

(No Model.)

2 Sheets—Sheet 1.

J. E. SMITH.

OSCILLATING STEAM ENGINE.

No. 290,713.

Patented Dec. 25, 1883.

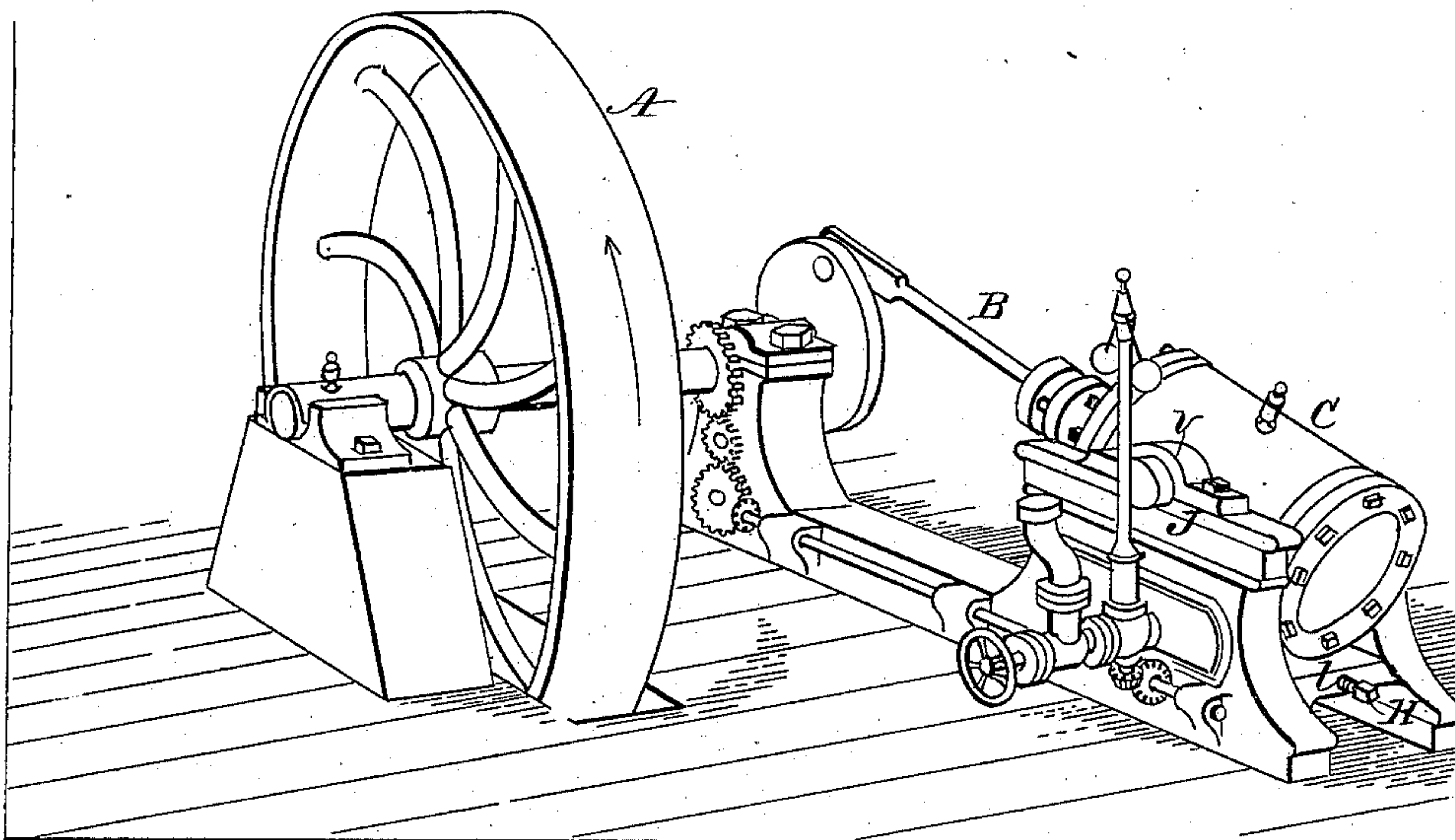


Fig. 1.

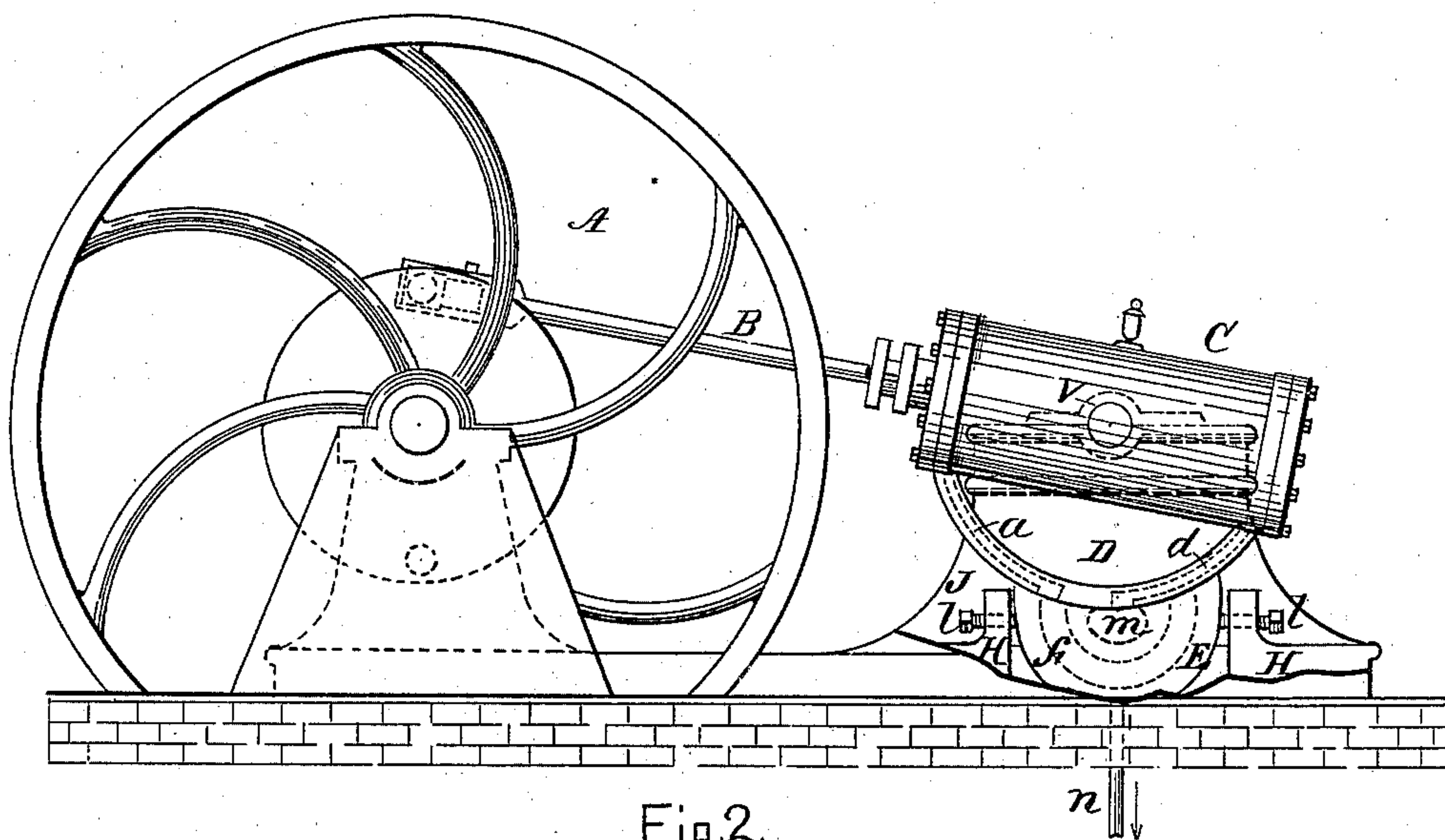


Fig. 2.

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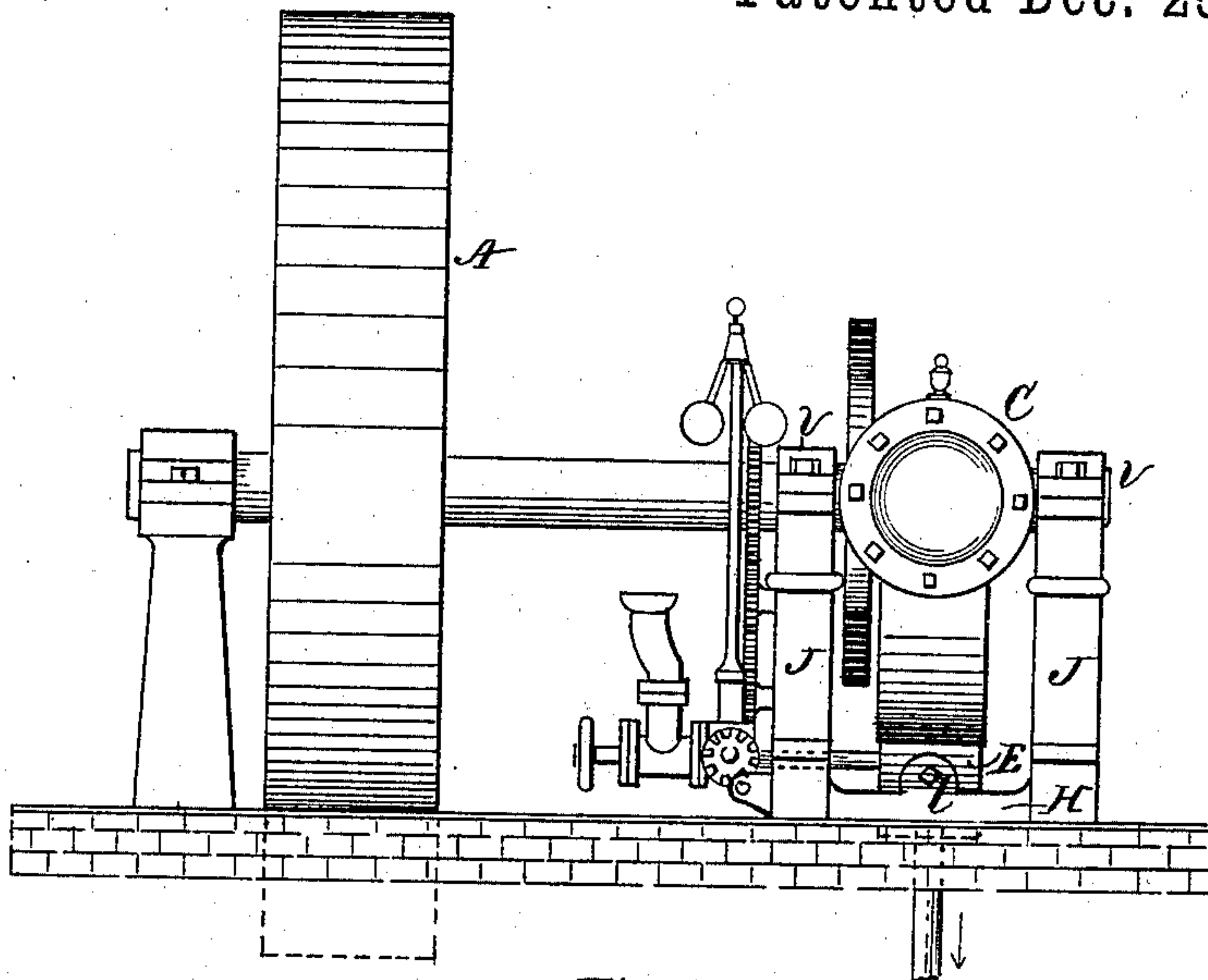


Fig. 3.

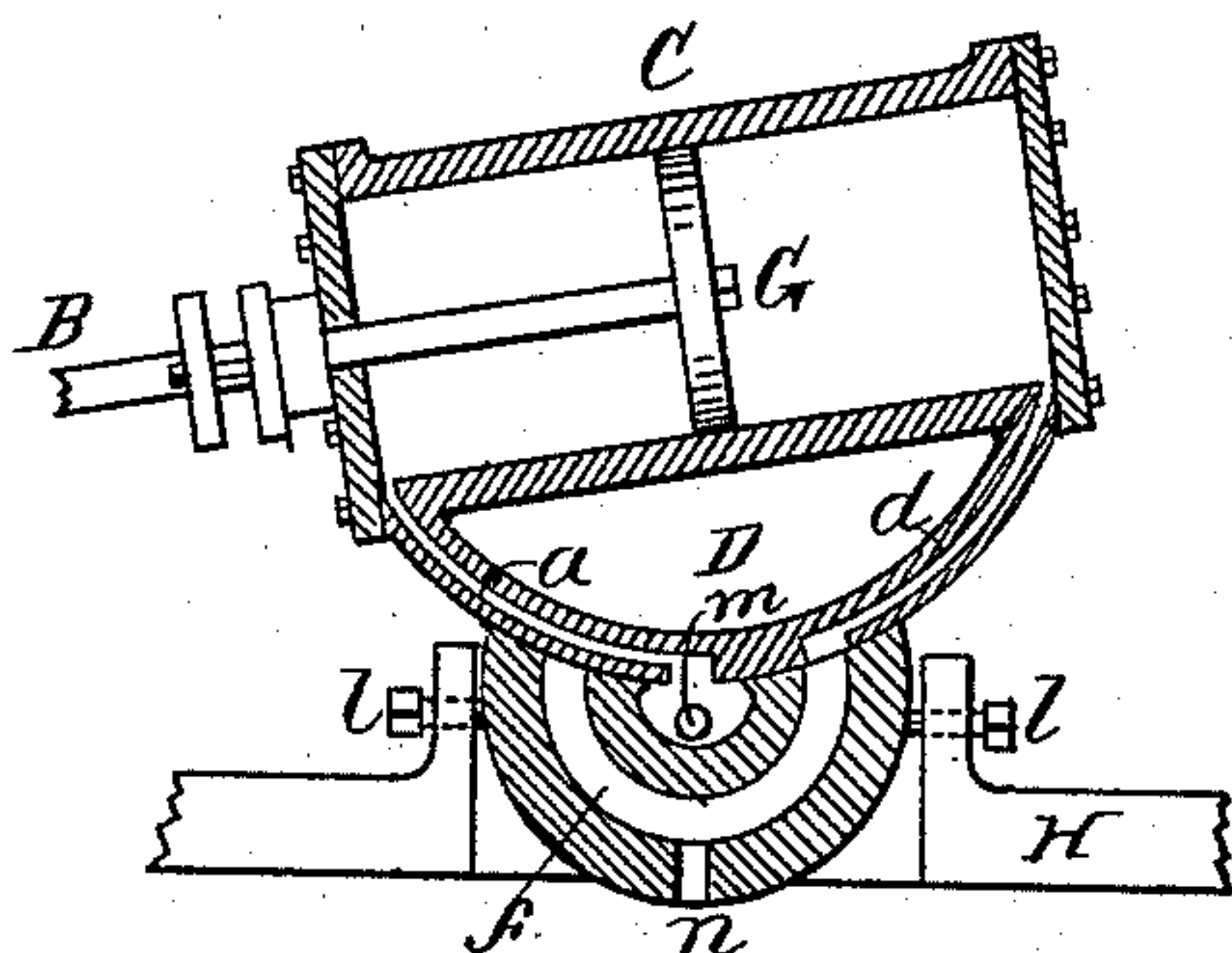


Fig. 4.

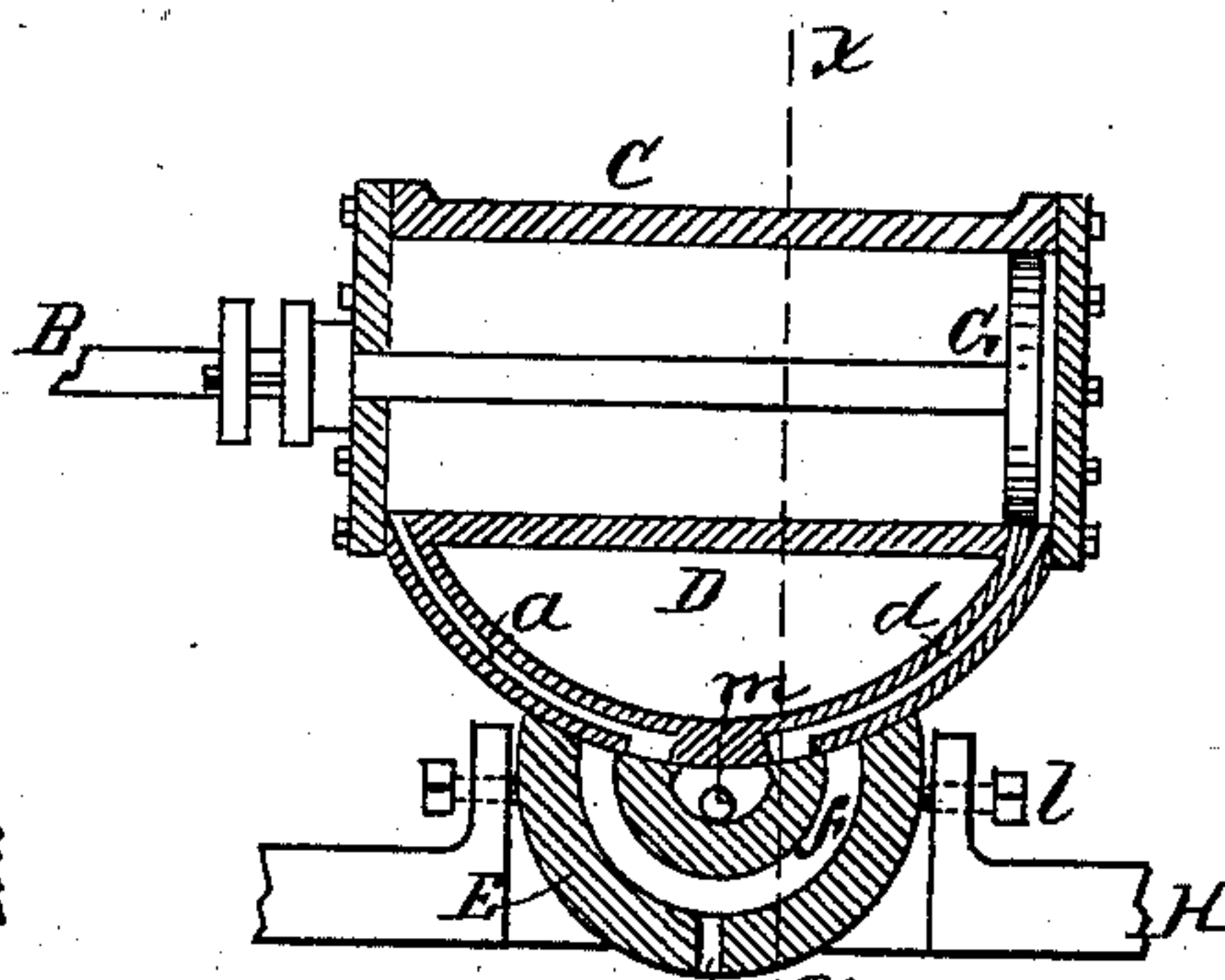


Fig. 5.

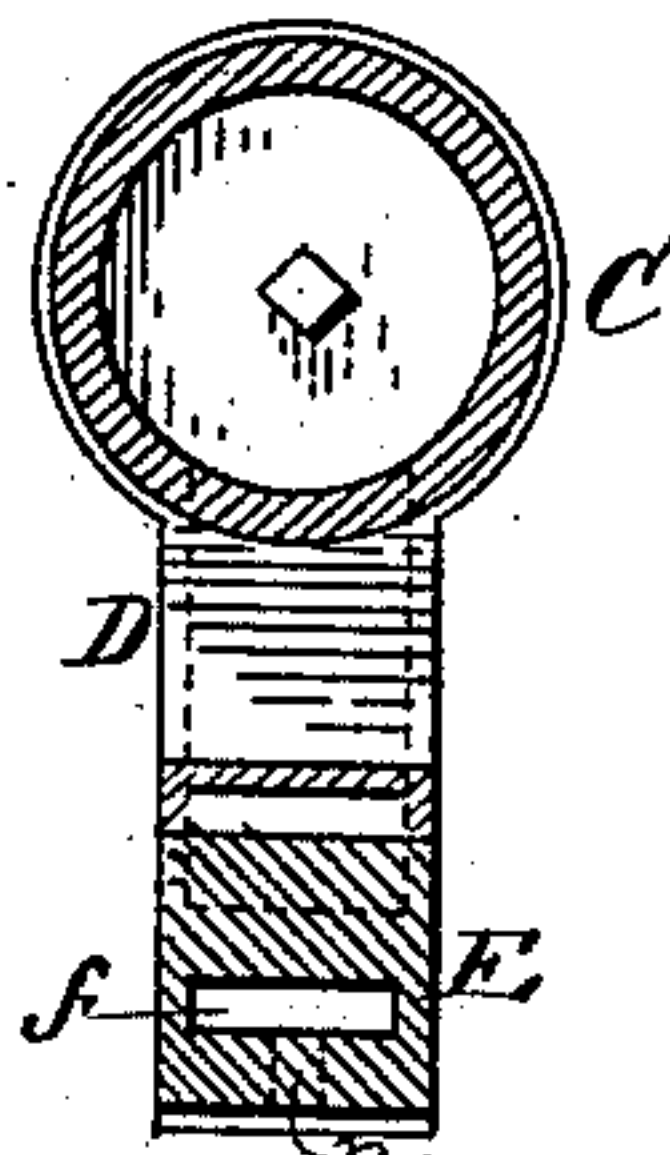


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN E. SMITH, OF BANGOR, MAINE.

OSCILLATING STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 290,713, dated December 25, 1883.

Application filed July 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. SMITH, of Bangor, in the county of Penobscot, State of Maine, have invented a certain new and useful Improvement in Oscillating Steam-Engines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view, representing an engine provided with my improvement; Fig. 2, a side elevation of the same; Fig. 3, an end view; Fig. 4, a vertical longitudinal section of the cylinder and seat, the piston being represented at half-stroke; Fig. 5, a like view, the piston being represented at full-stroke; and Fig. 6, a vertical transverse section taken on the line *xx*, Fig. 5.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates exclusively to oscillating steam-engines; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation, its extreme simplicity rendering an elaborate description unnecessary.

In the drawings, A represents the balance or fly wheel, B the piston-rod, and C the cylinder, these parts being of the ordinary form and construction, except as hereinafter specified.

Attached to the lower side of the cylinder, and preferably cast integral therewith, there is a curved projection, D, finished on its outer or lower face to form the arc of a true circle, and provided with the independent steam-ports *a* and *d*, said ports opening into the respective ends of the cylinder and downwardly through the projection D. A seat, E, concaved on its upper side to receive the projection D, is disposed beneath the cylinder, said seat being provided with the induction steam-pipe *m* and

with the curved exhaust-port *f*, having the mouth or port *n*.

In the use of my improvement, steam is let into the induction-pipe *m*, from whence it passes through the port *a* into the cylinder above the piston G, the piston being forced thereby down to the bottom of the cylinder and the wheel A revolved. As the wheel turns the upper end or head of the cylinder is elevated, and the port *a* opened into the port *f* and the port *d* into the pipe *m*. The engine then exhausts from above the piston G through the ports *a f n*, while at the same time live steam from the pipe *m* passes through the port *d* into the cylinder below the piston, and forces it upwardly or toward the rod B, after which, the wheel A continuing to turn, the forward end of the cylinder is again depressed until the steam is exhausted from below the piston and live steam let in above it.

In practice I have found that the steam heats the projection D and cylinder C with much greater rapidity than it does the seat E when all of these parts are composed of iron, thereby causing the engine to leak steam when first started up. I therefore construct the seat E of brass, composition, or of some metal which is a better conductor of heat than iron, whereby this defect is entirely obviated.

The seat is mounted in a carriage or support, H, and provided with the adjusting-screws *l l*, for forcing it against the projection D, or to take up the wear and produce a steam-tight joint between the seat and said projection beneath the cylinder C, which is journaled at *v*, to oscillate in the usual manner in the standards J; but, instead of the screws, any other suitable means for the same purpose may be employed.

Having thus explained my invention, what I claim is—

1. In an oscillating steam-engine, the combination, substantially as set forth, of an oscillating cylinder provided with an arc-shaped projection or rocker composed of metal and having steam-ports, and a concave seat having steam inlet and exhaust ports and composed of metal which is a better conductor of heat than the metal of the rocker.

2. The seat E, constructed as described and composed of brass, composition, or some metal

which is a better conductor of heat than iron, in combination with the cylinder C, having the projection D, said projection being constructed as described and composed of iron, substantially as and for the purpose specified.

5 3. The combination of the oscillating cylinder C, provided with the arc-shaped projection D, having steam-ports *a d*, opening near the center, a concave seat, E, having a central
10 induction-port, *m*, and an arc-shaped exhaust-

port, *f*, provided with a central discharge, *n*, the support H, provided with upwardly-projecting ears, and the horizontal clamping-screws *ll*, extending through said ears and supporting said seat, substantially as described.

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Witnesses:

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