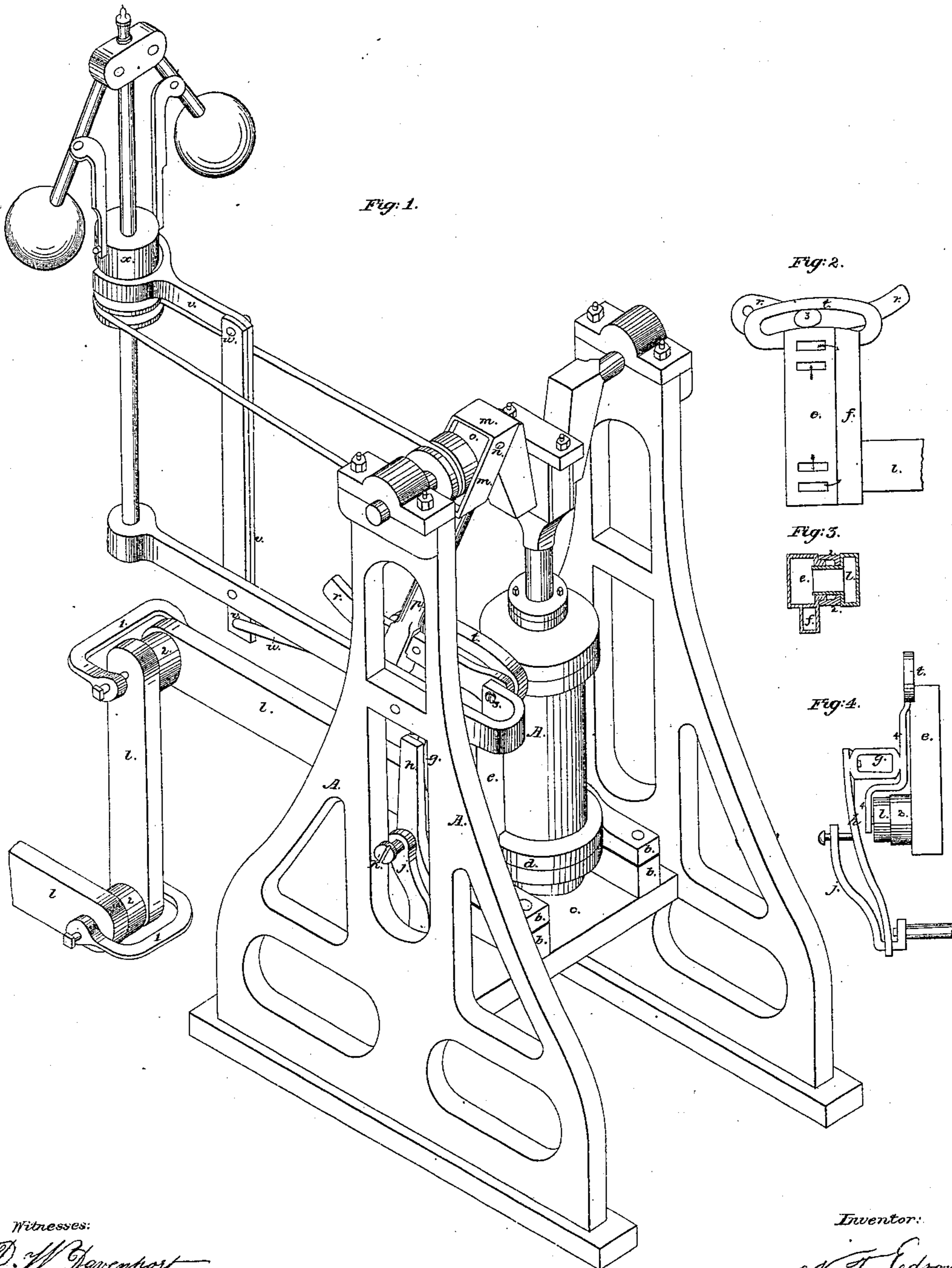


*N. T. Edson,
Oscillating Steam Engine.*

N^o 39,038.

Patented June 30, 1863.



Witnesses:
D. W. Gavenport
G. O'Brien

Inventor:
N. T. Edson

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N^o 39,038.

Patented June 30, 1863.

D. W. Davenport
G. A. Brien

N. T. Edison

UNITED STATES PATENT OFFICE.

NATHANIEL T. EDSON, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 39,038, dated June 30, 1863.

To all whom it may concern:

Be it known that I, NATHANIEL T. EDSON, of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a new and Improved Mode of Making Steam-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improvements consist in using the steam-chest for a slide-valve and in regulating the speed of the engine by connecting the stem of the valve or steam-chest with the eccentric-rod and governor, so that an increased speed of the engine will produce a less movement of the valve, and thereby increase the expansive use of the steam.

Figure 1 is a perspective view of a vibrating-cylinder engine. The frame A is made similar to such as are used for vertical engines, on which is mounted the shaft. The cylinder is mounted on cross-frame c. On this frame is mounted pillar-blocks b, which make the carriage for the shaft, it being in connection with the lower cylinder-head, d. The cylinder being thus supported and moved on the centers and bearings—viz., the pillar-blocks b and shaft—its movement is by vibrations on these centers to assume the positions natural to the crank action, so far as its own vibrations are concerned. The steam-chest e has one opening near each end against the cylinder leading to the side-pipe, f, which are the exhaust openings and pipe, and other (supply) openings leading to the steam in the chest, as shown in Fig. 2. The openings in the cylinder are between the supply and exhaust openings of the chest, when the chest is in its centers, but nearest the exhaust-openings. The chest is held against the cylinder by roller g, plate h, and stay j, which stay is firmly attached to the shaft, and adjustment made by turning the set-screw k.

l is the pipe which is connected to the chest by a joint, a sectional view of which joint is shown in Fig. 3, three of which joints are used to connect the stationary part of the supply-pipe to the movement of the chest of a vibrating or oscillating cylinder engine. If the cylinder is stationary and the chest is used for a slide-valve, two joints only are necessary. The joint, Fig. 3, used to connect

the supply-pipe to the chest, is held tight by the lower end of plate 4, which receives the pressure of roller g, resting against it, and the other joint or joints by a clamp, as shown. The exhaust-steam is conveyed from the side pipe F by a flexible pipe.

m is the eccentric-frame, and o a block which fits and rests on the eccentric groove, but is shorter than the width of the frame and moves from side to side of the frame on revolving of the eccentric. The frame and block are held on the eccentric by pin n, which passes through them. The sides of the frame rest against the outer circle of the eccentric, by which arrangement of block, frame, and eccentric the ports are opened quicker and remain open longer than with the usual eccentric arrangement. If this arrangement of frame and block is used in a horizontal engine, the straight-edged block in the lower part of the frame m should be replaced by a block similar to o in the top part of the frame.

p is the eccentric-rod with an opening through its end, through which one end of the circular lever r passes with its other end pivoted to the frame A at s. The lever has a projecting arm, 3, which fits and enters the slot of the slotted segment t. The diameter of the circle of lever r is obtained by taking the center of the crank on which the eccentric is placed for its center, and the diameter of the slotted segment t by taking the center of the shaft for its center. If the cylinder is stationary, the stem of the ordinary slide-valve or of the chest is attached to the projecting arm 3 direct. The segment t is firmly attached to the chest, and is moved up and down on the revolving of the eccentric. The eccentric-rod p is connected by joint to the governor-rod u, which is connected by joint to the angle-lever v, which lever has its pivot at w, with its other end resting in the groove of the governor-collar x.

Fig. 4 is a side view of several parts that are imperfectly shown in Fig. 1, and Fig. 5 a perspective view of the chest e without the side pipe, f, two of which chests are used, one for a supply on one side of the cylinder, the other on the opposite side for exhaust.

a' is a connecting-rod which is pivoted to the projecting arm d' of the chest at b', and to lever r at c'. When used in connection with an exhaust-chest, the connecting and eccentric

rods are one, the lever *r* and governor arrangement being dispensed with.

When the work to be performed by the engine requires all of its power, the eccentric-rod *p* will rest against the projection on the lever *r*, and the movement of the chest or valve will be sufficient to throw the ports wide open. On the speed of the engine increasing, the governor and angle-lever will move the eccentric-rod out from the projection, thereby opening the ports sufficiently wide only to keep up the speed of the engine. The crank when up revolving toward the governor, will cause the supply-ports to open when the crank is in the same position, at whatever angle the eccentric-rod may assume to the connecting-rod, and to close at a shorter stroke as the eccentric-rod leaves the projection.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The using of a steam-chest for a slide-valve in combination with roller *g*, plate *h*, and stay *j*, substantially as set forth.

2. The joint, Fig. 3, in combination with the plate 4, by which the gland 2 is held against the packing.

3. The combination of the eccentric frame *m* and block *o*, for the purposes specified.

4. The combination of the eccentric-rod *p*, governor-rod *u*, angle-lever *v*, and lever *r*, when acted upon by the governor to regulate the speed of the engine.

N. T. EDSON.

Witnesses:

G. O'BRIEN,

D. W. DAVENPORT.