

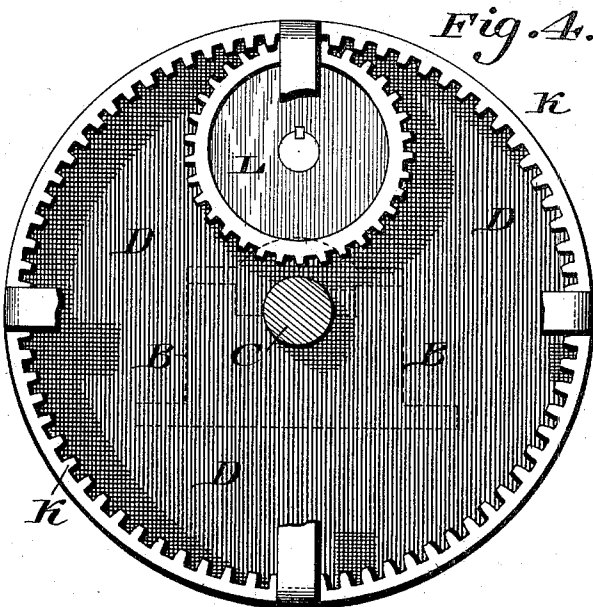
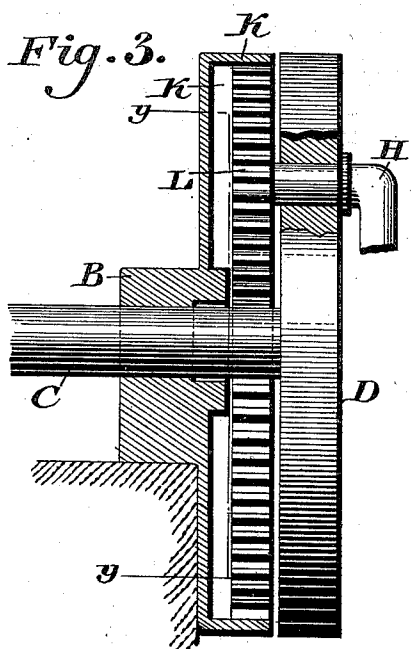
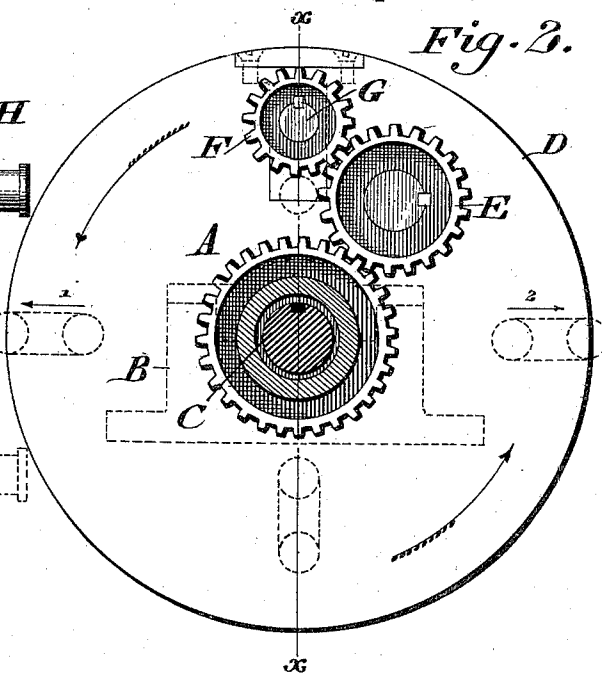
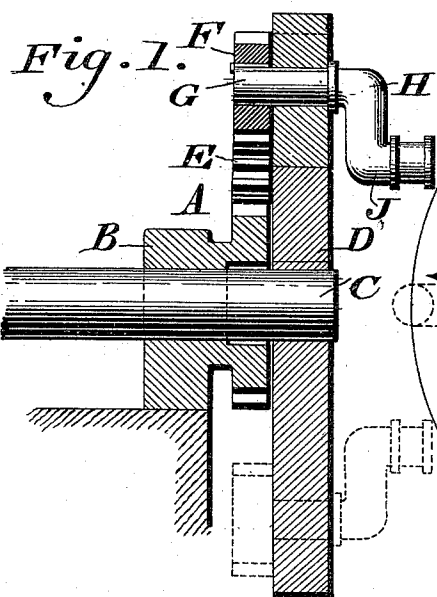
(No Model.)

J. J. HANLON.

DEVICE FOR INCREASING STROKE OF STEAM OR OTHER ENGINES.

No. 537,637.

Patented Apr. 16, 1895.



WITNESSES:

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JOHN J. HANLON, OF ALLENTOWN, PENNSYLVANIA.

DEVICE FOR INCREASING STROKE OF STEAM OR OTHER ENGINES.

SPECIFICATION forming part of Letters Patent No. 537,637, dated April 16, 1895.

Application filed December 30, 1893. Serial No. 495,169. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HANLON, citizen of the United States, residing at Allentown, in the county of Lehigh, State of Pennsylvania, have invented a new and useful Improvement in Devices for Increasing the Stroke of Steam or other Engines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of means substantially as described whereby the stroke of the piston of a horizontal or upright engine may be increased.

Figure 1 represents a partial elevation and partial diametrical section on line *x, x*, Fig. 2, of a device for increasing the stroke of an engine, embodying my invention. Fig. 2 represents a partial section and partial side elevation thereof. Fig. 3 represents a partial elevation and partial diametrical section of a modification on line *y, y*, Fig. 4. Fig. 4 represents a partial section and partial side elevation of the modification Fig. 3.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings: A designates a non-rotating pinion or toothed rim which is formed with or secured to the box B, which forms the bearing for the shaft C, to which is keyed the crank disk D, on which latter is mounted the idler E and pinion F, said idler meshing with the pinions A and F, whereby the pinion F is rotated as the crank disk D is revolved.

Connected with the pinion F is one limb G of a subsidiary crank H, which limb passes freely through an opening in the crank disk D. The other limb J of said subsidiary crank, which is the angular portion thereof, is outside of said wheel and is adapted to have the piston rod of a steam or other engine mounted thereon in any suitable manner.

It will be seen that when the piston is operated, the rod of the same, or the connection thereof, rotates the crank disk owing to its connection with the subsidiary crank H. As the crank disk D rotates, the pinion F is also rotated, owing to the gearing E and A, and thus the subsidiary crank receives rotation independent of the crank disk D, so that as its limb J is thrown to its outermost position, it imparts additional motion on the piston,

and thus increases the stroke of the same to the extent of the circle described by said limb, as shown by the arrow 1 Fig. 2. As the subsidiary crank continues its rotation independent of that of the crank disk, the limb J is again thrown to its outermost position, when the said crank disk has made a half-turn, as shown by the arrow 2, Fig. 2, and thus the piston is returned to the full extent of its increased stroke.

In Figs. 3 and 4, I show different gearing for effecting the rotation of the subsidiary crank. In this case, an internal gear wheel K or toothed rim is secured to the journal box, and has meshing with it the pinion L, to which latter the subsidiary crank is secured, by which provision said subsidiary crank is rotated when motion is imparted to the crank disk.

The body of the crank disk D serves as the only bearing for the limb G of the subsidiary crank H which carries the pinion F, thereby dispensing with straps or other bearings for the same.

I am aware that it has been proposed to mount an eccentric on a crank disk, and to provide means for rotating the same independent of said crank disk, but my device differs from this in many important particulars.

Among the advantages gained are, first, there is less friction, by reason of the limb G of the subsidiary crank having its bearing in the driving wheel alone; second, there is less friction from a subsidiary crank than from a large eccentric; third, there is less material used; fourth, my device can be readily applied to existing engines without changing the connecting rod, whereas when an eccentric is employed in place of a subsidiary crank, a new and large connecting rod has to be made, especially for each engine, and, lastly, the operations of the two devices are radically different, as the subsidiary crank makes a true revolution, and there is no eccentric motion whatever, as is the case when an eccentric is employed.

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

In a device for the purpose named, a shaft and a bearing therefor, a stationary toothed

rim carried by said bearing, a crank disk at-
tached to said shaft, a subsidiary crank ro-
tatably mounted in said crank disk, and gear-
ing connecting one limb of said subsidiary
5 crank with the stationary rim, whereby the
rotation of said crank disk will cause said
subsidiary crank to be rotated, the above

parts being combined substantially as de-
scribed.

JOHN J. HANLON.

Witnesses:

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