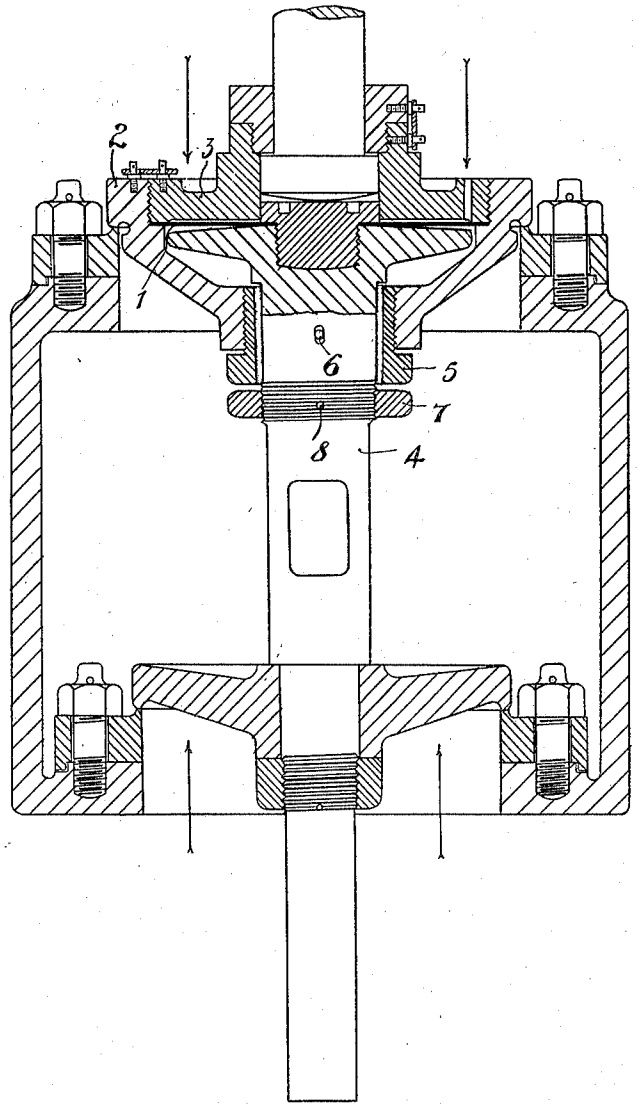
D. COCKBURN AND D. MacNICOLL.

VALVE.

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1,312,102. Patented Aug. 5, 1919.



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DAVID COCKBURN AND DONALD MACNICOLL, OF CARDONALD, NEAR GLASGOW, SCOTLAND, ASSIGNORS TO COCKBURNS, LIMITED, OF CARDONALD, NEAR GLASGOW, SCOTLAND.

VALVE.

1,312,102. Specification of Letters Patent. **Patented Aug. 5, 1919.**

Application filed February 14, 1919. Serial No. 276,918.

To all whom it may concern:

Be it known that we, DAVID COCKBURN and DONALD MACNICOLL, both subjects of the King of the United Kingdom of Great Britain and Ireland, and residing at Cardonald, near Glasgow, Scotland, have invented a certain new and useful Improvement in Valves, of which the following is a specification.

This invention relates to double beat valves of the type fitted with a flexible diaphragm or diaphragms.

The invention has for an object to provide a construction in which steam enters outside the beats, so contrived that in the event of fracture of the diaphragm the leakage of steam may be reduced to a minimum; another object is to provide for the simultaneous grinding of the valve faces of both beats.

In a construction embodying the invention as illustrated in vertical section in the accompaying drawing there is or are fitted to one beat, in the present instance the upper beat, a thin flexible metallic diaphragm 1 imprisoned in a cell between the respective valve element 2 and a covering member 3 secured to the said valve element 2.

A small amount of clearance is left between the valve spindle 4 and a headed sleeve member 5 threaded into the valve element 2 and normally held in position by a split pin 6, the clearance serving the purpose of the port provided in the construction described in the specification of Patent No. 1299130, namely of admitting steam to the diaphragm cell.

In screw-threaded engagement with that portion of the valve spindle 4 between the beats is a nut 7 normally held in position by a split pin passing through the aperture 8.

When the valve faces of the two beats are to be ground, the split pins are removed from the nut 7 and from the sleeve member 5. The sleeve member 5 is then "hardened" on the valve element 2 and the nut 7 is then hardened on the sleeve member 5.

When the faces of both beats have "come up," the nut 7 is screwed back and secured by the split pin 8; the sleeve member 5 is then moved back a slight distance and secured by the split pin 6.

Referring to the drawing, it will be understood that when the valve is shut steam is present in the spaces above the upper beat and below the lower beat. The valve is then balanced; that is to say, the pressure acting on the upper beat and on the diaphragm in the direction of the arrows counteracts the pressure acting in the direction of the arrows on the lower beat, so that both beats may be moved from or to their seats with a minimum effort.

The diaphragm accommodates the difference in expansion between the valve faces and the seat faces.

Should the diaphragm fracture, the diaphragm cell becomes filled with steam, and the balance is destroyed, but only during the movement of the valve through the amount of the difference of expansion between the valve faces and the seat faces. In consequence, an additional effort is called for on the hand-wheel when just taking the valve off its seat and again when just making contact on shutting the valve. When the diaphragm is fractured, the leakage of steam is by way of the clearance between the valve spindle 4 and the sleeve member 5.

What we claim is:—

1. In a double beat valve, in combination with two valve elements, a spindle between said elements, a covering member secured to one of said elements and affording in conjunction with said last named element a cell, a flexible diaphragm within said cell, and a sleeve threaded into said last named element, said sleeve surrounding and spaced from said spindle to afford a passage into said cell.

2. In a double beat valve, in combination with two valve elements, a spindle between said elements, a covering member secured to one of said elements and affording in con-

junction with said last named element a cell, a flexible diaphragm within said cell, a sleeve threaded into said last named element, said sleeve surrounding and spaced from said spindle, and a nut fitted to said spindle between said sleeve and the other valve element.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

DAVID COCKBURN.
DONALD MacNICOLL.

Witnesses:
KATE FOTHERINGHAM,
ISABEL ROLLO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."