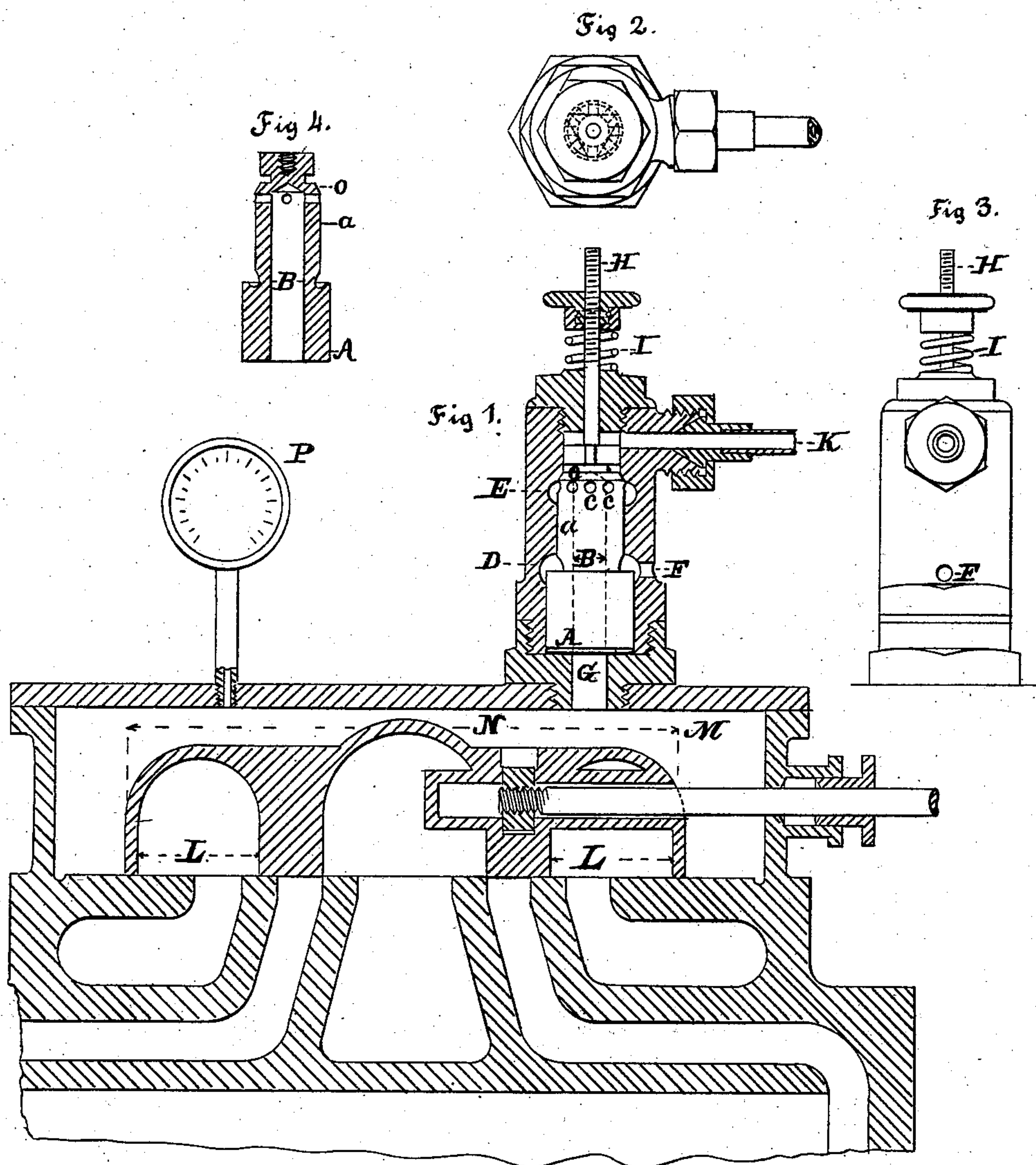


(No Model.)

E. RUUD.
BALANCED SLIDE VALVE.

No. 260,612.

Patented July 4, 1882.



Witnesses.
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EDWIN RUUD, OF ALTOONA, PENNSYLVANIA.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 260,612, dated July 4, 1882.

Application filed November 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWIN RUUD, a citizen of Norway, residing at Altoona, in the county of Blair and the State of Pennsylvania, have
5 invented a new and useful Improvement in Balancing Slide-Valves of Steam-Engines; and I do hereby declare the following to be a full and clear description of the invention.

This invention relates to an improvement in
10 the balancing slide-valves of steam-engines.

The object I desire to attain is to prevent the heavy pressure on the back of the slide-valve, which large friction is a great loss for every steam-engine.

15 Figure 1 is a vertical section of the apparatus, and also the slide-valve and steam-chest. Fig. 2 is a top view of apparatus. Fig. 3 is a side view of the same, and Fig. 4 is a vertical section of the valve.

20 Similar letters refer to similar parts throughout the several views.

A *a* is one cylinder, but with different diameters, and the small end consists of a valve, O.

25 B is a hole in the cylinder's passage from the valve and downward.

C are small holes, which open into the larger hole, B.

30 E is a groove in the sleeve. D is also a groove, and F is a hole for letting the pressure on the back side of the balancing slide-valve out to the air.

G is a hole which continues from B.

H is a screw for tightening or loosening the spring I.

35 K is a pipe supplied with steam from the boiler or from L. The steam comes to the cylinder from L. The idea is to get a pressure in the steam-chest just large enough to keep the slide-valve down. Therefore the area
40 of the large end of the cylinder A is in proportion to the area of the small end *a* or valve O as the area of the slide N is in proportion to the area of the steam-ports L+L.

45 The operation is as follows: The steam enters at K, passes down through the valve O, fills the groove F, and enters the holes C, and then to the larger hole, B, and passes down to the steam-chest M. As soon as the pressure

on the area of the large end of the cylinder becomes greater than the pressure on the valve
50 O the valve will be pressed up to its seat, and no steam will be let through. By the spring I and the screw H the pressure in the steam-chest can be regulated some few pounds. By the steam-gage P the pressure in the steam-
55 chest can be indicated, so that the right pressure may be kept in the steam-chest.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A slide-valve, in combination with the
60 valve-cylinder A, for regulating the pressure on the back of said valve, said cylinder being provided with a passage through it and a valve, O, at the small end of said cylinder, the area of the large end of cylinder A being in the
65 same proportion to the small end of the cylinder as the area of said slide-valve is in proportion to that of the ports which it covers and moves, substantially as set forth.

2. The combination, with the valve-cylinder
70 A, having its smaller end, *a*, provided with a valve, O, and a passage, B, in said cylinder, of the grooves D E, passage F, and steam-chest M, having slide N and ports L, substantially as set forth.

3. The combination, with a valve-cylinder of different diameters, as stated, the small end thereof comprising a valve, O, and provided with a passage, B, and holes C opening into said passage, of the grooves D E, hole G,
80 steam-chest M, having slide N and ports L L, and devices for regulating the pressure within the steam-chest, substantially as specified.

4. A slide-valve, in combination with a regulating-valve cylinder, located in the passage
85 leading thereto, said cylinder consisting of a larger and a smaller portion, and provided with a valve and passage, substantially as set forth.

5. Screw-threaded rod H and its nut, in combination with spring I, valve O, regulating-cyl-
90 inder A, having passage B, and the slide-valve, substantially as set forth.

EDWIN RUUD.

Witnesses:

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