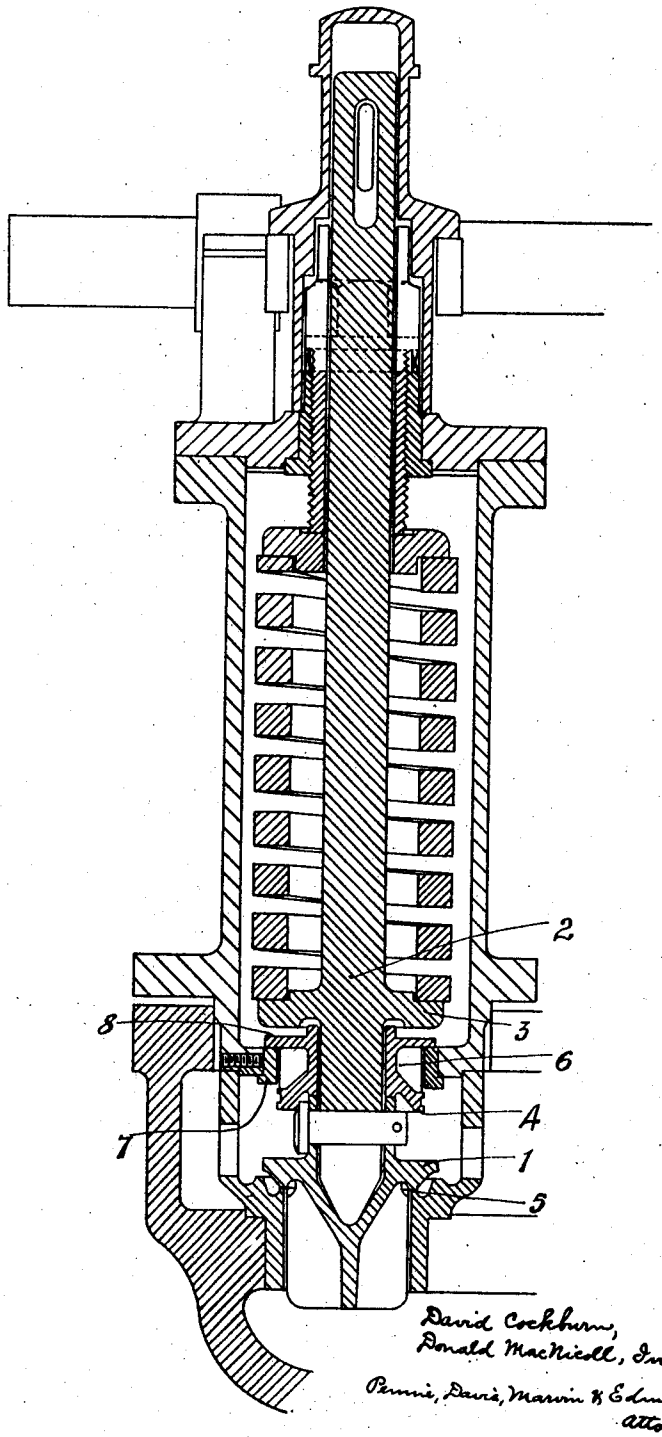
D. COCKBURN AND D. MacNICOLL.

SAFETY VALVE.

APPLICATION FILED JUNE 20, 1919.

1,332,886.

Patented Mar. 9, 1920.



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UNITED STATES PATENT OFFICE.

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

SAFETY-VALVE.

1,332,886. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed June 20, 1919. Serial No. 305,637.

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 Safety-Valves, of which the following is a specification.

This invention relates to an improvement in safety valves of the type fitted with a piston positioned above the valve proper and movable upwardly to effect increased lift of the valve proper.

In a prior construction the piston was adapted when lifted to enter a cylindrical chamber situated above the valve seat and so spaced therefrom as to be unoccupied by the piston when the valve is in engagement with its seat.

An object of the present improvement is to provide a guard for the piston and cylinder whereby to prevent access of dirt, etc., which would interfere with the free movement of the piston. Yet another object is to insure uniformity of clearance between the piston and the lower end of the cylindrical chamber, so that, however much the valve be ground, the piston has only to travel the same distance to bring it into occupation of the cylindrical chamber, it being understood that as the piston is caused unfailingly to enter the cylinder it is unfailingly subjected to unbalanced upward pressure of steam in consequence of which it is moved upwardly to effect the increased lift of the valve proper.

The figure of the accompanying drawing is a vertical section of a construction of safety valve according to the invention as defined by the appended claims.

The construction shown includes, as heretofore, a valve proper 1 carried by a spindle 2 having a collar 3 below which is a piston 4 fitted to surround loosely the valve spindle 2 and of greater area than the cross-sectional area of the opening at the valve seat 5. The piston is formed with fins 6 which guide the piston in its movement in the cylindrical chamber 7, and above the fins 6 is a guard-disk 8 which in the lowered position of the piston 4, that is out of occupation of the cylindrical chamber 7, rests on and closes the upper end of the cylindrical chamber 7.

Normally the piston 4 is supported by the disk 8 resting on the upper end of the cylindrical chamber, but when the valve proper 1 rises the piston 4 is lifted by fluid pressure and caused to occupy the cylindrical chamber 7 which is thereupon cut off from communication with the waste steam space above the valve proper, the pressure of steam on the underside of the piston 4 being then available to force the piston 4 upwardly against the collar 3, whereby there may be obtained increased lift of the valve proper 1.

It will be seen that any tendency the piston 4 may have to bind in the cylindrical chamber 7 will not prevent the valve proper 1 from rising.

What we claim is:—

1. In a safety valve, in combination with a valve spindle having a stop, a valve movable with said spindle, a cylinder surrounding said spindle, and a piston fitted to said spindle and movable relatively thereto into engaging relation with said stop, said piston provided with a guard member adapted, when said valve is seated, to close one end of said cylinder.

2. In a safety valve, in combination, a valve seat member having an opening, a valve proper to control said opening, a valve spindle having a collar above said valve proper, a piston slidable on said spindle independently of said valve, said piston being below said collar and adapted to be lifted when said valve proper rises out of engagement with said seat member, said piston being of greater area than said opening, a cylinder above said seat member, said cylinder being so spaced from said seat member as to be unoccupied by said piston when said valve proper is in engagement with said seat member, said cylinder adapted to receive said piston on the rise of said valve proper, and a guard member attached to said piston, said guard member adapted in the lower position of said piston to rest on and to close the upper end of said cylinder.

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.