(No Model.)

E. HAUG.

Balance Slide Valves.

No. 232,271. **Patented Sept. 14, 1880.**

Fig: 1.

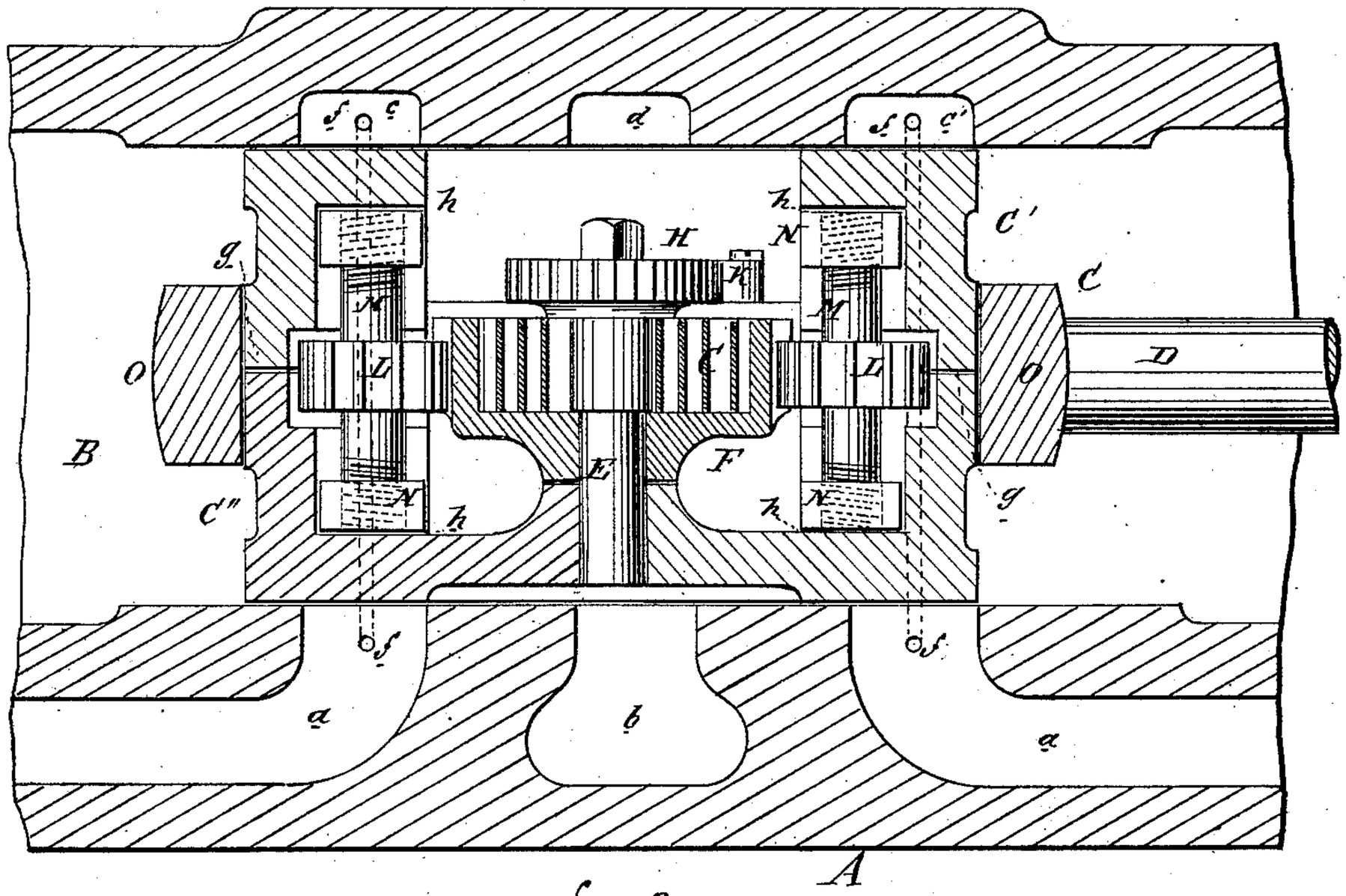
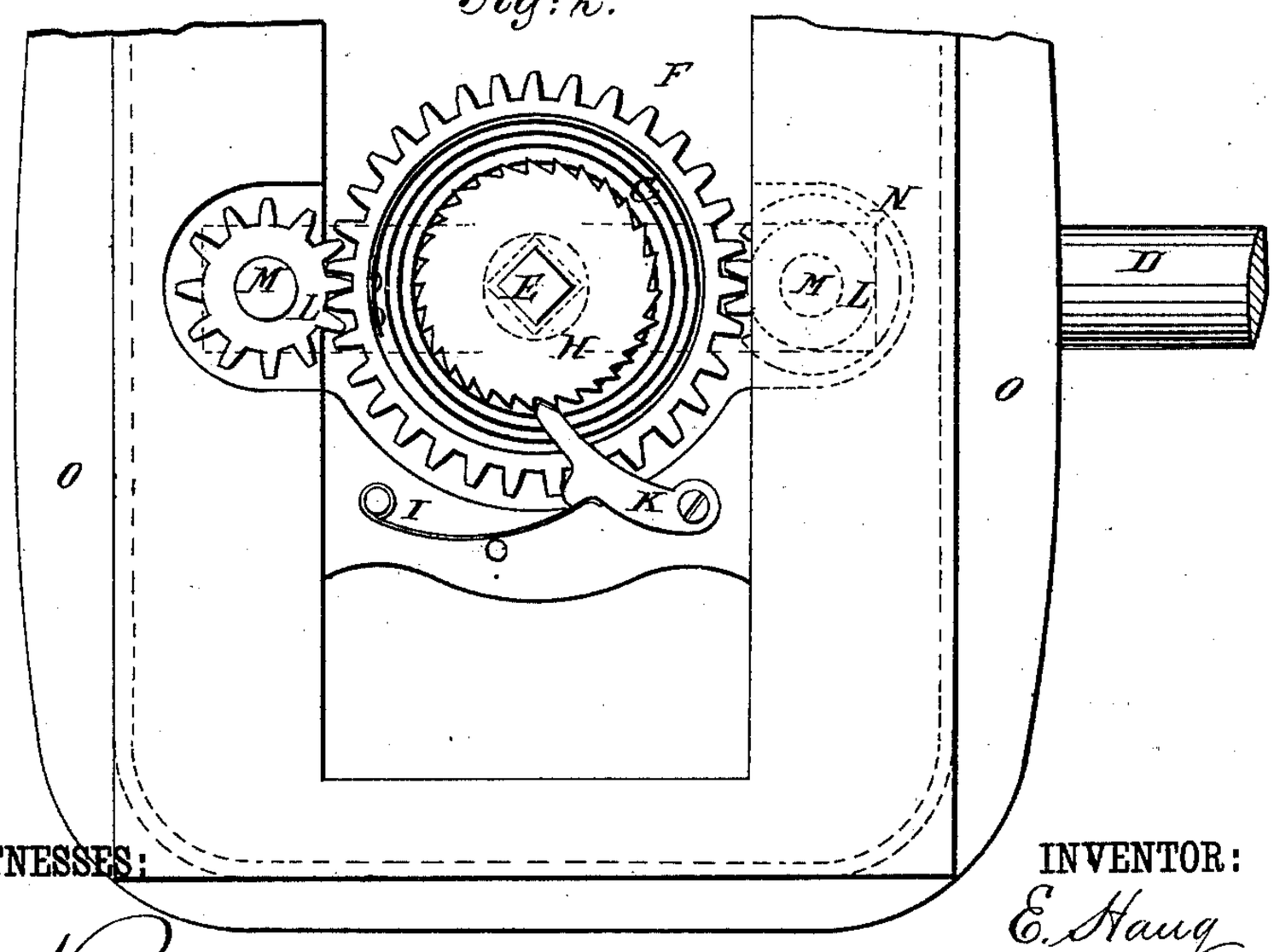


Fig: 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDMUND HAUG, OF WHISTLER, ALABAMA.

BALANCE SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 232,271, dated September 14, 1880.

Application filed May 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDMUND HAUG, of Whistler, in the county of Mobile and State of Alabama, have invented a new and Improved Balance Slide-Valve, of which the following is a specification.

The object of this invention is to secure equal steam-pressure upon the top and bottom of a steam-engine valve as soon as expansion takes place in the cylinder.

Figure 1 is a longitudinal sectional elevation of the valve in position on the steam-cylinder. Fig. 2 is a plan of the valve with the top of the valve-chest removed.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a steam-cylinder provided with inlet-ports *a a* and exhaust-port *b*. B is a valve-chest provided with top or cover B′, in the under side of which the three cavities *c c′ d* are formed, the two former being of like form or size with the inlet-ports *a a*, and the latter of like form and size with the exhaust-port *b*. The channels or tubes *f f* pass through the sides of the chest and connect the cavities *c c′* with the inlet-ports *a a* of the cylinder A, so that steam entering from the valve-chest B into the inlet-ports *a a* of the cylinder A will pass up through the channels *f f*, and bear with equal pressure on the top and on the bottom of the valve C.

In order to take up the wear automatically the valve C is parted in two longitudinally, as shown at *g*, just on the center line of the valve-rod D.

In the center of the lower section of the said valve C is fixed a shaft, E, which projects upward into the interior or exhaust opening of the said valve, and has fixed upon it the hollowed or recessed cog-wheel F, which contains the coiled spring G, one end of which spring G is secured to the shaft E, and the other against the inner face of the said cog-wheel F.

H is a ratchet-wheel keyed horizontally upon the said shaft E above the cog-wheel F, and I is a spring holding the pawl K in the teeth of the ratchet H, in order to preserve the tension of the spring G when the said spring G is wound up. On either side of the cog-wheel F, and in gear therewith, are the pinions L L, keyed upon their respective shafts M M, which shafts M M are upright and set within recesses *h h* on either side of the exhaust-opening of said valve. The ends of these shafts M M are, respectively, right and left screw threaded, and have fitted on them the nuts N, that respectively press tightly against the top and bottom sections of the said valve C, so that as the upper and lower surfaces of the said valve wear the tension of the spring G causes the cog-wheel F to turn and impart its motion to the pinions L, and thence to the pinion-shafts M, to force the said nuts N apart, and to thereby press the top and bottom parts, C′ and C″, respectively, of the said valve C always steam-tight against their respective wearing-surfaces.

O is the ring or band fitted steam-tight about the joint *g*, formed between the two valve-sections. This valve C may be operated in the position shown in the drawings, or may be reversed and operated with equal advantage.

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

In a balance slide-valve made in two parts, the combination, with the cog-wheel F, spring G, pinions L, pinion-shafts M, and nuts N, of the ratchet H and pawl K, substantially as herein shown and described, whereby the said spring is held in tension, as set forth.

EDMUND HAUG.

Witnesses:
DENNIS RYAN,
GEO. W. DALY.