(No Model.)

J. B. CONRAD.

BALANCED SLIDE VALVE.

No. 261,206. Patented July 18, 1882.

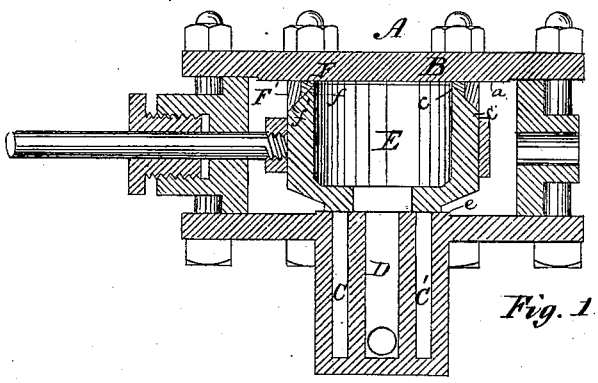

Fig. 1

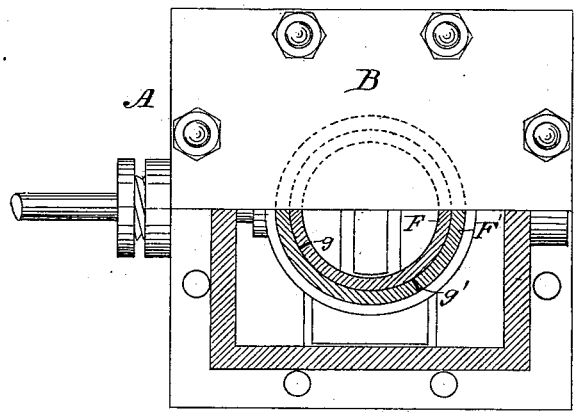

Fig. 2.

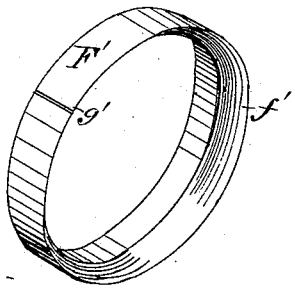

Fig. 3.

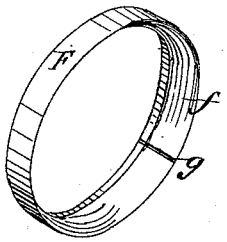

Fig. 4.

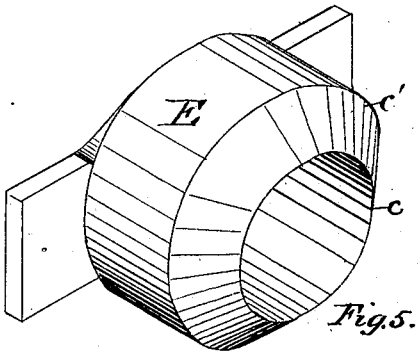

Fig. 5.

WITNESSES.

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JOHN B. CONRAD, OF PORTLAND, OREGON.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 261,206, dated July 18, 1882.

Application filed March 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CONRAD, a resident of the city of Portland, in the county of Multnomah, and State of Oregon, have invented certain new and useful Improvements in Balanced Slide-Valves, of which the following is a specification.

My invention relates to a slide-valve which is fitted with adjustable metal rings to act as steam-packing around the top of the valve and under the cover of steam-chest, the under side of these metal rings being adapted to fit upon the top of valve, which is also of corresponding shape to fit these metal rings.

The object of my invention is to construct a slide-valve with suitable and necessary parts, arranged to work automatically by steam-pressure laterally, and form a steam-tight packing against the steam-chest cover, and prevent vertical pressure of the steam upon the valve; and my invention consists, first, in constructing a slide-valve of circular formed chamber, open at top, and having its top chamfered off from the upper and inner rim in the form of an inclined plane all around the top, there being a space intervening between the top of valve and the cover of steam-chest; secondly, by placing on top of this chamfered part of valve annular metal rings, which are cleft transversely, so as to come together and lessen their circle automatically when lateral pressure of steam comes against them, there being one inner and smaller ring and one outer and larger ring. The inner and lower side of each ring is chamfered off from the inside outward, so as to fit close and snug upon the corresponding chamfered shoulder of valve-top, and top surface of the two rings forms a smooth surface, and is adapted to fit close against the upper seat formed on the cover of steam-chest and make a steam-tight flexible packing.

In the accompanying drawings, forming part of this specification, Figure 1 is a view in vertical section of my invention. Fig. 2 is a view in transverse section of my invention, showing annular metal rings in position. Figs. 3 and 4 are enlarged views of the annular metal ring, showing the chamfered inside of each and where they are cleft; and Fig. 5 is a view in enlarged size, showing the slide-valve having chamfered top.

A in Fig. 1 represents the steam-chest. B represents the cover of same, having a raised seat, *a*, on its under surface. C C′ represent the reception-ports. D represents the exhaust. E represents the slide-valve resting upon raised seat *e*. Slide-valve E, as shown in Figs. 1 and 5 at *c c′*, is chamfered off at top, and is of circular form, the chamfer extending all around its top from *c* to *c′*, the outer surface of the chamfer being smooth and accurate in order to fit close and snug with the annular metal rings F F′. (Shown in Figs. 1, 2, 3, and 4 of drawings.) These rings F F′ are cleft or cut through transversely, so as to admit of lateral compression, the ring F being smaller than the other and fitting inside of ring F′. The inner sides, *f f′*, of rings F F′ are chamfered off, so as to correspond with and fit the chamfered part *c c′* of valve E, and their top surface, *d d′*, is smooth and accurate, so as to fit up snug against seat *a* of cover B. *g g′* represent where each ring is cleft. This method of cutting the rings F F′ renders them flexible and elastic to the lateral pressure of the steam, and is a very important feature of my invention.

The operation of my invention is as follows: The steam, entering steam-chest B, exerts a lateral pressure upon the rings evenly all round, which causes the rings to lessen their circles and brings them together. At the same time their upper surface comes up snug against seat *a* of cover B of steam-chest, and a tight steam-packing is formed, which prevents any vertical pressure upon the valve. This operation is automatic, the rings, from their flexible construction and arrangement, acting automatically from the lateral pressure, and the chamfered edges preventing any escape of steam. The rings will rise a little with the pressure; but the snug fitting of the ring and valve chamfers prevents any leak of steam to cause vertical pressure. I thus effect a very important and useful result by a simple and inexpensive arrangement upon the common slide-valve. I completely do away with any vertical pressure upon the valve and attain the successful construction and operation of an automatic balanced slide-valve.

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

1. In a balanced slide-valve having a circular chamber, the inner and outer annular metal rings, cleft transversely, having inward chamfered bottom surfaces, and arranged with respect to each other so as to be steam-tight.

2. In a balanced slide-valve, the inner and outer annular metal rings, F F′, cleft transversely, having inwardly chamfered bottom surfaces, and arranged with respect to each other so as to be steam-tight, in combination with a slide-valve having a chamfered top, *c c′*, over which the bottom of each ring slides, operating substantially as herein shown.

3. One or more annular metal rings cleft transversely, having chamfered inner surfaces, in combination with a slide-valve having a circular open chamber and chamfered top, as herein shown.

4. In a balanced slide-valve, the combination of valve E, having chamfered top, two annular metal rings, F F′, cleft transversely, having inwardly chamfered bottom surfaces, and arranged with respect to each other so as to be steam-tight, seats *a e*, and steam-chest A, operating substantially as herein set forth.

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Witnesses:
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