

(No Model.)

2 Sheets—Sheet 1.

H. THIBAUT & C. D. HARSIN.
ENGINE.

No. 459,885.

Patented Sept. 22, 1891.

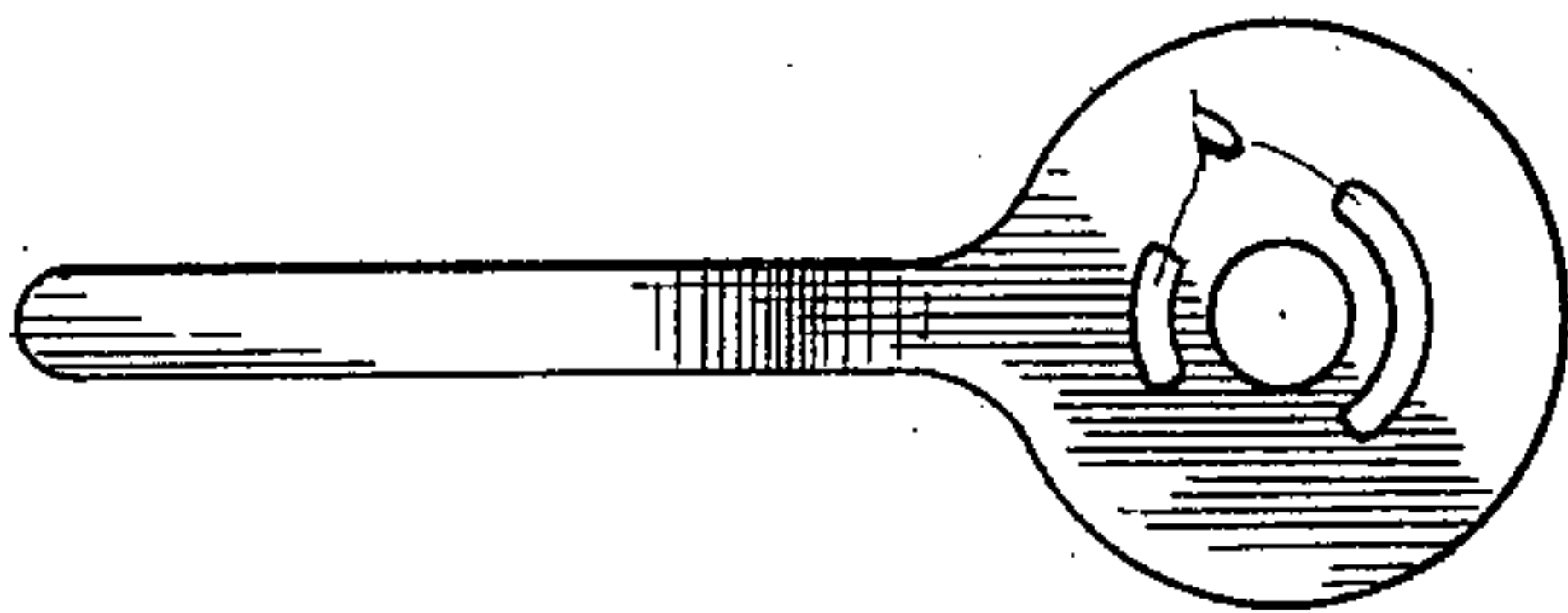


Fig. 3.

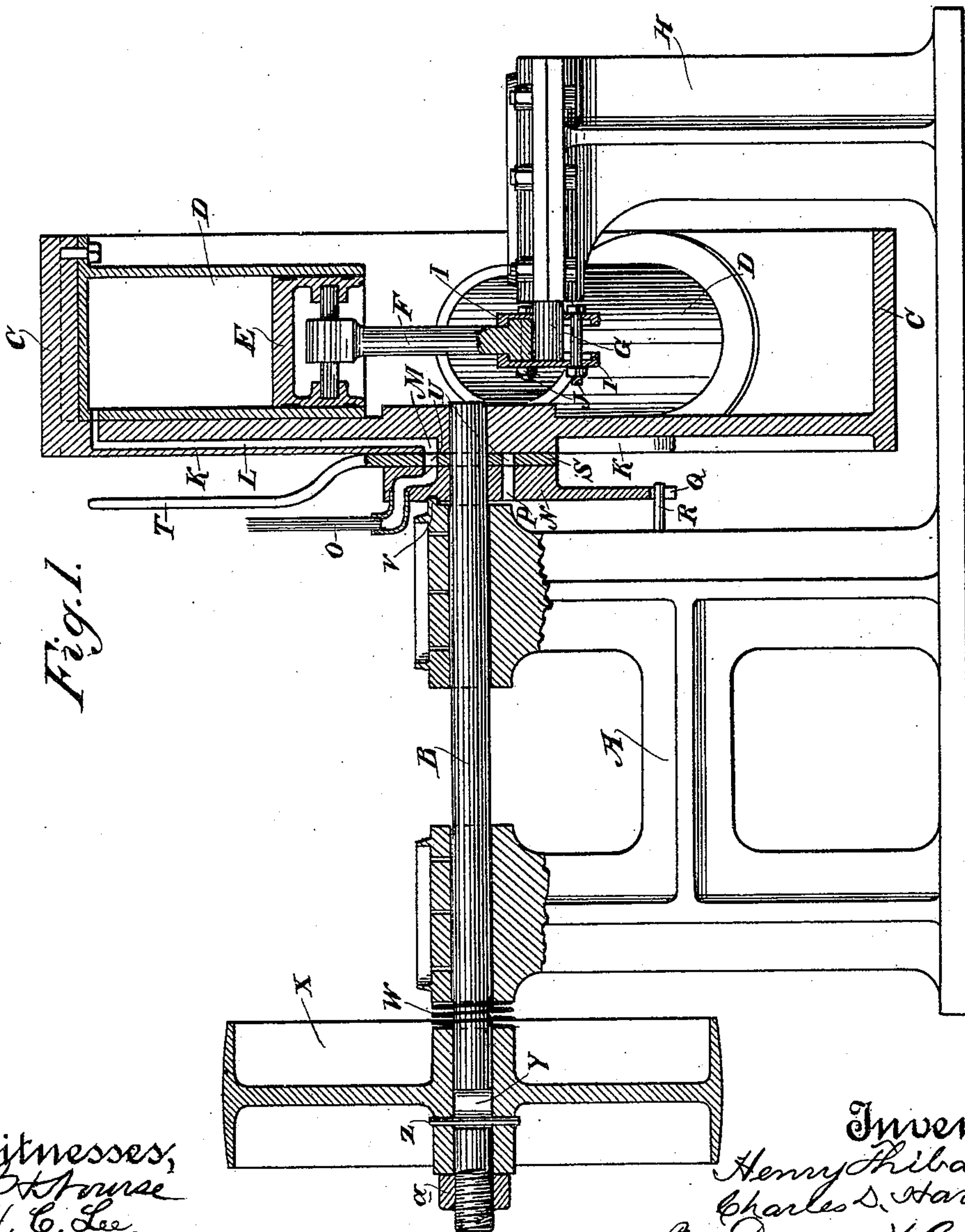


Fig. 1.

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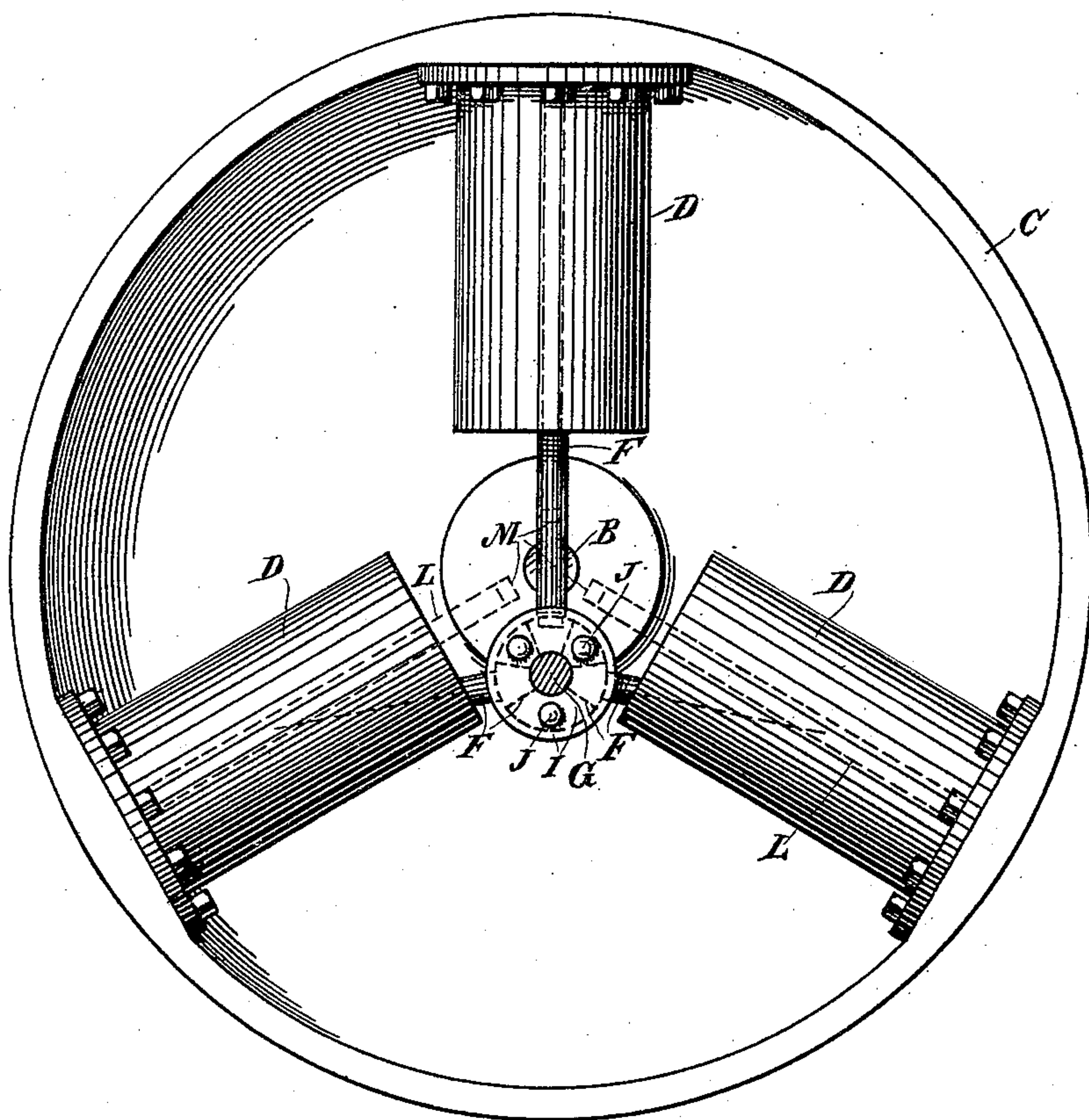
2 Sheets—Sheet 2.

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Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY THIBAUT AND CHARLES D. HARSIN, OF STOCKTON, CALIFORNIA;
SAID THIBAUT ASSIGNOR AND SAID HARSIN ASSIGNOR OF PART TO
JOHN GAMBETTA, OF SAME PLACE.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 459,885, dated September 22, 1891.

Application filed October 29, 1890. Serial No. 369,730. (No model.)

To all whom it may concern:

Be it known that we, HENRY THIBAUT and CHARLES D. HARSIN, citizens of the United States, residing at Stockton, San Joaquin county, State of California, have invented an Improvement in Engines; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to certain improvements in engines to be propelled by steam, air, vapor, or any other elastic or suitable medium.

It consists in the arrangement of two or more cylinders within a rotating rim and radial to the center thereof, pistons reciprocating in said cylinders, and connecting-rods uniting said pistons with a stationary pin which is eccentric to the center of the rim in which the cylinders are fixed, and in certain details of construction, all of which will be more fully described in the following specification.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a vertical section taken through the rotary rim and one cylinder, showing also the steam-passages and reversing mechanism. Fig. 2 is a front view showing the relative arrangement of the cylinders and their connection with the stationary eccentric-pin. Fig. 3 is a detail view of the reversing-disk.

A is a standard or frame-work, within which is journaled the shaft B, having fixed upon one end a disk or wheel, which is provided with a peripheral rim C. Within this rim we have shown three cylinders D, secured so as to stand radially with their inner ends toward the center and equidistant from each other. Within these cylinders are fitted the reciprocating pistons E, and these pistons are connected by the rods F with a pin G. This pin is firmly fixed and supported in a standard H at such a point as to be out of line with the shaft B, about which the cylinders rotate, and it will be manifest that when steam is admitted into either of the cylinders

the pressure exerted upon the piston would be counteracted by the stationary pin G, and the pressure will thus be transmitted to the outer end or base of the cylinder, and this pressure will cause the rotation of the wheel-rim on account of the pin G being out of line of the central shaft B.

The ends of the pitmen or connecting-rods F are fitted to abut against the pin G having the proper curve, and they are formed with shoulders projecting outwardly, around which the rings or collars I are fitted. These rings or collars thus serve to hold the pitman in contact with the crank-pin and at the same time allow them the necessary amount of movement as the cylinders rotate about the pin. These rings or collars are connected together at points between the pitmen ends by the bolts J, which extend from one to the other and thus hold them in place. The inner periphery of the rim C is flattened at the points where the bases of the cylinders are bolted thereto, so as to give them a firm support.

Exterior to the disk which forms the central portion of the rim C are the hollow arms K, having channels within them extending radially from near the center to the outside. These channels L have one end of each connected with the rear or outer end of one of the cylinders, and the inner end has an opening, as shown at M, through which steam is admitted into the channel.

N is a collar loosely surrounding the shaft B and having a passage through it, which coincides with the opening M, and the steam-pipe O is connected with this passage by a suitable coupling, so that steam is admitted through this collar N into the passage M whenever the wheel-rim C has rotated to such a point as to bring one of these passages opposite the steam-supply port. Upon the other side of the collar N is an exhaust-passage P, which the revolution of the wheel-rim C brings temporarily into line with one of the passages L, so that the steam may be exhausted from the cylinders at the proper time.

Q is an arm extending outward from the collar, and R is a pin passing through a hole or slot in the end of this arm and into a supporting frame-work A, and by this pin the position of the collar N is regulated and maintained. By means of this pin R the collar N is adjusted and secured. The collar may be turned a little upon the shaft without disturbing the connection with the steam-pipe O, as the latter has considerable unsupported length and can thus adapt itself to the movements of the collar. By thus turning the collar the steam may be admitted to the cylinders sooner or later, and their position with relation to the fixed crank when this admission and the application of power take place is adjusted to meet the requirements.

Between the collar N and the hub of the disk which carries the wheel-rim C is fitted a thin circular plate S, which turns loosely around the shaft B. This plate has a handle or arm T, by which it may be turned in one direction or the other, and through it are made the slots U, which serve to admit steam to pass from the supply-pipe O to the passage L, or from the passage L to the exhaust-passage P. By turning this disk so as to admit the steam at different points with relation to the fixed eccentric-pin G it will be manifest that the movements of the engine may be reversed, according as the steam is admitted at one side or the other of the center, and by turning the disk still farther the supply of steam can be entirely cut off.

In order to insure a tight joint at the point where the steam passes through the collar M and the disk S, we have shown a projection or stud at V which exerts a pressure between the frame A, and that portion of the collar through which the steam passes, and this tends to press that portion of the collar more closely into contact with the disk S and with the hub of the main-wheel disk. In order to maintain this contact, the shaft B is allowed an end motion in its journal-box, and a spring W surrounds the shaft between the outer journal-box and the hub of the pulley X, which is fitted upon the end of the shaft and through which power is transmitted to any desired point. The end of the shaft B is slotted, as shown at Y, and the pin Z, which connects the pulley X with the shaft, passes through this slot. The slot is of sufficient length to allow the pulley to be moved somewhat upon the shaft for the purpose of adjusting it from time to time to regulate the tension of the spring W. This adjustment is effected by turning the nut α , which screws upon the outer end of the shaft B, and by turning this nut the tension may be regulated as desired.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an engine, a rim or disk secured upon

a shaft and rotating therewith, cylinders fixed radially within said rim, having pistons fitted to reciprocate therein, an independent crank pin or shaft out of line with the main shaft, and pitmen connecting the pistons with said pin, in combination with a collar through which the main shaft passes, said collar having steam and exhaust openings made through it, as shown, and a disk loosely surrounding the shaft and fitting between the collar and the hub of the cylinder-carrying rim, said disk having slots made through it corresponding with the steam and exhaust openings of the collar and cylinders, and a handle by which said disk may be turned so that steam will be admitted to the cylinders with relation to the eccentric crank-pin, so as to drive the engine in either direction, substantially as herein described.

2. In an engine, a rim or disk supported upon a rotating shaft and having cylinders fixed radially to it, an independent crank-pin fixed out of line with the main shaft, pistons reciprocating within the cylinders, and pitmen connecting said pistons with the fixed crank-pin, a collar and reversing-disk fixed between the hub of the cylinder-carrying rim and the journal-box of the shaft upon which it is mounted, and arms projecting from the collar and from the disk, whereby the two may be moved and adjusted with relation to each other and with relation to the revolving rim and cylinder, substantially as herein described.

3. In an engine, the revolving rim or disk having cylinders mounted thereon, pistons connected with an independent crank-pin fixed out of line with the main shaft, a collar and reversing-disk surrounding the main shaft between the hub of the cylinder-carrying rim and the adjacent journal-box, steam-passages leading to the outer ends of the cylinders and corresponding steam and exhaust passages made through the collar and reversing-disk, a pressure pin or plate V, adapted to press against the collar, so as to make a tight joint between it, the reversing-disk, and the wheel-hub, a pulley fixed upon the opposite end of the main shaft, and a spring W between said pulley and the adjacent journal-box, whereby the main shaft is drawn in that direction and the joints through which the steam passes are kept tight, substantially as herein described.

4. In an engine, a rim or disk mounted upon a rotating shaft having cylinders fixed radially within the rim, pistons reciprocating therein, an eccentrically-fixed independent crank-pin with which said pistons are connected, a collar and reversing-disk surrounding the main shaft and fitting between the hub of the cylinder-carrying wheel and the adjacent journal-box of the main shaft, a pulley fixed to the opposite end of the main shaft, a spring acting between said pulley and the

adjacent journal-box, whereby steam-tight joints are maintained between the collar, the reversing-disk, and the wheel-hub, and an adjusting plate or nut upon the shaft fitted to
5 press against the outer end of the hub of the pulley, whereby the tension of the spring may be adjusted, substantially as herein described.

In witness whereof we have hereunto set our hands.

HENRY THIBAUT.
CHARLES D. HARSIN.

Witnesses:

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