantially as shown and described.

4. In a valve-gear, the combination, with a longitudinally-slotted link, of a link-block fitted to slide in the slot of the said link, and comprising a U-shaped body part fitted into the slot of the said link, flanges extending from the ends of the said body part and engaging the rear edges of the sides of the link, a cap extending across the front edges of the said link, and means for fastening the said cap to the said body part, substantially as shown and described.

5. In a valve-gear, the combination, with a longitudinally-slotted link, of sets of tapered

pivots secured on the sides of the said link and extending transversely, and eccentric-rods having forked ends engaging the said tapered pivots, substantially as shown and described.

6. In a valve-gear, the combination, with a longitudinally-slotted link, of a set of centrally-arranged tapering pivots extending outwardly and transversely, links connected with the said pivots, and an arm under the control of the engineer and connected with the said links, substantially as shown and described.

7. In a valve-gear, the combination, with a link formed with a longitudinally-extending slot, of a block fitted to slide in the said longitudinal slot, a wrist-pin held in the said block, and a valve-stem connection engaging the said wrist-pin, substantially as shown and described.

8. In a valve-gear, the combination, with a link having a longitudinal slot, of a block fitted to slide in the said slot and formed with a U-shaped body piece, and a wrist-pin held in the sides of the said U-shaped body piece and adapted to connect with the valve-stem connection, substantially as shown and described.

WILLIAM A. WINN.

Witnesses:

R. B. WINN,

C. F. RATHBUN.