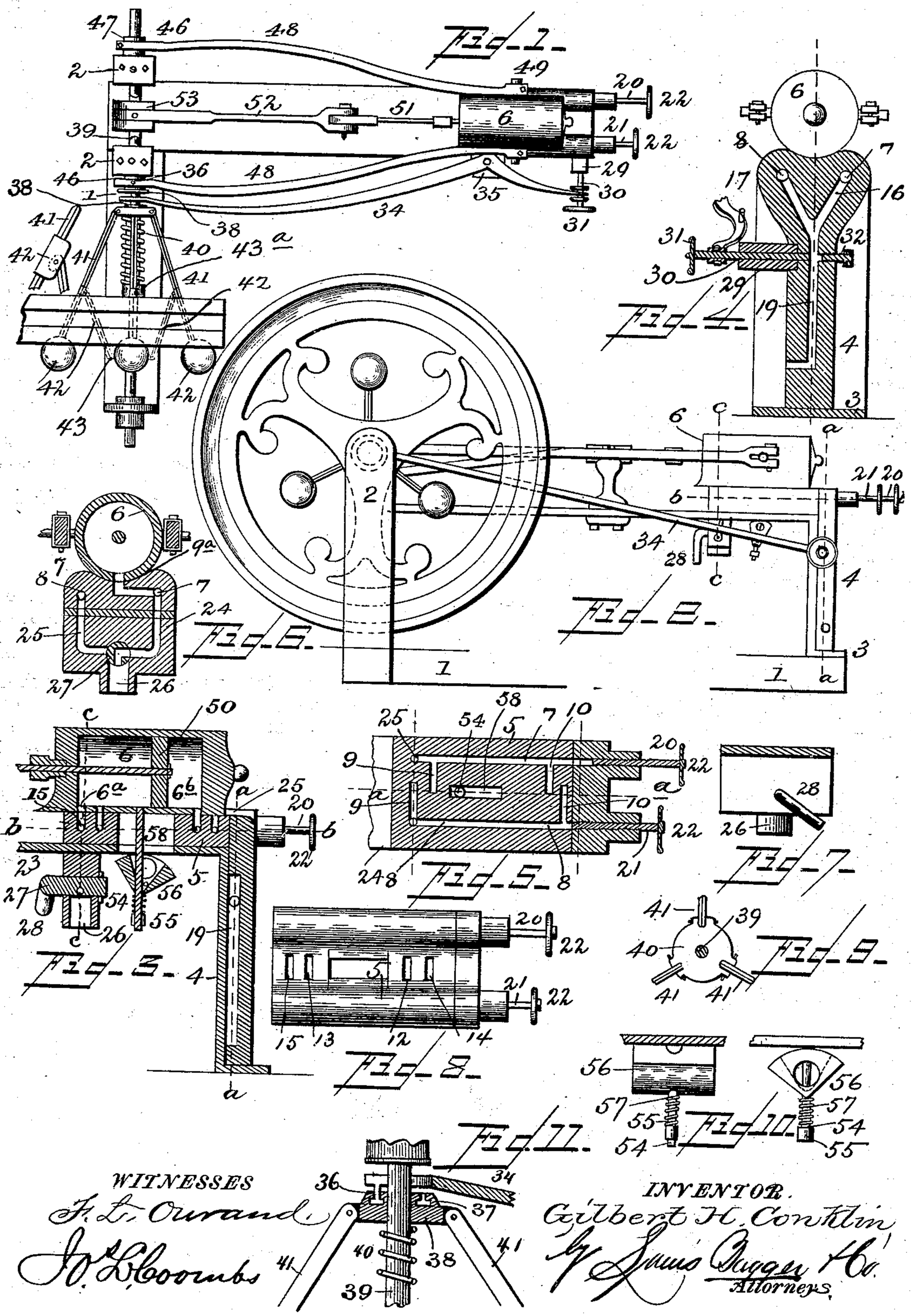
(No Model.)

G. H. CONKLIN.

STEAM ENGINE.

No. 506,473. Patented Oct. 10, 1893.



WITNESSES

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STEAM-ENGINE.

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To all whom it may concern:

Be it known that I, GILBERT H. CONKLIN, a citizen of the United States, and a resident of Riverhead, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in steam engines in which the cylinder provided with inlet and exhaust ports, reciprocates back and forth during the operation of the engine, to alternately bring the ports in its ends into alignment with similar or corresponding ports in the stationary bed upon which the cylinder reciprocates, thus acting in a reverse manner to the ordinary stationary cylinder engines provided with slide-valves.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings: Figure 1 is a plan view of an engine constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a central longitudinal sectional view of one end of the engine. Fig. 4 is a cross section on line *a*—*a*, Figs. 2 and 3. Fig. 5 is a horizontal section on the line *b*—*b*, Figs. 2 and 3. Fig. 6 is a cross section on the line *c*—*c*, Figs. 2 and 3. Fig. 7 is a detail elevation of the exhaust-pipe and handle for reversing the exhaust-valve. Fig. 8 is a top view of the bed upon which the cylinder reciprocates. Fig. 9 is a detail view of the inner end of the governor. Fig. 10 shows detail views of the devices for holding the cylinder on the bed. Fig. 11 shows the means for actuating the cut-off lever.

In the said drawings, the reference numeral 1 designates the base of the engine, and 2 the uprights which support the driving shaft.

The numeral 3 denotes a horizontal bar or plate provided with a standard 4, secured to the base 1. Firmly secured to this plate 4 is the bed 5, concaved upon its upper side to correspond with the contour of the cylinder 6, which is supported thereby. This bed is provided with a series of horizontal steam passages 7 and 8, and lateral steam passages 9, 10, and 9^a, 10^a. These passages 9 10 and 9^a, 10^a are adapted to register and communicate with the ports 12, 13, and 14, 15, in the bed 5, as hereinafter described, which in turn communicate with the cylinder through ports 6^a and 6^b. At one end the passages 7 and 8, communicate with diagonal passages 16 and 17, in a standard or upright 4, which passages lead to and communicate with a steam passage 19, in said standard adapted to be supplied with steam from any suitable source.

At the upper ends of passages 16 and 17, are valves 20 and 21 consisting of screw-rods provided with hand-wheels 22, by which they may be rotated to open and close communition between passages 7, 16, and 8, 17.

At its inner end the bed 5 is provided with a downward extension 23, provided with exhaust passages 24 and 25, which communicate at their upper ends with passages 7 and 8, while at their lower ends they communicate with an exhaust pipe 26.

Located in the exhaust pipe at its upper end is a two-way exhaust valve 27, provided with an operating handle 28, so that said valve can be rotated so as to communicate with either passage 24 or 25.

Near the upper end of passage 19, the standard 18 is provided with a sleeve 29, in which is located a valve 30, consisting of a rod provided with a hand-wheel 31. This rod is aligned with a plug 32, against which its end is adapted to abut when pushed in. Connected with this screw-rod is one end of a lever 34 pivoted to a lug 35 formed on the extension 23. The opposite end of this lever is provided with a stud 36 which works in a groove 37 in the flange of a sleeve 38, which embraces and works upon the driving shaft 39, journaled in the uprights 2. This sleeve is provided also with a flange 40 to which is pivoted a series of arms 41 having balls or weights 42 at their free ends.

To the arms 41 intermediate of their ends are pivoted arms 42, which in turn are pivoted to a sleeve 43 on shaft 39. Secured to this shaft 39, is a collar 43^a, against which abuts one end of a coiled spring 49, the other end of which bears against the sleeve 38.

Secured to the driving shaft are eccentrics 46, upon which work straps 47, formed with or secured to the rods 48, pivoted to studs 49 on opposite sides of the cylinder.

The numeral 50 denotes the piston, 51 the piston-rod, 52 the pitman, and 53 the crank.

The steam cylinder is provided on its under side with a downwardly projecting rod 54, screw-threaded at its lower end, and provided with an adjusting nut 55. Upon this rod is a segment 56 which is forced up against the under side of plate 4 by means of a coiled spring 57, so as to keep or hold the cylinder tightly upon its bed. The rod 54 passes through a slot 58, in the bed 5.

The operation is as follows: In the position shown in the drawings, where valve 20 is open, and valve 21 is closed, steam is admitted through a supply pipe to passage 19, and from thence passes through passages 16, 7, and 10, and ports 12 and 6^b to the cylinder, and exhausting through ports 6^a and 15, and passages 9^a and 24. When the piston has been forced to the opposite end of the cylinder, the latter will be moved by means of the eccentrics and connecting bars, so as to close port 10 and 15, and open ports 14 and 13, so as to admit steam to the cylinder upon the opposite side of the piston, exhausting through ports 6^b and 12, and passages 10^a, 7, and 24, as will be well understood by those skilled in the art. When it is desired to reverse the engine, the exhaust valve is reversed, and valve 20 closed, and valve 21 opened, when the operation will proceed in a similar manner, the passages 8, 10^a and 17 in this case however, being the supply passages, and passages 7, 9, 16, and 25, the exhaust. By means of the governor and the steam valve connected therewith, the steam supply may be regulated according to requirements. For instance, if the engine is running too fast, the balls 42 will swing outward, actuating the sleeve connected with the lever 34, which in turn will move the valve 30 inward, so as to diminish the area of the steam passage, and decrease the supply of steam to the cylinder. When the engine runs too slow however, the operation is reversed, and the steam supply increased.

Having thus described my invention, what I claim is—

1. In a steam engine the combination with the bed having a series of induction and eduction passages, the cylinder supported on said bed provided with inlet and exhaust ports, the piston, the piston rod and driving shaft, of the eccentrics on said shaft, the arms connected with said eccentrics, and with the cylinder, substantially as described.

2. In a steam engine the combination with the bed having a series of induction and eduction passages, the reciprocating cylinder having inlet and exhaust ports, the driving shaft, the eccentrics carried thereby and provided with bars connected with the cylinder, the valves located in said bed and the two-way exhaust valve, substantially as described.

3. In a steam engine the combination with the bed having steam passages therein, the reciprocating cylinder provided with steam ports, the driving shaft, the eccentric and the connecting bars, of the standard provided with diagonal passages, communicating with the passages in said bed, the steam supply passages provided with a valve the pivoted lever connected with said valve, and the governor connected with said lever, substantially as described.

4. In a steam engine the combination with the bed having steam passages and a slot on its under side, of the reciprocating cylinder having steam ports and provided with a downwardly extending rod passing through said slot, the adjusting nut, the coiled spring and the movable segment, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

GILBERT H. CONKLIN.

Witnesses:

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