R. Mc Dorrell,

Exhaust Mechanism for Locomotives.

No. 39,583. Patented Aug. 18, 1863.

Fig. 2.

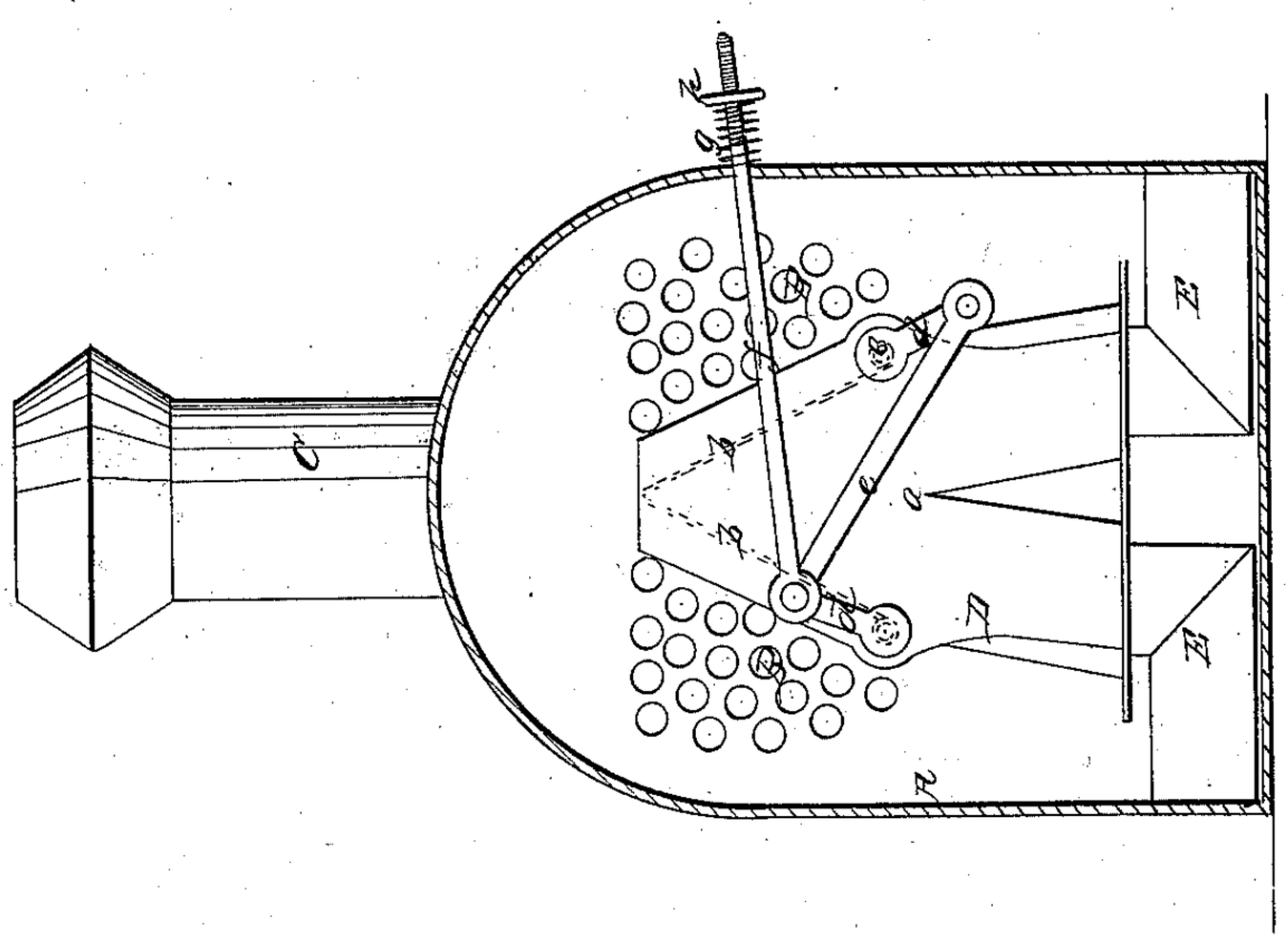
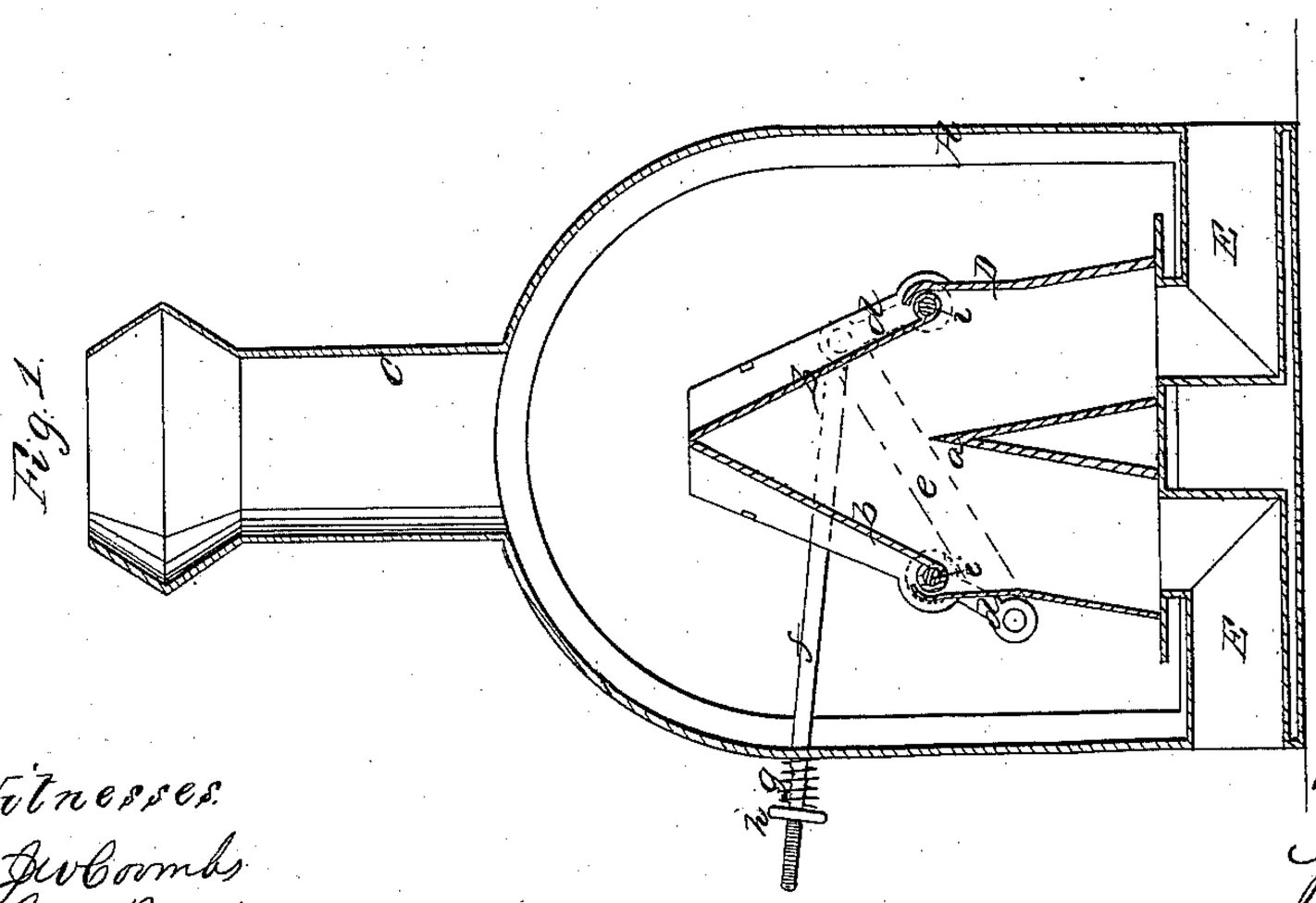


Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

RICHARD McDOWELL, OF LAMBERTVILLE, NEW JERSEY.

IMPROVED VARIABLE EXHAUST FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **39,583,** dated August 18, 1863.

To all whom it may concern:

Be it known that I, RICHARD McDOWELL, of Lambertville, in the county of Hunterdon and State of New Jersey, have invented a new and Improved Self-Regulating Variable Exhaust; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a transverse vertical section of my invention, looking from the inside of the smoke-box. Fig. 2 is a similar section looking from the outside of the smoke-box.

Similar letters of reference in both views indicate corresponding parts.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.

A represents the smoke-box of an ordinary locomotive boiler. The products of combustion enter into said smoke-box through the heating-tubes B, and pass off through the smoke-stack C.

D is the exhaust, which consists of a conical chamber, *a*, from the bottom of which two pipes, E, lead, one to each of the steam-cylinders. The top of the chamber *a* is closed by two wings, *b*, which are hinged to rods *c*, so that they open and close freely. The rods *c* extend through the sides of the chamber *a*, and arms *d* are firmly keyed one to the end of each of said rods. These arms point in opposite directions, and they are connected to each other by a link, *e*, and one of the arms also connects with a rod, *f*, which is subjected to the action of a spring, *g*. The power of this spring can be regulated by a nut, *h*, and its action on the arms *d* is such that the wings *b* have a tendency to close when not exposed to a counteracting force. If the exhaust-steam rushes into the chamber *a* it acts upon the inner surfaces of the wings *b*, and causes them to open, and it is obvious that the orifice between the wings will be larger or smaller, according to the larger or smaller force of the steam acting on said wings. By this arrangement the orifice of the exhaust regulates itself automatically, according to pressure and volume of the exhaust-steam, and the engineer is not compelled to pay any further attention to this part of his engine after he has once set the spring to the proper tension.

I do not claim, broadly, the invention of a self-acting exhaust-regulator; but

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the spring *g* with the wings *b b* and exhaust D, in the manner herein shown and described.

R. McDOWELL.

Witnesses:

JOHN KENNEDY,

JAMES BROUGHTON.