A. C. WHITE.

THROTTLE VALVE FOR LOCOMOTIVES.

APPLICATION FILED AUG. 20, 1919.

1,333,357. Patented Mar. 9, 1920.

Fig. 2.

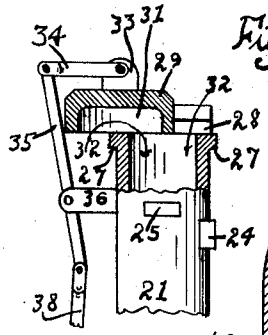


Fig. 1.

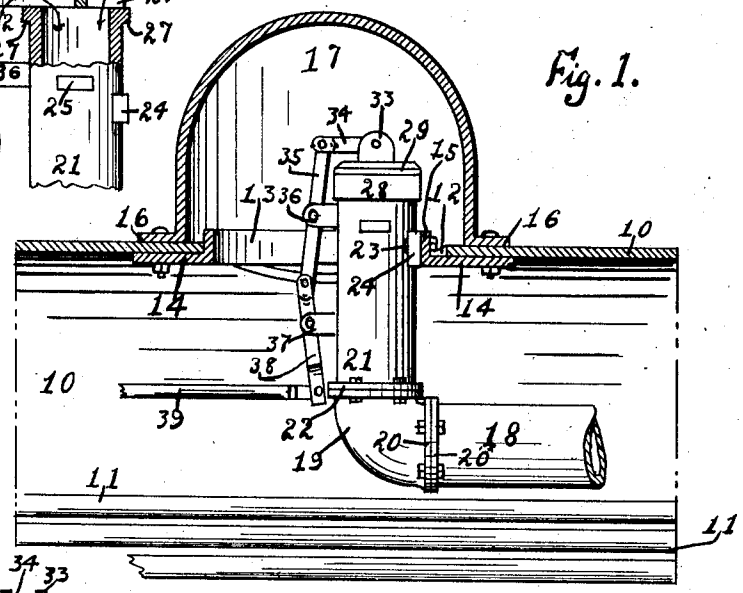


Fig. 3.

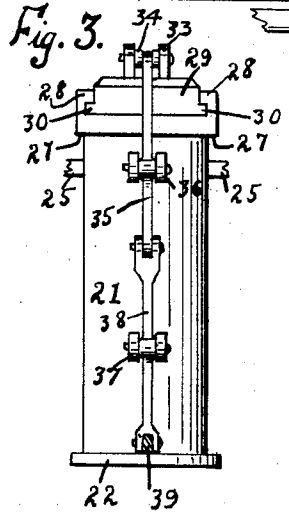
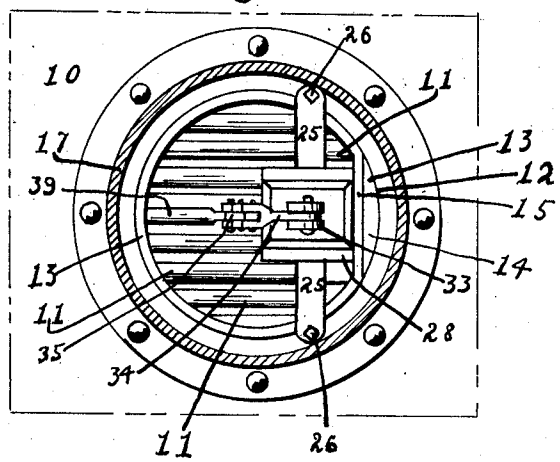


Fig. 4.



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UNITED STATES PATENT OFFICE.

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THROTTLE-VALVE FOR LOCOMOTIVES.

1,333,357. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed August 20, 1919. Serial No. 318,757.

To all whom it may concern:

Be it known that I, ALF C. WHITE, a citizen of the United States, and a resident of Boone, in the county of Boone and State of Iowa, have invented a certain new and useful Throttle-Valve for Locomotives, of which the following is a specification.

The object of my invention is to provide a throttle valve for locomotives of simple, durable and inexpensive construction.

A further object of my invention is to provide a throttle valve for locomotives, which is so constructed it may be operated with a comparatively slight effort upon the part of the driver of the locomotives.

A further object of my invention is to provide a throttle valve, which is so arranged that movement of the valve to position to admit steam to the cylinders of the locomotive will be caused by rearward movement of the throttle valve control rod, and so that movement of the control rod in the reverse direction will tend to shut off the steam from the cylinders.

A further object of my invention is to provide a valve which may be attached to the steam-pipe of the locomotive, and installed within the steam dome, which is so constructed that its operating parts will occupy minimum space, so that it will be possible for a person to enter the boiler through boiler vent opening without removing the steam-pipe or valve therefrom.

A further object of my invention is to provide a valve and valve controlling mechanism, which may be readily removed for repairs or inspection when necessary.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of my improved device installed in a boiler, the boiler being shown in section to better illustrate its construction and manner of installation.

Fig. 2 shows an elevation of the upper portion of the steam-pipe and valve, parts being shown in section to better illustrate the construction.

Fig. 3 shows an end elevation of the steam-pipe and valve, illustrating the controlling means for the valve, and

Fig. 4 is a top or plan view of the parts shown in Fig. 1, the steam dome being broken away to better illustrate the construction.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the shell of a boiler, having flues 11 therein. It will be understood that the flues 11 are ordinarily spaced downwardly somewhat from the top of the boiler and that the boiler is provided with an opening 12, known as the vent opening.

Mounted within the opening 12 is a collar 13, which extends around the opening and may be secured to the boiler shell in any suitable manner, as by a flange 14. The forward side of the collar 13 is flattened somewhat at 15, as is shown in Fig. 4. Secured to the outer surface of the shell, as by a flange 16, is a steam dome 17. Within the boiler is a pipe 18, known as the dry-pipe, which is extended forwardly through the boiler and communicates with the driving cylinders of the locomotive.

At the end of the dry-pipe 18, adjacent to the vent opening 12, is an elbow 19, provided with flanges 20 adapted to coact with similar flanges 20 on the dry-pipe 18, whereby the elbow and pipe may be secured to each other. Extending upwardly from the elbow 19 is a pipe 21, known as the standpipe, which has flanges 22 at its lower end, whereby it may be secured to the elbow 19. The standpipe 21 extends from the elbow upwardly through the vent opening 12 and is secured to the collar 13 by bolts 23, which are extended through laterally extending lugs 24, and the portion 15 of the collar 13. Lugs 25 extend from opposite sides of the standpipe 21 above the collar 13, and may be secured to the boiler shell in any suitable way, as by bolts 26.

At the upper end of the standpipe 21, outwardly extending flanges 27 are formed, which constitute a substantially rectangular valve seat, having at either side edge upwardly extending parallel guide channels 28, adapted to receive a valve member. Mounted on the valve seat is a valve member 29, comprising a substantially rectangular block, having laterally projecting beads 30 at opposite side edges, adapted to reciprocate in the guide members 28.

In the central lower surface of the valve 29 is a recess 31, which is substantially circular in cross section and is adapted to register with the opening in the standpipe when the valve is in position to cross the upper end of the standpipe.

From the construction of the parts just described, it will be seen that movement of the valve 29 to position shown in Fig. 2 will permit steam to enter the standpipe from the boiler, both through the recess 31 and past the forward edge of the valve 29, as is indicated by the arrows 32. It will thus be seen that movement of the valve member through a distance substantially equal to half the diameter of the standpipe will permit a volume of steam to enter the standpipe through openings substantially equal in cross sectional area of the standpipe.

Extended upwardly from the valve 29 are a pair of spaced lugs 33 between which is pivotally mounted one end of a link 34. One end of the link 34 is forked to pivotally receive the upper end of a lever 35. Spaced pairs of lugs 36 and 37 extend outwardly from the rear side portion of the standpipe 21 and pivotally support the central portions of levers 35 and 38.

The upper end of the lever 38 is forked to pivotally receive the lower end of the lever 35; the lower end of the lever 38 is forked to pivotally receive the forward ends of a throttle control rod 39.

From the construction of the parts just described, it will be seen that movement of the throttle control rod 39 will cause a corresponding movement of the valve 29, that is forward movement of the rod 39 will cause a forward movement of the valve 29, thereby crossing the valve seat opening, and shutting off the supply of steam from the boiler to the cylinders.

Movement of the throttle control rod in the opposite direction will direct the levers 38 and 35, and the link 34 to move the valve 29 rearwardly thereby opening the valve seat opening, so that steam may be transmitted from the boiler to the cylinders.

An advantage of my improved construction resides in the fact that the parts occupy a minimum amount of space, so that when it is desired to enter the boiler to inspect it, then the steam dome may be removed, and the inspector may climb down into the boiler through the vent opening 12 without removing the standpipe 21 or the valve operating levers.

If necessary, however, the valve operating levers may be readily removed by driving out the pins by which they are pivotally connected together, so that the vent opening will be obstructed only by the standpipe 21 itself.

In addition to this feature, the device is so constructed that the power required to move the valve from open to closed position or vice versa is comparatively slight, and the connections are such that the movements of the operator in controlling the valve are instinctive.

Some changes may be made in the construction and arrangement of the parts of my improved device, without departing from the essential features and purposes of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a device of the class described adapted to be installed in a boiler having a vent opening at the upper part thereof, and a steam dome above and closing said opening, a standpipe adapted to extend through said opening into the dome and boiler, means for connecting a dry-pipe to the lower end of said standpipe, means for detachably securing the standpipe to the forward edge of the vent opening, a valve seat secured to the top of said standpipe, spaced guide devices fixed to said seat and disposed parallel with each other and with the longitudinal axis of the boiler, a valve mounted in said guides and adapted to move to positions to selectively cover and uncover the opening in said seat, and means for operatively connecting said valve with the throttle control rod of the boiler.

2. In a device of the class described adapted to be installed in a boiler having a vent opening at the upper part thereof, and a steam dome above and closing said opening, a standpipe adapted to extend through said opening into the dome and boiler, means for connecting a dry-pipe to the lower end of said standpipe, means for detachably securing the standpipe to the forward edge of the vent opening, a valve seat secured to the top of said standpipe, spaced guide devices fixed to said seat and disposed parallel with each other and with the longitudinal axis of the boiler, a valve mounted in said guides and adapted to move to positions to selectively cover and uncover the opening in said seat, a pair of spaced vertically alined lugs secured to the rear side of the standpipe and extended laterally therefrom, a lever pivoted intermediate of its ends to each of said lugs, said levers having their adjacent ends pivoted together, means for operatively connecting the upper end of the upper lever to the valve, and means for operatively connecting the lower end of the lower lever to a throttle control rod.

3. In a device of the class described adapted to be installed in a boiler having a vent opening at the upper part thereof, and a steam dome above and closing said opening, a standpipe adapted to extend through said opening

into the dome and boiler, means for connecting a dry-pipe to the lower end of said standpipe, means for detachably securing the standpipe to the forward edge of the vent opening, a valve seat secured to the top of said standpipe, spaced guide devices fixed to said seat, and disposed parallel with each other and with the longitudinal axis of the boiler, a valve mounted in said guides and adapted to move to positions to selectively cover and uncover the opening in said seat, means for operatively connecting said valve with the throttle control rod of the boiler, whereby rearward movement of the throttle rod may uncover the opening in the valve seat.

4. In a device of the class described adapted to be installed in a boiler having a vent opening at the upper part thereof, and a steam dome above and closing said opening, a standpipe adapted to extend through said opening into the dome and boiler, means for connecting a dry-pipe to the lower end of said standpipe, means for detachably securing the standpipe to the forward edge of the vent opening, a valve seat secured to the top of said standpipe, spaced guide devices fixed to said seat and disposed parallel with each other and with the longitudinal axis of the boiler, a valve mounted in said guides and adapted to move to positions to selectively cover and uncover the opening in said seat, said valve having a central recess in its lower surface whereby steam may enter the valve seat opening through both the recess and at the end of the valve when the latter is in opened position, and means for operatively connecting said valve with the throttle control rod of the boiler.

Des Moines, Iowa, July 15, 1919.

ALF C. WHITE.