

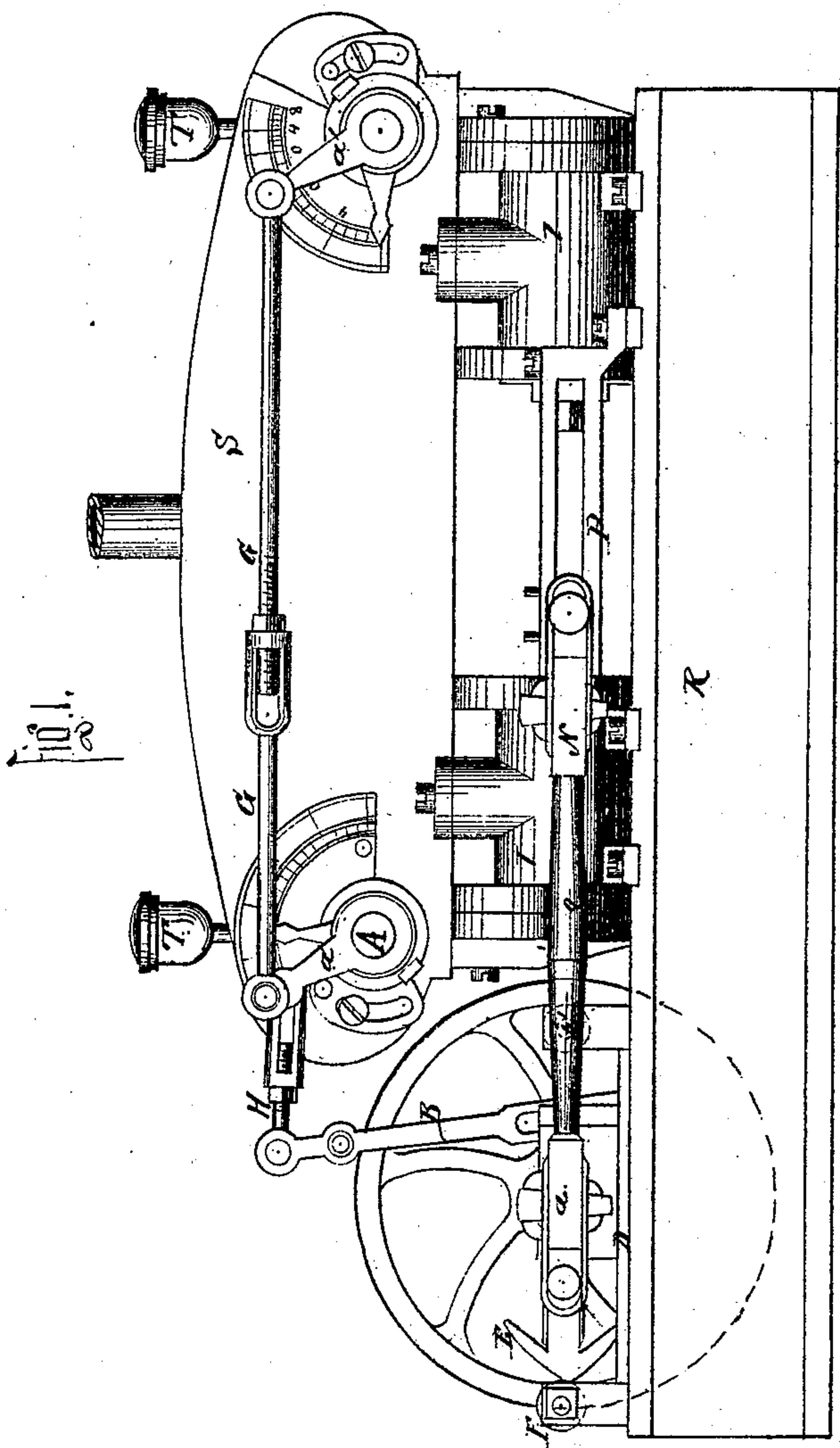
C. C. Waggoner,

Sheet 1-2 Sheets

Steam Engine.

No. 93,449.

Patented Dec. 28, 1869.



Witnesses:

Victor Hagmann
John C. Remon

Inventor:

C. C. Waggoner
per *[Signature]*
Attorneys.

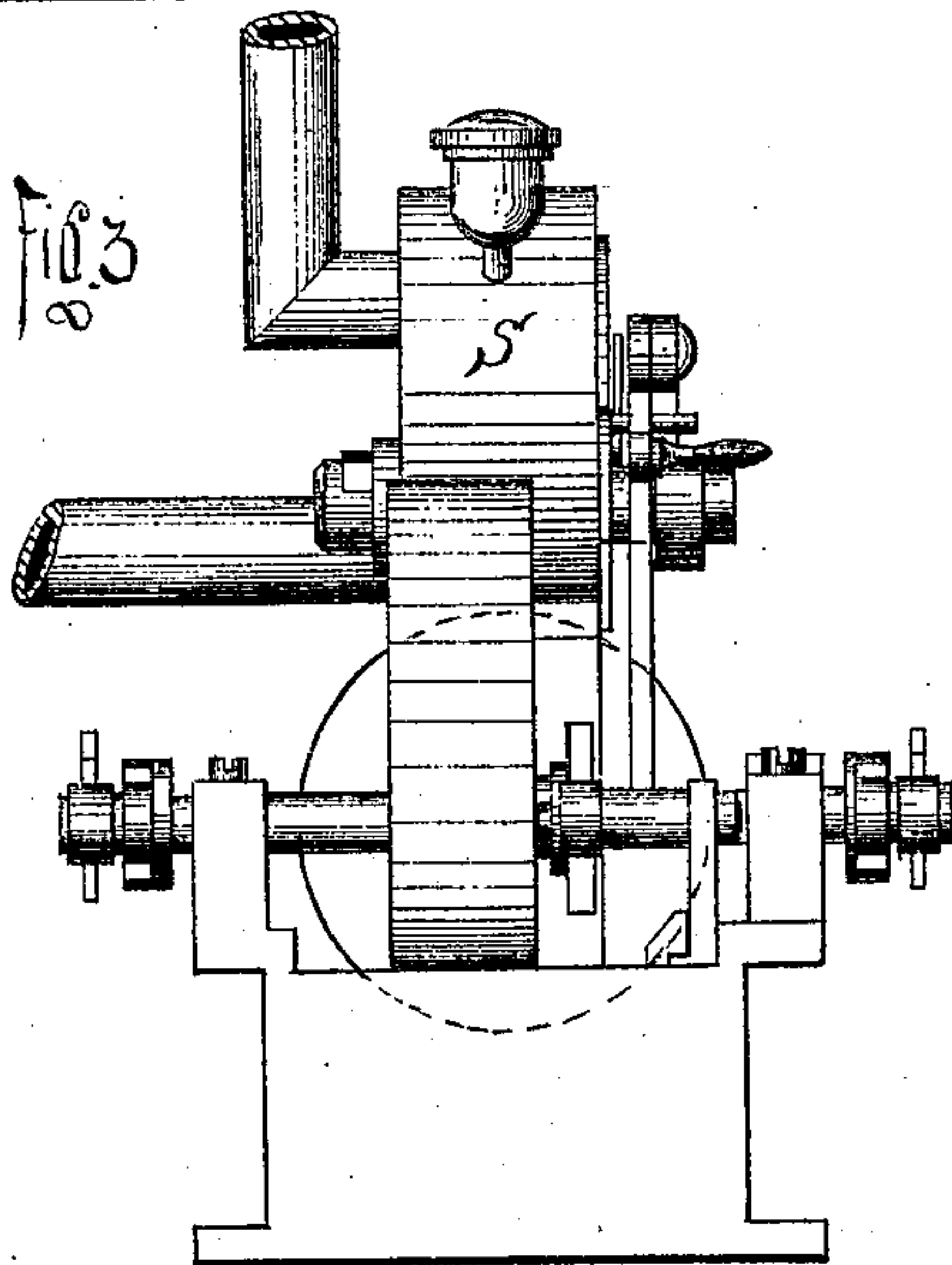
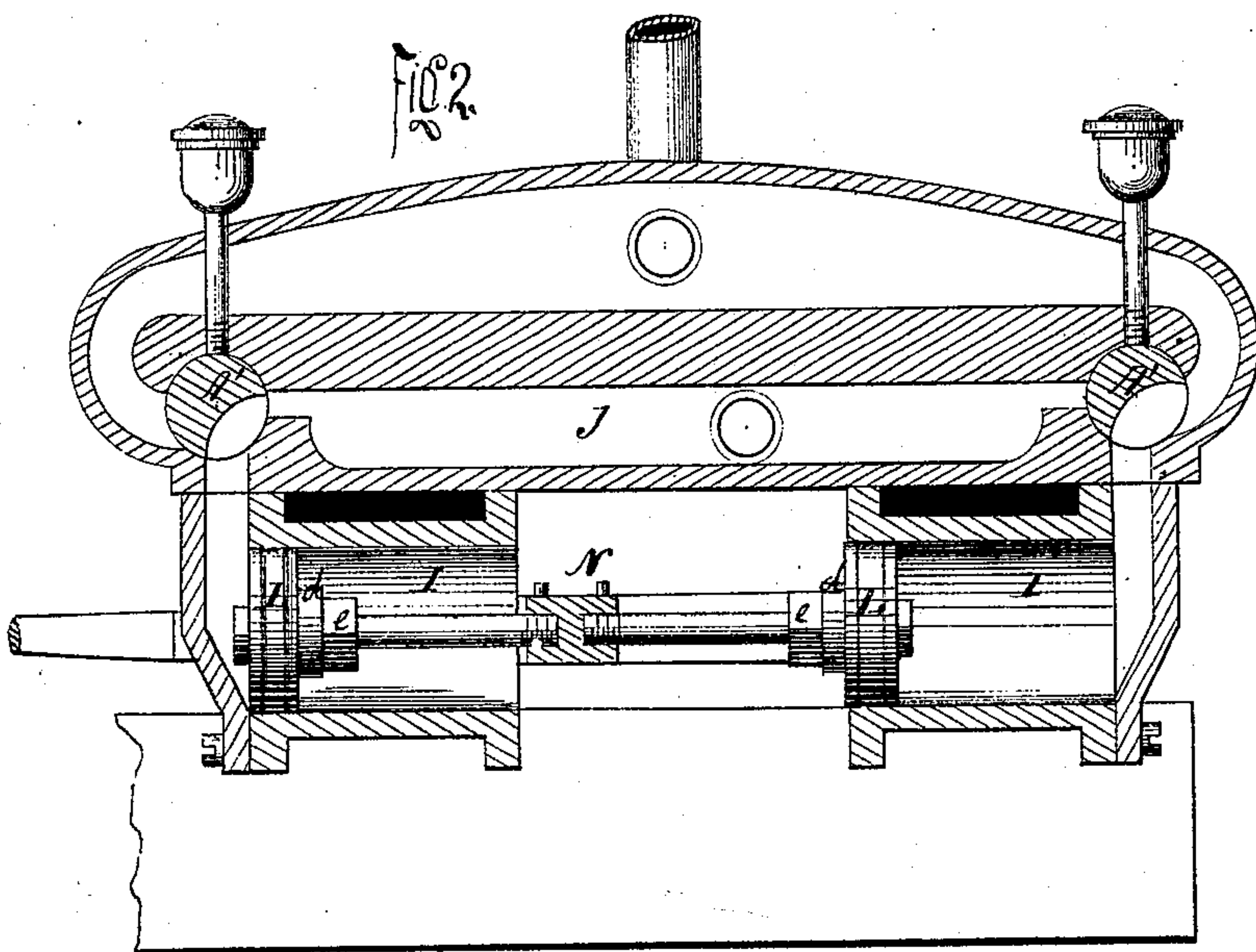
C. C. Waggoner,

Sheet 2 - 2 Sheets

Steam Engine.

No. 98,449.

Patented Dec. 28. 1869.

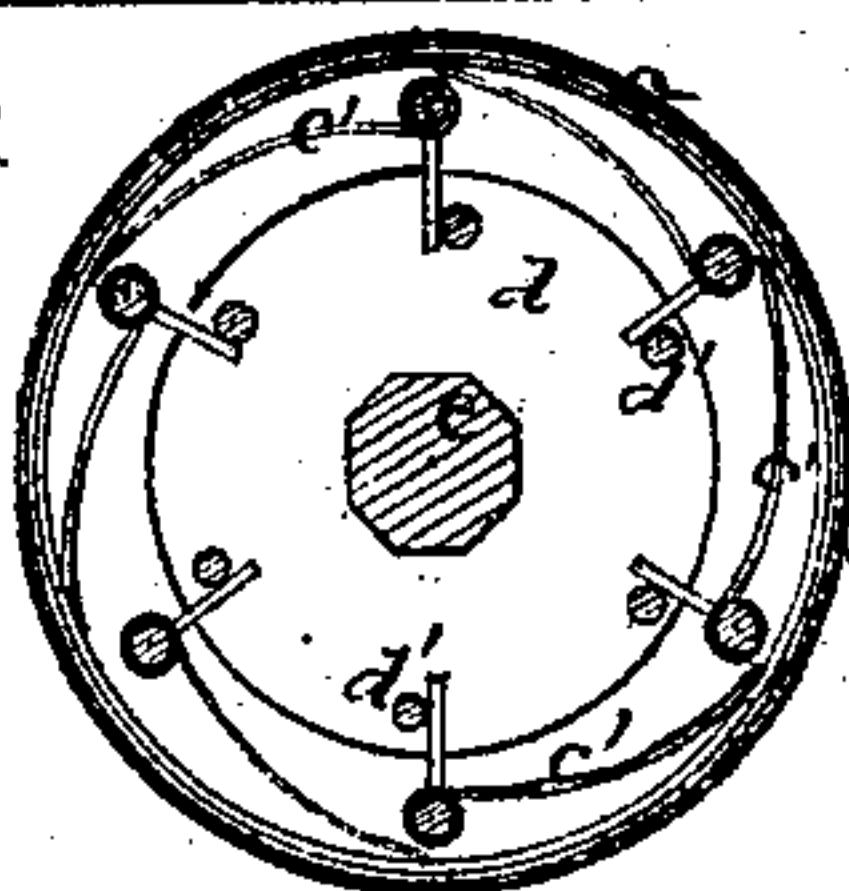


Witnesses:

Victor Hagmann

Solon Kemmon

FIG 4



Inventor:

C. C. Waggoner

per H. C. & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES C. WAGGONER, OF ST. JOHN'S, OHIO.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. **98,449**, dated December 28, 1869.

To all whom it may concern:

Be it known that I, C. C. WAGGONER, of St. John's, in the county of Auglaize and State of Ohio, have invented a new and useful Improvement in Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of the specification, in which—

Figure 1 is a side elevation, Fig. 2 is a longitudinal vertical section, Fig. 3 is an end elevation, and Fig. 4 is a transverse vertical section, of cylinder, showing packing ring and arrangements for tightening the same.

This invention consists, first, in a novel and peculiar mechanism for shifting the valves, whereby this operation may be performed in one-sixteenth of the time of the stroke; second, in connecting the valve-levers by a right and left hand screw, so as to increase or decrease the amount of steam entering the cylinders at the will of the engine; third, in a novel and peculiar mechanism for tightening the packing-rings about the piston.

In the drawings, R is the engine-bed, upon which rest the two horizontal cylinders I I, the pistons L L of which are operated by one cross-head, N, carrying two pitmen, o o, the ends of the cross-head playing in guide P, one on each side of the bed, and the two pitmen being connected with two cranks, one on each end of the fly-wheel shaft a.

E is an arrow-headed arm, projecting from said shaft a, the inclined head of which comes in contact, as the arm moves downward during the revolution of the shaft, with friction-wheels F, and, as the arm moves upward, with a friction-wheel, F', said wheels being placed in the ends of a horizontal slide, D, moving in the bed R, said slide having a pin, d, projecting from it and passing through a slot made lengthwise of the lever B, which lever is jointed at its lower end below the point where the pin d passes through it to the bed R. Hence the movements of the slide D impart a vibrating motion to the lever B, which it communicates, by means of the connecting-rod H, to the valve-lever a', projecting from the valve-stem A, extending outside the steam-

chest S, there being one valve at each end of the latter, the levers a' of which are connected by rods G G, having a right and left screw connection, by means of which the said rod G may be lengthened or shortened at pleasure, in order to increase or diminish the openings of the steam-ports. The valve-stems A, having a vibrating motion imparted, as above specified, communicate the same to the crescent-shaped valves A', and thus alternately open and close the ports opening out of the live-steam chamber J. Each valve A' alternately admits steam from the chamber J to the cylinder I, and out of the cylinder I into the exhaust-steam chamber S.

T T are oil-cups communicating with the valves by tubes t'.

Fig. 4 shows the manner of tightening the piston-packing when loose, wherein c is the split packing-ring, and c' elbow-springs for tightening it, the elbow-springs being pivoted upon pins projecting horizontally from the piston.

d is the rotatable "stress-head," as I call it, placed loosely upon the piston-rod, having pins d' in its outer side and near its rim, which, on turning the stress-head, force up the elbow-springs against the packing. The stress-head is held in the proper position by the follower-screw e, and is rotated by means of a lever inserted in the holes in its periphery.

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

1. The arrow-headed arm E, slide D, lever B, and valve-levers a', combined and arranged substantially as set forth.

2. The rod G, having a right and left screw connection, combined with the valve-levers a', as and for the purpose described.

3. The rotatable stress-head d, provided with pins d', in combination with follower-screw e, elbow-springs c', and packing-ring c, substantially as specified.

CHARLES C. WAGGONER.

Witnesses:

WILLIAM BUSH,
G. M. ROGERS,
LEWIS P. BAYLIFF.