

(No Model.)

W. A. CAMPBELL.
BALANCE SLIDE VALVE.

No. 324,299.

Patented Aug. 11, 1885.

Fig. 1

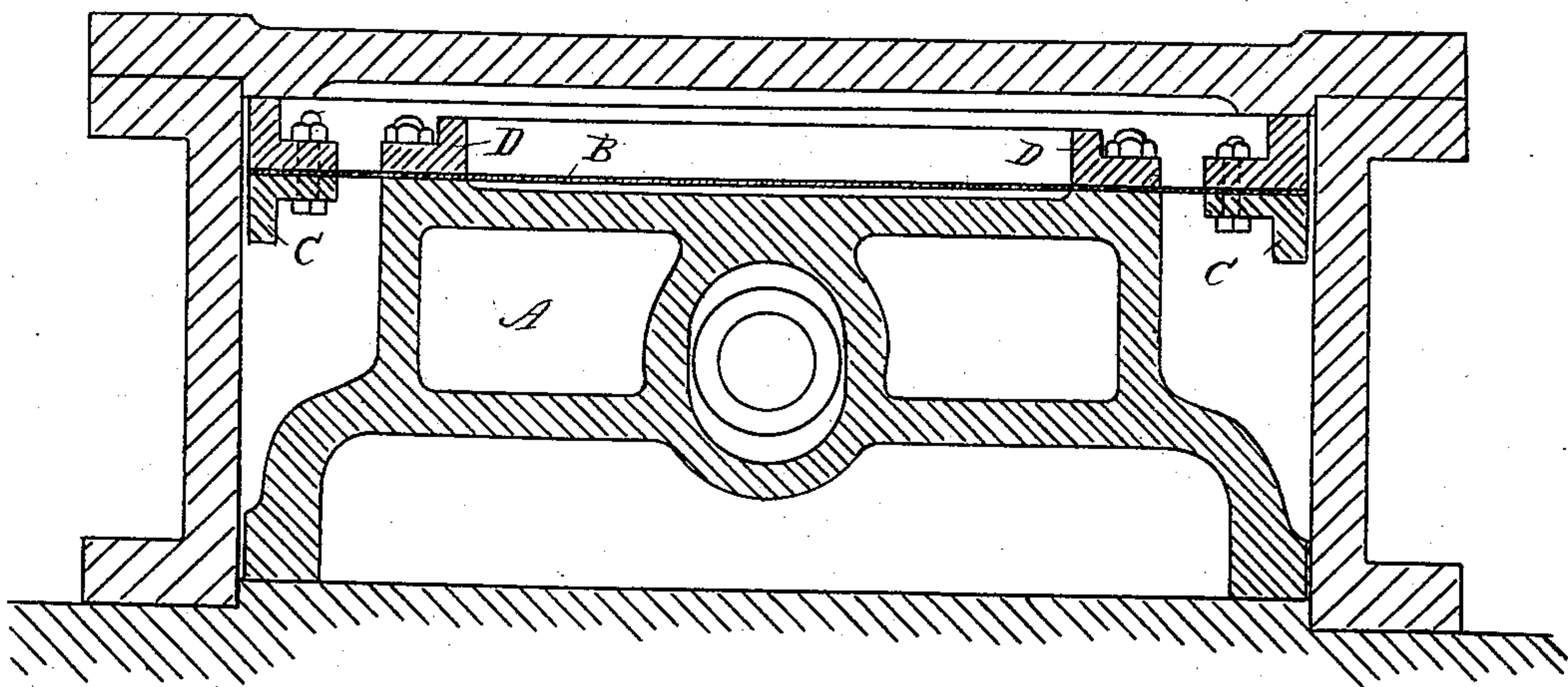
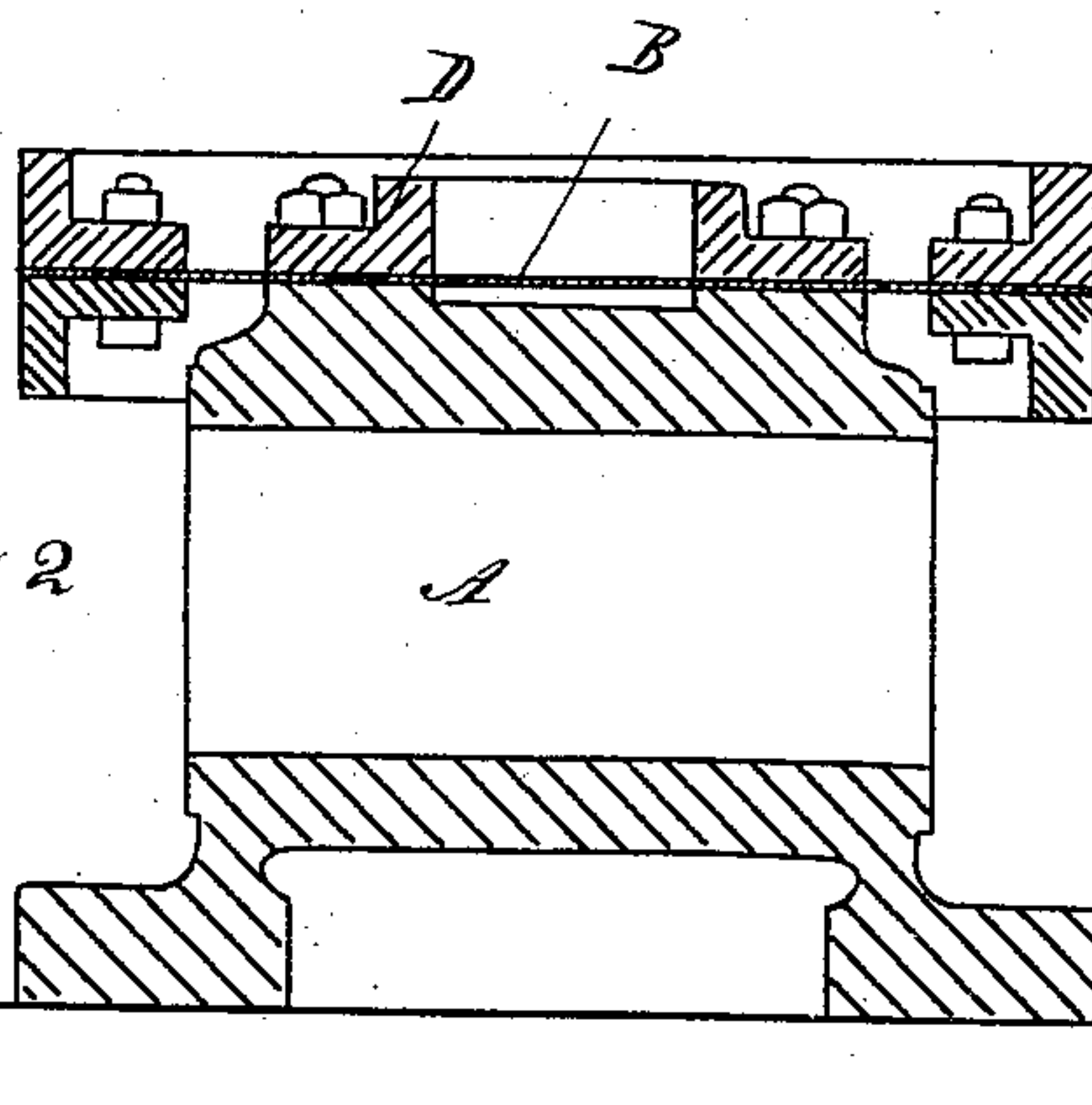


Fig. 2



Attest:
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UNITED STATES PATENT OFFICE.

WILLIAM A. CAMPBELL, OF EAST SAGINAW, MICHIGAN.

BALANCE SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 324,299, dated August 11, 1885.

Application filed April 29, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CAMPBELL, of East Saginaw, in the county of Saginaw and State of Michigan, have invented new and useful Improvements in Balanced Slide-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to a new and useful improvement in balanced steam-valves.

In the drawings which accompany this specification, Figure 1 is a cross-section of the valve, and Fig. 2 is a longitudinal section thereof.

A is a slide-valve, and B is a close diaphragm of sheet metal or thin plate of about the size of the face of the valve, and having its edges secured to a rigid frame, C, which is formed in halves and riveted or bolted together, so as to bind the edges of the diaphragm steam-tight between them.

D is another frame, by means of which the diaphragm is secured on top of the valve, so that it freely overlaps the same all around.

In practice the parts are so arranged that the upper face of the frame C is adapted to form a steam-tight joint with the under side of the chest-cover during the whole travel of the valve.

Upon steam being admitted into the chest the parts of the diaphragm overlapping the top of the valve will yield sufficiently to the pressure of the steam to press the frame C tightly enough against the under side of the chest-cover to keep and maintain a steam-joint during the travel of the valve. As the steam-pressure against the under side of the overlapping portions of the diaphragm and against the under side of the frame C is exerted in an upward direction, it will counter-balance the pressure with which the valve is

pressed onto its seat to any desired degree, regulated by the amount of overlap given to the diaphragm.

The valve A may be of any of the different forms of slide-valves in use, with this restriction: that its body must be made sufficiently smaller on its top side than on its bottom or face side to allow enough overlap to the diaphragm to make it yielding under the action of steam without exercising more lifting-power than is required to balance the valve on its seat.

I provide for reversing the frame C when part shall have become worn, and thereby, in effect, carry an extra frame for use. As shown, both sides of the frame C are made alike, and the diaphragm B is clamped between them. When one frame or one side of the frame becomes worn, I have only to release the diaphragm from the valve and reverse the whole in order to place a new frame in contact with the chest-cover.

I am aware that a flexible diaphragm has been similarly used with non-reversible frames; and in such cases when the frame became worn a complete substitution of a new frame was necessary.

What I claim as new is—

1. The combination, with the valve and diaphragm, of a reversible frame, C, as and for the purposes set forth.

2. The frame C, made in two similar parts and arranged reversely and clamping the diaphragm B between them, combined with the said diaphragm, the valve A, and chest, and adapted to be reversed when worn, as set forth.

WILLIAM A. CAMPBELL.

Witnesses:

H. S. SPRAGUE,
CHARLES J. HUNT.