

JOHN DONNELLY.

Improvement in Apparatus for Operating Steam-Engine.
 No. 127,747. Patented June 11, 1872.

Fig. 1.

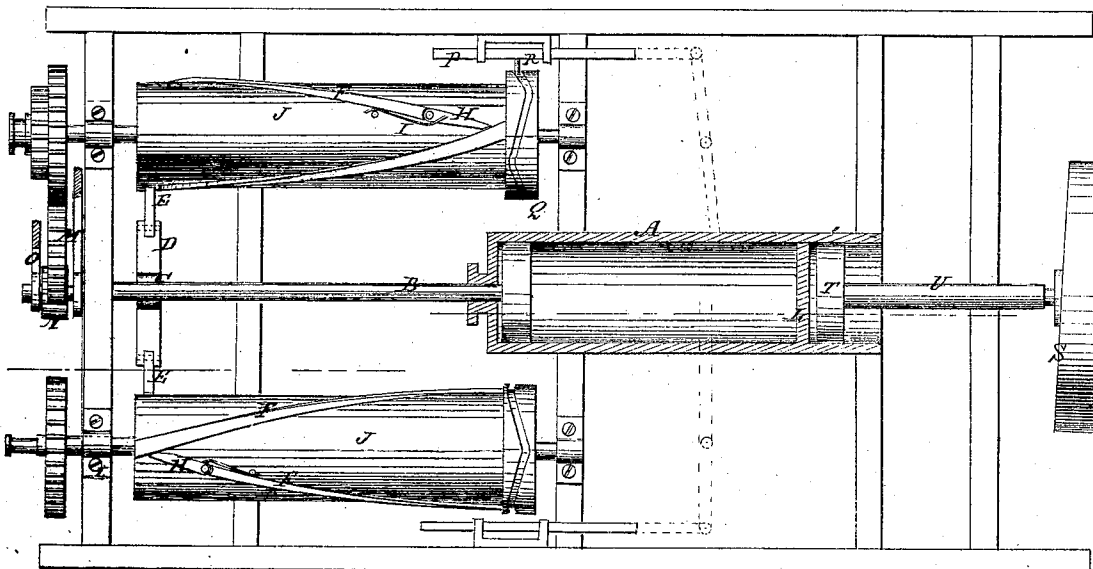


Fig. 2.

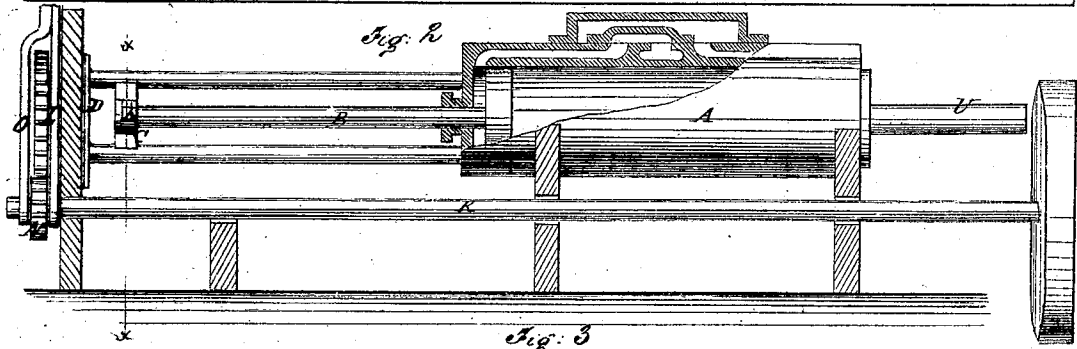


Fig. 3.

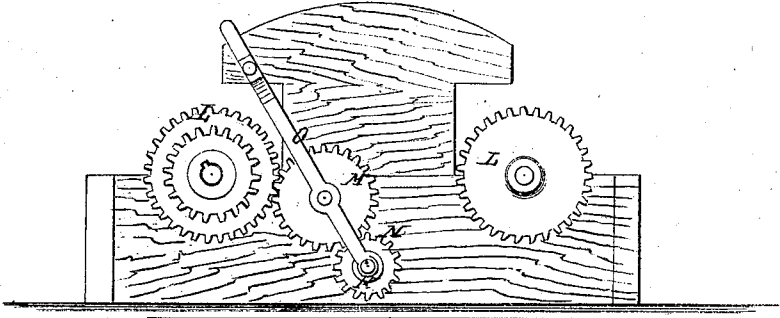
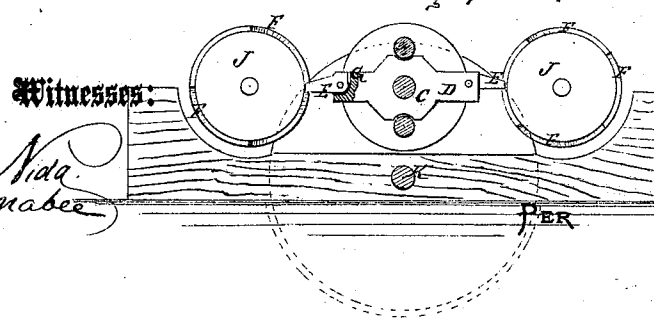


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN DONNELLY, OF HUDSON, NEW YORK, ASSIGNOR OF ONE-HALF HIS
RIGHT TO HORACE R. PECK, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR OPERATING STEAM-ENGINES.

Specification forming part of Letters Patent No. 127,747, dated June 11, 1872.

Specification describing a new and useful Improvement in Steam-Engines, invented by JOHN DONNELLY, of Hudson, in the county of Columbia and State of New York.

My invention relates to that class of steam-engines in which rotary motion is established by the cross-head or a projection thereon acting against spiral ribs on a cylinder; and it consists, first, of a jointed piece on each of the flanges or ribs, with a spring to rise and allow the cross-head to pass from one rib to the other at each end of the stroke, the said pieces being returned to their positions again by the spring. The invention also consists of a shifting idle-wheel in connection with two drums, and gearing with the main shaft for shifting the connection of said main shaft from one to the other of the cylinders to reverse the motion, the said cylinder being arranged for driving in opposite directions. It also consists of a brake for arresting the motion, said brake being formed by a cam-wheel on the driving-shaft and a secondary steam-piston arranged to be forced against the said wheel, said secondary piston being in the end of the steam-cylinder opposite to the main piston.

Figure 1 is partly a plan view and partly a horizontal section of my improved steam-engine. Fig. 2 is partly a side elevation and partly a longitudinal sectional elevation. Fig. 3 is an end elevation; and Fig. 4 is a transverse section taken on the line *xx* of Fig. 2.

A is the steam-cylinder; B, the piston-rod; C, the cross-head; D, the arms thereof; and E, the jointed projections or fingers thereon for acting on the spiral ribs F of the cylinders or drivers J, arranged parallel with the piston-rod for being revolved by the action of said arms on said ribs as the cross-head moves back and forth. Said fingers are so pivoted to said arms that they can only turn to the longitudinal line of the arms in the direction in which the resistance of the ribs acts on them, as indicated by the shoulders G, Fig. 4; but in the other direction they may be turned around perpendicular to said arms, and thus allow the ribs to escape thereon when turning independently of the cross-head, or

not turning at all when the cross-head is working. The object of this arrangement is to allow of operating either of the two cylinders for changing the motion from one direction to the other. For allowing the fingers E to shift from one flange to the other, as required, at each end of the stroke the flanges, which are in advance of the said fingers, are provided with a pivoted piece, H, arranged to be lifted by said fingers to allow them to pass under, after which it is closed down again by a spring, I, to be acted on by the reverse motion of the said fingers. The motion is transmitted from the cylinders to a driving-shaft, K, by gear-wheels L, an idler, M, and a pinion, N, the said idler being mounted on a shifting-lever, O, capable of transferring the idler to one or the other of the cylinders, according to which way it is desired to have the main shaft turn. I propose to actuate the slide-bar P for working the valve-gear by means of a grooved disk, Q, on the axle of the cylinder and a pin, R, on the said slide working in said groove; and for changing the valves, to open and close sooner or later, I propose to have said disk capable of shifting along on its shaft. I also propose to use a revolving hub on the slide-bar P with four or more arms or pins, R, of different sizes, for varying the action of the valves, the said hub being shifted to bring a large or small pin into the groove, by which the action will be varied as the pins vary in size. S is the cam-wheel on the main shaft, to be used for breaking the motion of the machine; and T is the secondary piston, with a rod, U, for being forced against the side of said cam-wheel by steam let into the chamber behind it. Said chamber is cut off from the main cylinder by the diaphragm V, and a part of the main cylinder is utilized for said brake-piston.

Steam may be admitted through the piston and cross-head arm, pressing on the flanges and upper guide, being cut off by stop-cock at end of stroke, if found desirable.

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

1. The jointed sections H in the ribs F for

lifting in advance of the finger E, to allow it to pass from one rib to the other, successively, substantially as specified.

2. The combination, with two spiral-ribbed cylinders or drums, J, actuated in the manner described, and a driving-shaft, K, of an idler-wheel, M, shifting-lever O, and the gear-wheels L and N, all substantially as specified.

3. The secondary brake, cylinder-piston T, piston-rod, and the cam-wheel S, substantially as specified.

JOHN DONNELLY.

Witnesses:

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