Oct. 30, 1945. D. A. KELLY 2,387,912

BLOW-OFF COCK

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Fig. 1.

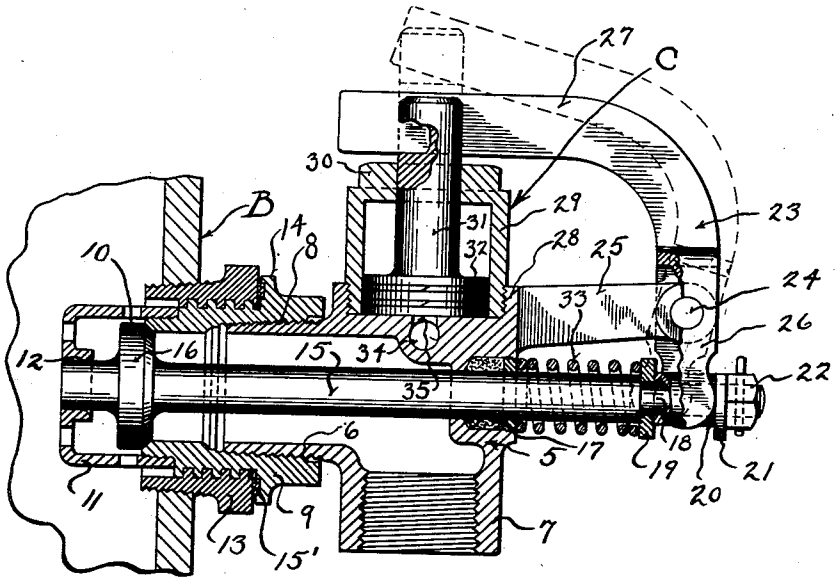
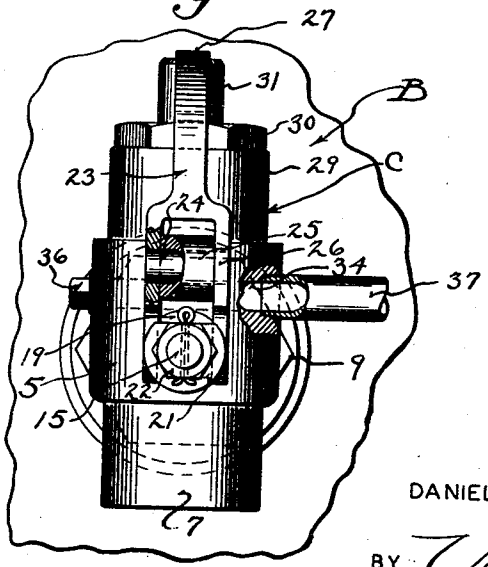


Fig. 2.



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BLOWOFF COCK

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2 Claims. (Cl. 137—139)

This invention appertains to valves and more particularly a novel blow-off cock for the boilers of steam locomotives.

One of the primary objects of my invention is to provide a blow-off cock having incorporated therewith a pressure operating mechanism for the valve thereof, the arrangement being such that a compact structure will be had which will not project an objectionable distance from the boiler.

Another salient object of my invention is to provide a pressure operated blow-off cock which can be conveniently and quickly associated with or removed from a boiler.

A further object of my invention is to provide a pressure operated blow-off cock embodying an operating piston and cylinder for the valve carried by the cock casing, but having no communication therewith, whereby danger of leakage of water and sediment from the boiler to the cylinder is eliminated.

A further important object of my invention is to provide a pressure operated blow-off cock having formed directly on the casing thereof diametrically opposite the discharge nipple, an internally threaded boss or flange for receiving the cylinder for the operating piston of the valve, the casing having a passageway and port therein for the admittance of pressure to the inner end of the cylinder.

A still further object of my invention is to provide a pressure operated blow-off cock of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market at a reasonable cost.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated, in the accompanying drawing, in which drawing:

Figure 1 is a vertical longitudinal sectional view through my improved blow-off cock showing the same associated with a boiler.

Figure 2 is an end elevational view of the blow-off cock with parts thereof broken away and in section to illustrate structural detail.

Referring to the drawing, in detail, wherein similar reference characters designate corresponding parts throughout the several views the letter C generally indicates my improved blow-off cock for a boiler B.

Only a fragment of the boiler has been shown and the part illustrated may be considered as the boiler side plate.

The blow-off cock C includes a casing 5 embodying a substantially cylindrical body portion 6 and a depending discharge nipple 7, the forward end of the body portion 6 is tapered and is externally threaded as at 8. This threaded body portion 6 receives a coupling sleeve 9 having formed on its forward end a valve seat 10. A perforated strainer cap 11 can be threaded on the forward end of the coupling sleeve. This cap at a central portion can be provided with a valve stem guide 12.

In order to facilitate the connection of the blow-off cock with the boiler B I provide a union nut 13 which is adapted to be threaded directly into the side of the boiler and this union nut and the coupling sleeve 9 are provided with mating coarse threads and obviously the blow-off cock can be quickly threaded into the union nut.

In order to prevent leakage, the coupling sleeve 9 is provided with an annular flange 14 and this flange carries a gasket 15' for snug engagement with the outer face of the union nut.

Slidably mounted within the casing body is a valve stem 15 and this stem has formed thereon or secured thereto a valve body 16 which is adapted to fit upon the valve seat 10. The forward end of the valve stem is slidably received within the valve guide 12 and the opposite end of the stem extends through a packing gland 17 carried by the casing.

The protruding end of the valve stem is reduced in diameter to form a stop shoulder 18. Fitted on the valve stem against the shoulder 18 is a stop washer 19. A spacing sleeve 20 is then fitted on the valve stem against the stop washer and a second stop washer 21 is fitted against the spacing sleeve. This assembly can be held on the valve stem by a nut 22.

In order to operate the valve, I provide an operating lever 23. This lever is rockably mounted intermediate its ends on a pivot pin 24 carried by a bracket 25. This bracket is preferably formed directly on the valve casing. The inner end of the operating lever is bifurcated to form a yoke 26 and this yoke straddles the valve stem and is confined between the stop washers 19 and 21. The opposite end of the lever is provided with an arcuate operating arm 27 which extends over the valve casing.

In accordance with my invention I cast directly on the body portion 6 of the valve casing an annular flange or boss 28. This flange or boss is disposed directly diametrically opposite the dis-

charge nipple 7 and is internally threaded for the reception of a cylinder 29. Hence the cylinder is carried directly by the valve casing and it is to be noted that the inner end of the cylinder is closed by the valve casing and that the outer end of the cylinder is closed by a wall 30 which can be formed integral with the cylinder. This outer wall 30 is apertured for a piston rod 31. The inner end of the piston rod carries the operating piston 32. The outer end of the piston rod is slotted for the reception of the operating handle 27 of the lever 23.

An expansion spring 33 is coiled about the valve stem 15 and the spring is confined between the valve casing and the stop washer 19. Hence the spring 33 functions to normally hold the valve body 16 on its seat 10. When the piston 32 is moved outwardly, the lever 23 will be operated to move the stem 15 and the valve body 16 inwardly, and the valve body will be forced off of its seat allowing the blowing off of the boiler.

The valve casing 5 is transversely bored to provide a fluid passageway 34 and this passageway is connected with the inner end of the cylinder by means of a port 35. One end of the passageway 34 is closed by a clean-out plug 36 and the opposite end of the passageway has threaded therein a conduit pipe or tube 37.

The pipe 37 conducts fluid under pressure to the inner end of the cylinder. This fluid can be compressed air or steam and is under the control of the engineer by means of a valve (not shown) located in the engineer's cab.

From foregoing description it can be seen that I have provided an exceptionally simple and durable form of blow-off cock which can be operated by air pressure.

Changes in detail may be made without departing from the spirit or the scope of the claims, but what I claim as new is:

1. A blow-off cock for steam boilers comprising a valve casing having a longitudinally extending body and a right angularly disposed discharge nipple, an internally threaded annular flange formed on the valve casing, a cylinder having its outer end closed threaded into said flange, the inner end of said casing having a valve seat, a valve for said seat, spring means normally holding the valve on its seat, a lever for operating said valve against the tension of the spring, an operating piston slidably mounted in the cylinder having operative connection with the lever, and said casing having a passageway therein for fluid under pressure and a port connecting said passageway with the inner end of the cylinder.

2. A blow-off cock comprising a valve casing having a longitudinally extending body and an angularly disposed discharge nipple, the inner end of said body being externally threaded, a coupling sleeve threaded on said body having a valve seat on its inner end, a strainer cap threaded on said sleeve having a guide boss, said sleeve being provided with external threads for connection with a boiler, a valve stem slidably mounted in said boss and in said casing having a valve body thereon for the seat, and means including an operating lever for actuating the valve and stem, an annular flange formed on the casing, a cylinder having its outer end closed threaded into said flange, a piston slidably mounted in the cylinder, a piston rod for the piston slidably extending through the closed end of the cylinder, said piston rod having its outer end slotted, said operating lever including an arcuate arm fitted in the slotted portion of the piston rod, and said valve casing having a passageway for fluid under pressure and a port connecting said passageway with the inner end of the cylinder.

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