2 Sheets—Sheet 1.

W. SIMS.
Cut-Offs.

No. 211,799. Patented Jan. 28, 1879.

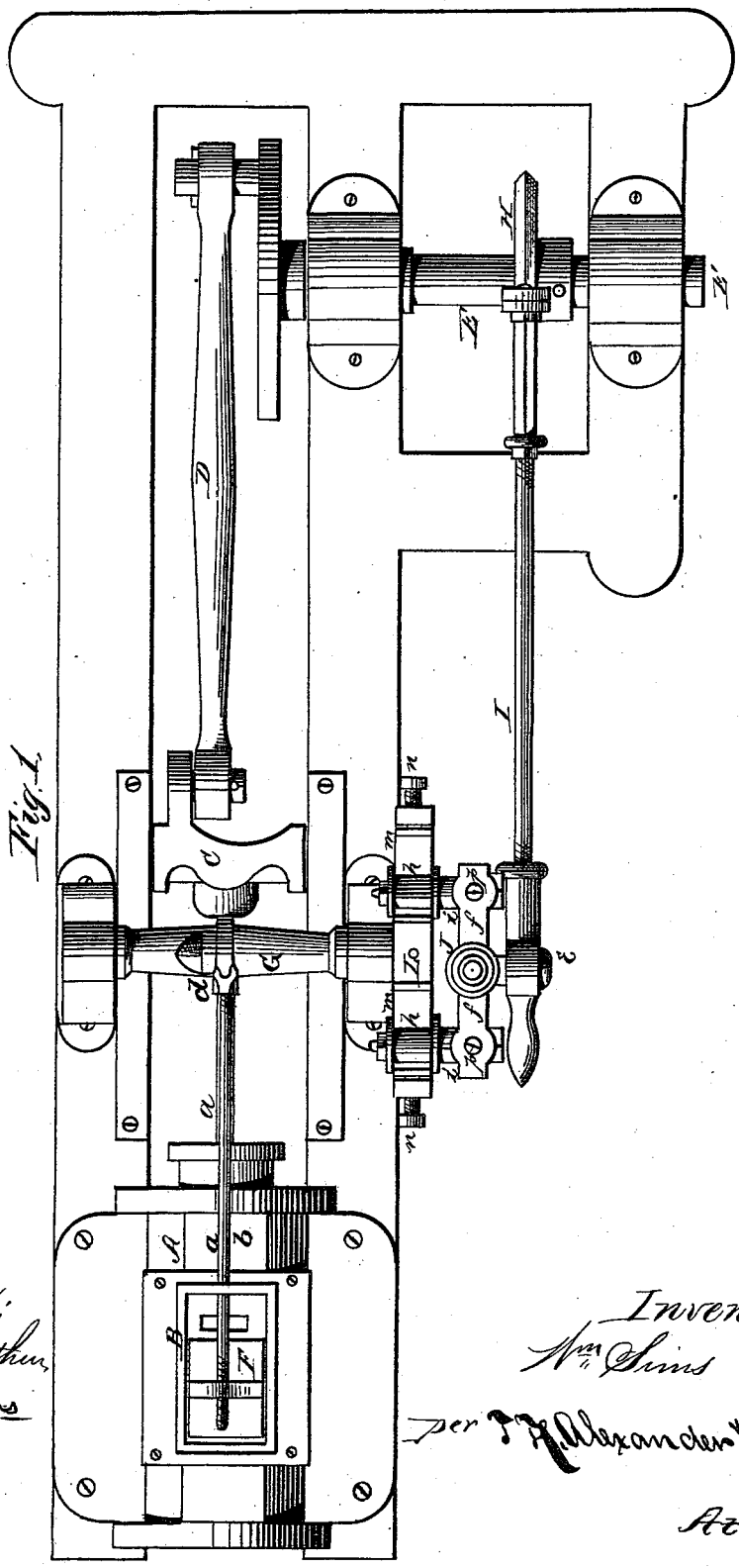

Fig. 1.

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2 Sheets—Sheet 2.

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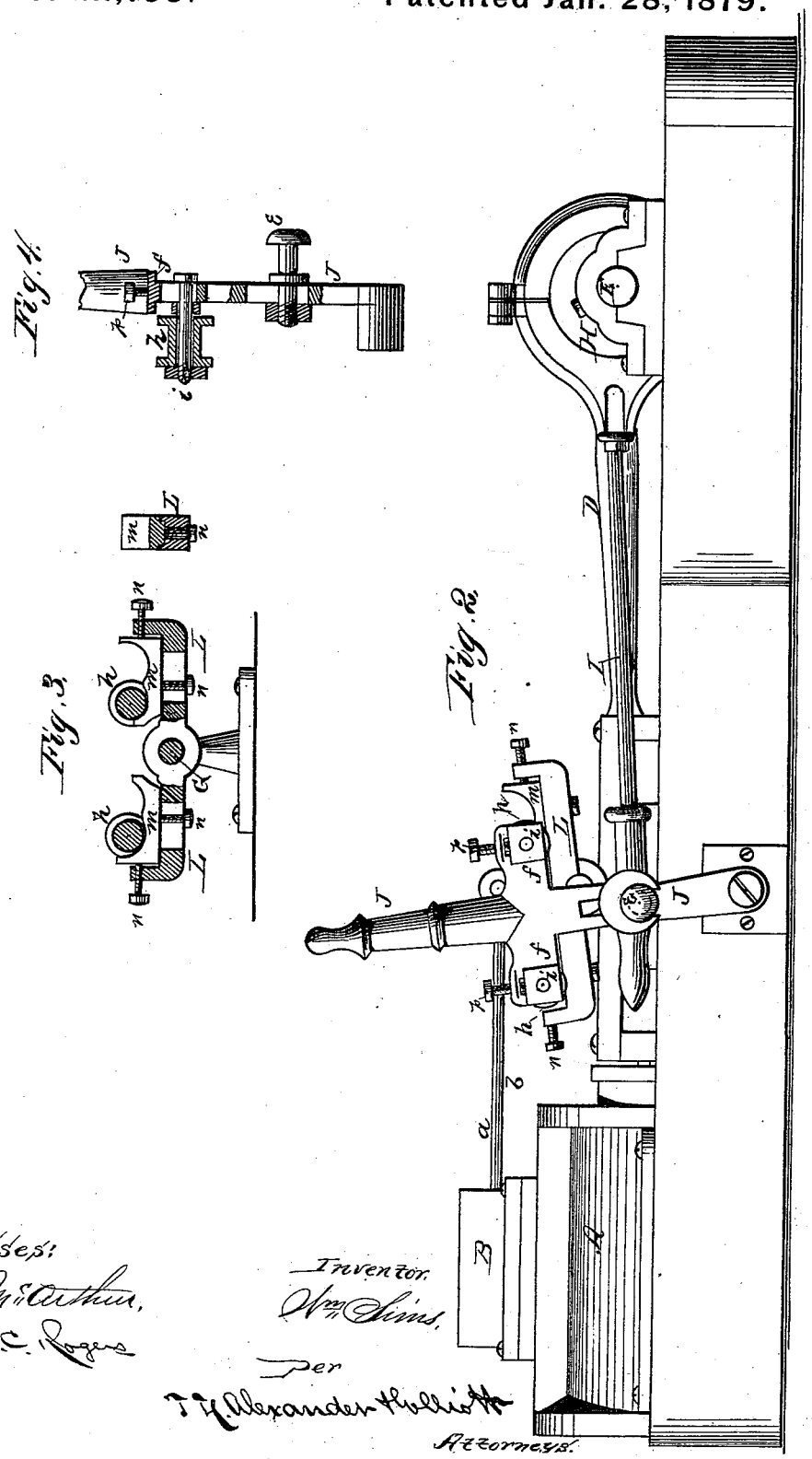

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM SIMS, OF RIPLEY, OHIO.

IMPROVEMENT IN CUT-OFFS.

Specification forming part of Letters Patent No. **211,799**, dated January 28, 1879; application filed December 20, 1878.

To all whom it may concern:

Be it known that I, WILLIAM SIMS, of Ripley, in the county of Brown and State of Ohio, 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 thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to slide-valve engines; and it consists in the construction and arrangement of a cut-off attachment for the same, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view; Fig. 2, a side elevation; and Figs. 3 and 4 are detail sectional views of parts of my engine.

A represents the steam-cylinder, with valve-chest B. *a* is the piston-rod, connected with the cross-head C, and this cross-head connected by a pitman, D, with a crank on the shaft E.

F is the slide-valve, provided with an adjustable rod, *b*, which connects with an arm, *d*, on a rock-shaft, G.

The shaft E is provided with an eccentric, H, having the usual strap, with adjustable rod I, to act upon a wrist-pin, *e*, projecting from a lever, J. This lever is slotted, and the wrist-pin *e* allowed to be adjusted up and down in said slot, to regulate the travel of valve.

The lever J is pivoted to a stud on the frame of the engine, at its lower end, and it is provided with two slotted arms, *f f*, in each of which is placed a stud, *i*, with rollers *h h* placed thereon. These rollers play back and forth over cams *m m* on the ends of a beam, L, secured to the end of the rocking shaft, G. Each cam is held to its place by two set-screws, *n n*, which renders it adjustable. The wrist-pins or studs *i* are also adjustable, and held down to the work by set-screws *p p* from the top, which also take up the wear.

On a quick-working engine the rollers *h* are to be made of iron spools, with one flange screwed on. Between the two flanges are to be put leather rings until the space between the flanges is filled up and compressed hard, thus rendering it noiseless. On a slow-moving or long-stroke engine the rollers work smoothly without leather. When these parts are properly adjusted, as soon as the engine passes its center about four inches the steam-opening is full open, and then the valve remains stationary until the piston has traveled the desired distance. The valve is then made to move quickly and cut off the steam. The piston travels the balance of the stroke by expansion. The valve then moves quick again and throws on a full head. These two quick movements are produced by the action of the rollers *h* on the cams *m*.

The cams *m* are constructed as shown in Fig. 3, and upon their shape depends the proper movement of the valve. As the roller passes over one incline it causes the cut-off, as it passes down the next incline the valve remains stationary, and as it travels the third incline it gives steam and throws the opposite cam in position to repeat the operation. The rollers *h* are flanged to fit over the cams and impart firmness to the lever.

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

1. In a cut-off attachment for slide-valves, the combination of the lever J, carrying the rollers *h h*, with the cams *m m* on the beam L, attached to the rocking shaft G, substantially as and for the purposes herein set forth.

2. In a cut-off attachment for slide-valves, the combination of the pivoted lever J, having slotted arms *f f*, the adjustable studs *i*, set-screws *p p*, and rollers *h h*, as and for the purposes herein set forth.

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

WILLIAM SIMS.

Witnesses:
CHAS. ZAUMSEIL,
W. MADDOX.