United States Patent Office.

ALEXANDER K. RIDER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, CORNELIUS H. DELAMATER AND GEORGE H. REYNOLDS, OF SAME PLACE.

Letters Patent No. 109,053, dated November 8, 1870.

IMPROVEMENT IN BALANCE SLIDE-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ALEXANDER K. RIDER, of the city and county of New York, State of New York, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines; and I do hereby declare the following is a full and exact description thereof.

My valve is intended to serve as a balanced or partially balanced slide-valve.

I will proceed to describe what I consider the best form of carrying out my invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a vertical section through the valve and the cylinder face. It also shows one of the many forms in which the steam-chest cover may be constructed.

Figure 2 is a plan view of the same parts, with the steam-chest cover removed; and

Figure 3 is a cross-section of the valve in a modified form, adapted for cases where the pressure is within the valve.

Similar letters of reference indicate like parts in the drawing.

A is the cylinder face;

B is the top of the steam-chest; and

C is the main body of the valve.

The valve is reciprocated to and fro by one or more valve-rods. It may be actuated by any ordinary or suitable valve-gear.

The top plate B of the steam-chest should be very truly and smoothly finished on its under surface, and should be mounted in a plane, as nearly parallel as possible, to the cylinder face A.

But it is liable to be always a little out of truth, and the wear of the surfaces, as also the slight variations in height of the valve and of the steam-chest, due to changes of temperature and other causes, makes it important to provide for a slight elasticity.

All ordinary means for making the parts elastic have involved complications of construction, which my invention avoids.

I mount upon the top of the main body C a top, D, which is of cast-iron, and similar in all respects to the material of C, except that it is thinner.

Only a narrow bearing surface is presented to rub against the under surface of the steam-chest cover B.

This bearing surface is marked *d*, and comes at the extreme outer edge of the broad thin part D. In other words, the part D is broad and thin, and forms a tight permanent union with the valve C at its inner edge, and a steam-tight contact with the steam-chest cover B at and near its outer edge.

The steam has free access to the greater portion of the space between D and C. It presses up the bearing edge D into contact with the cover B.

When the parts are properly constructed this pressure is just sufficient to guarantee a tight fit without inducing much friction.

There are cases where a valve is worked with the interior filled with steam, and the exterior within the steam-chest is open to the exhaust.

In such cases I would reverse the conditions with regard to the fastening edge and bearing edge of the thin part D, making the bearing edge *d* on the inner edge of the ring, and the holding surface on the outer edge.

The outline of my part D may be rectangular, as represented, or more or less rounded.

All the parts not represented may be understood as constructed and applied in the ordinary or any suitable manner.

I prefer, in most cases with large valves, to make the elastic part D in one piece with the main portion C of the valve.

In smaller engines I make it of similar material in a separate piece, and bolt it or rivet it as above; and in very small engines I make it of thin steel, or other suitable material sufficiently strong and elastic.

I claim—

The slide-valve D C, the upper portion D being an extension upward of the main body of the valve, and having a firm union with the valve at one edge and a tight contact with the steam-chest cover B at the other edge, as specified.

In testimony whereof, I have hereunto set my name in presence of two subscribing witnesses.

A. K. RIDER.

Witnesses:

C. C. LIVINGS,

A. HOERMANN.

A. K. Rider,

Slide Valve.

No. 109,053. Patented Nov. 8. 1870.

Fig. 1.

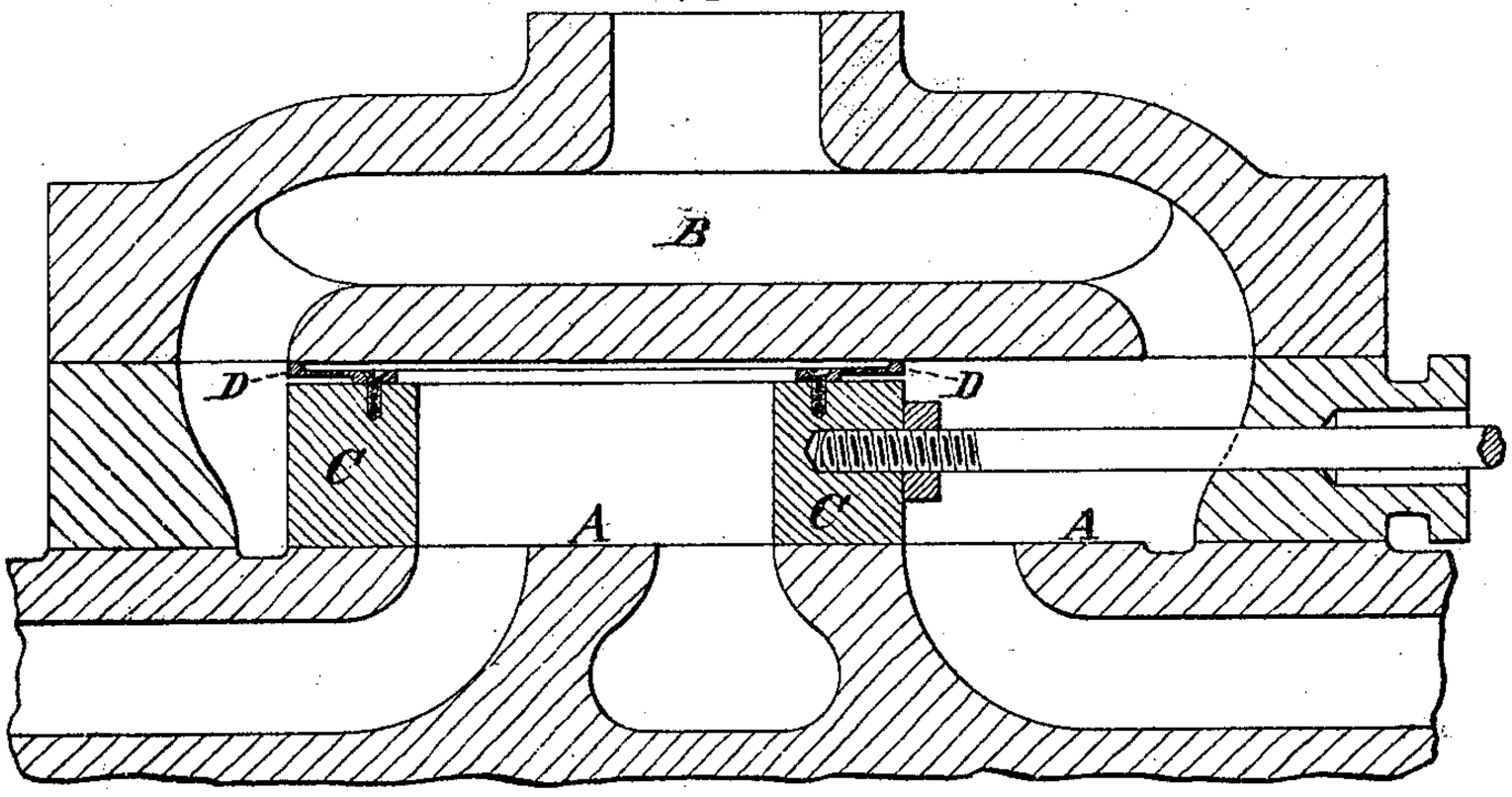


Fig. 2.

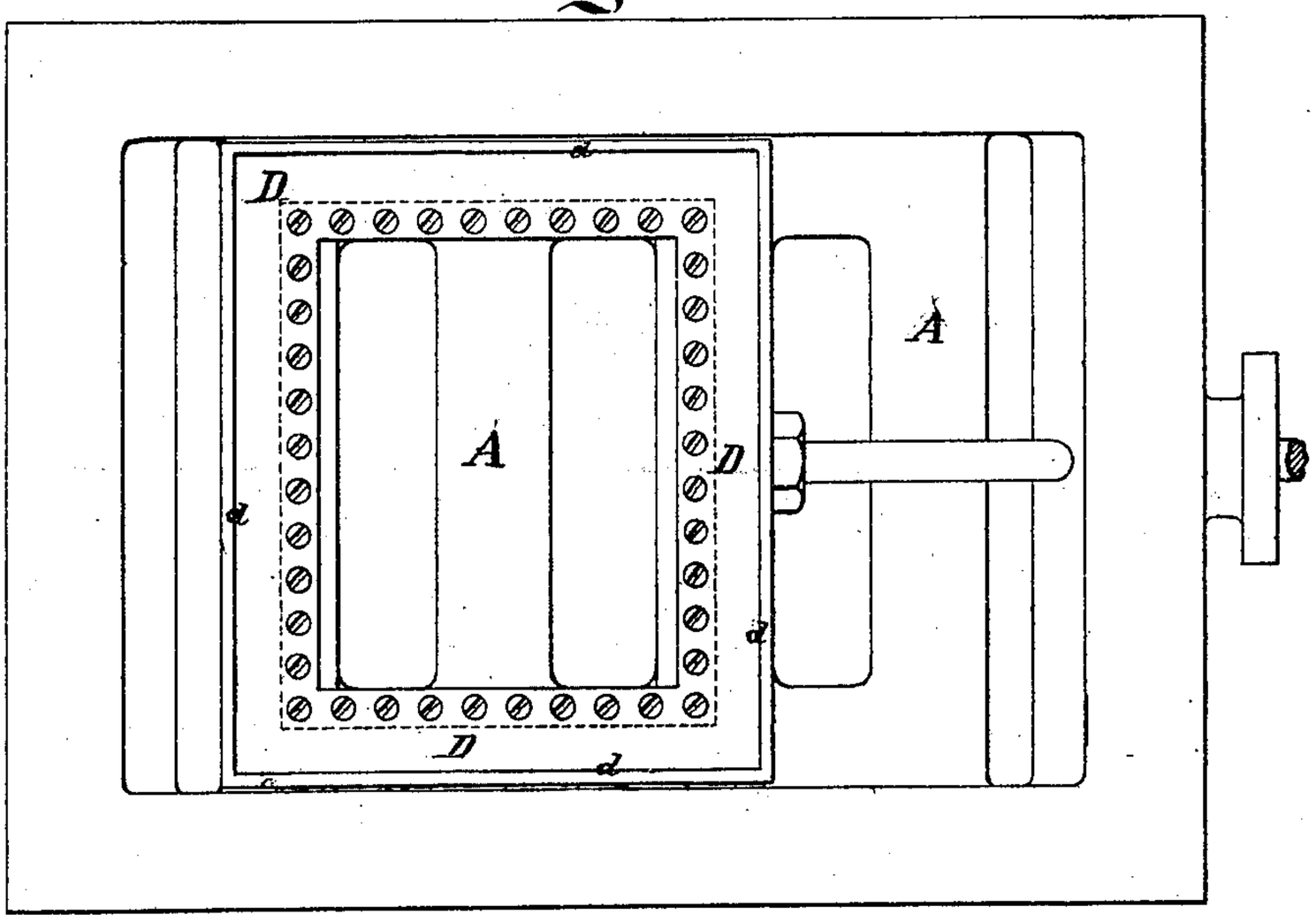
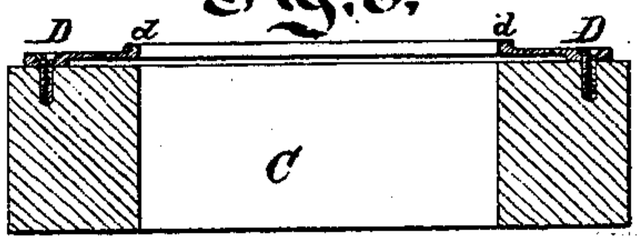


Fig. 3.



Witnesses,

A. Hoermann.

C. C. Livingston

Inventor,

A. K. Rider

by his atty

J. D. Cleton