

(No Model.)

2 Sheets—Sheet 1.

L. E. MICHELL.

BLOW-OFF COCK AND FIRE EXTINGUISHER.

No. 408,919.

Patented Aug. 13, 1889.

Fig. 2.

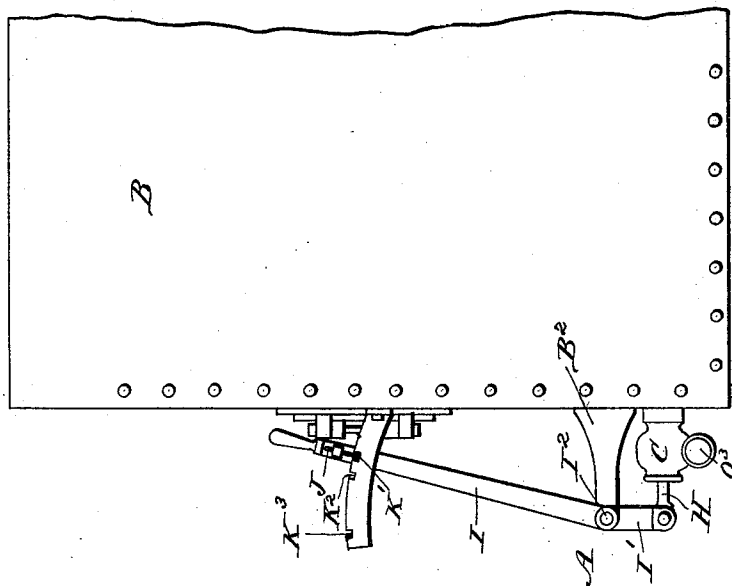
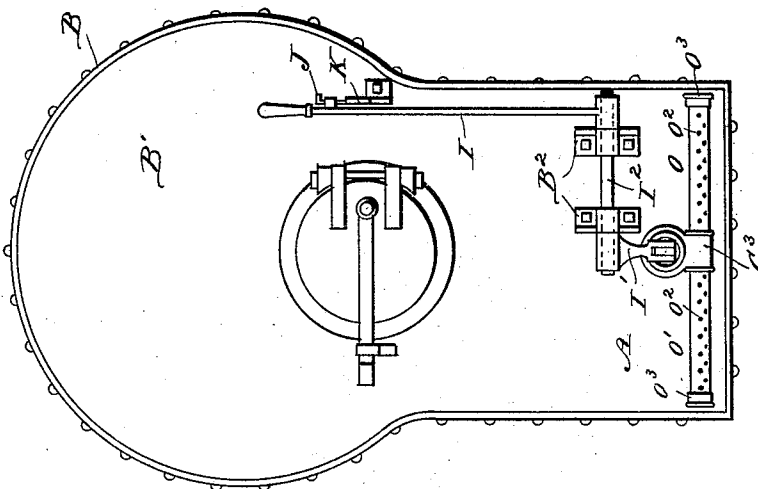


Fig. 1.



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(No Model.)

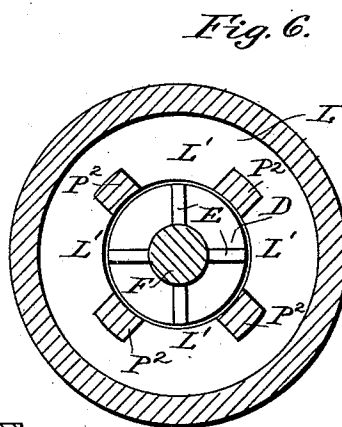
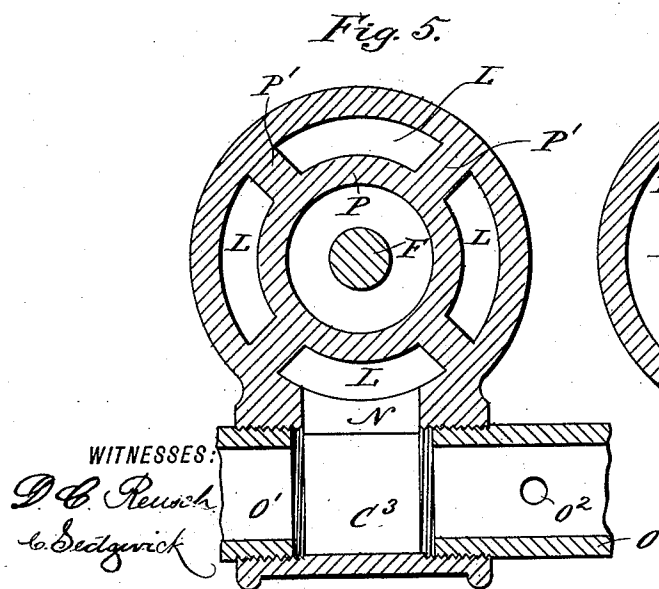
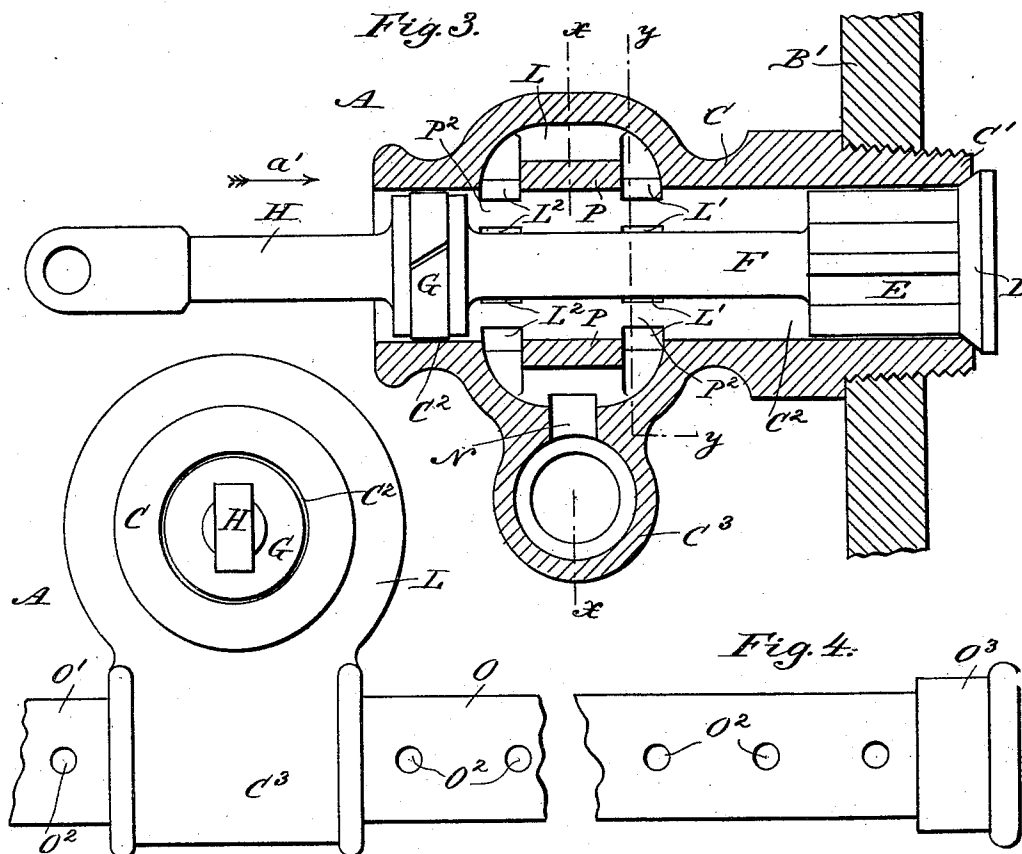
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# UNITED STATES PATENT OFFICE.

LUCIUS E. MICHELL, OF PALESTINE, TEXAS.

## BLOW-OFF COCK AND FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 408,919, dated August 13, 1889.

Application filed June 15, 1889. Serial No. 314,345. (No model.)

### *To all whom it may concern:*

Be it known that I, LUCIUS E. MICHELL, of Palestine, in the county of Anderson and State of Texas, have invented a new and Improved Blow-Off Cock and Fire-Extinguisher for Locomotives, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved blow-off cock and fire-extinguisher to be used on locomotives for cleaning the boiler, and at the same time serving to sprinkle wooden structures in the track, such as bridges, railroad-ties, trestles, &c., to prevent their being set on fire by falling cinders discharged from the ash-pan of the locomotive or from other causes.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of the improvement as applied. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged sectional side elevation of the improvement. Fig. 4 is an end elevation of the same. Fig. 5 is a transverse section of the same on the line  $xx$  of Fig. 3, and Fig. 6 is a similar view of the same on the line  $yy$  of Fig. 3.

The improved combined blow-off cock and fire-extinguisher A is preferably secured to the lower part of the front end plate B' of the locomotive-boiler B, as is plainly shown in Figs. 1 and 2. The device A is provided with a valve-body C, screwed or otherwise secured to the front plate B' and provided on its inner end with a valve-seat C', leading to a longitudinal central opening C<sup>2</sup>, extending throughout the valve-body C. An inwardly-opening valve D is held on the seat C, and is provided with wings E, extending inward a suitable distance into the opening C<sup>2</sup>. The inner ends of the wings E are connected with a central valve-stem F, carrying on its outer end a piston G, mounted to slide in the central opening C<sup>2</sup>. From the piston G extends a piston-rod H in line with the valve-stem F. The outer end of the piston-rod H is pivotally connected with an arm I', secured on a shaft

I<sup>2</sup>, mounted to turn in suitable bearings secured in the front plate B' of the boiler B. On the shaft I<sup>2</sup> is also secured an upwardly-extending lever I, carrying near its handle end a catch J, adapted to engage a notch K', K<sup>2</sup>, or K<sup>3</sup>, formed in the segment K, projecting from the front plate B' of the boiler B. The center of the segment K is in the axis of the shaft I<sup>2</sup>.

In the valve-body C is arranged an annular chamber L, connected at its bottom by a port N with a hollow offset C<sup>3</sup>, formed on the bottom of the valve-body C. From the ends of this offset C<sup>3</sup> extend the pipes O and O' in opposite directions, each of the pipes being provided with a number of apertures O<sup>2</sup>, placed suitable distances apart, as is plainly shown in Figs. 1 and 4. The outer ends of the pipes O and O' are closed by caps O<sup>3</sup>.

The annular chamber L is connected by the ports L' and L<sup>2</sup> with the interior central opening C<sup>2</sup>, the ports L<sup>2</sup> being adapted to be closed by the piston G, which latter, when the valve D is closed, as shown in Fig. 3, is to the left of the said ports L<sup>2</sup>, so that the latter register with the central opening C<sup>2</sup>.

The inner wall P of the chamber L is supported by ribs P', extending radially from the outer wall, and also by longitudinally-extending ribs P<sup>2</sup>, connecting each edge of the inner wall P with the valve-body C, as is plainly shown in Figs. 3, 5, and 6.

The operation is as follows: When the device is in the position shown in Figs. 2 and 3, the valve D is on its seat C' and the piston G is to the left of the ports L<sup>2</sup> in the central opening C<sup>2</sup>. Now, when the operator desires to throw water and steam onto the wooden structures in the track over which the locomotive passes, the operator moves the lever I outward until the catch J drops into the notch K<sup>2</sup>, whereby the piston-rod H is moved inward in the direction of the arrow  $a'$  until the inner end of the piston is flush with the ports L<sup>2</sup>. The inward motion of the piston-rod H unseats the valve D, whereby the water and steam from the boiler can pass through the seat C' into the central opening C<sup>2</sup>, and from the latter, through the ports L' and L<sup>2</sup>, into the annular chamber L, and from the latter, through the port N, into the hollow offset C<sup>3</sup>. The water and steam from the latter can

pass into the sidewise-extending pipes O and O', from which they pass through the apertures O<sup>2</sup> down onto the track over which the locomotive is passing. Thus the water and steam from the locomotive-boiler are thrown on the track, especially on the ties and other wooden structures, so that the latter cannot be set on fire by hot cinders dropped from the ash-pan of the locomotive. When the operator desires to use the device as a blow-off cock, he moves the lever I still farther outward until the catch J drops into the outer notch K<sup>3</sup>. This outward movement of the lever I causes a further inward motion in the direction of the arrow a' of the piston-rod H, so that the latter forces the piston G beyond the ports L<sup>2</sup> onto the inner wall P. At the same time the valve D is still further opened, and the water and mud accumulated in the bottom of the boiler are forced through the seat C' into the central opening C<sup>2</sup> and pass from the latter through the ports L' into the annular chamber L. Part of the water and mud pass, as before described, through the port N into the pipes O and O' and out of the same through the apertures O<sup>2</sup>. The larger part of the water and mud, however, passes from the annular chamber L through the ports L<sup>2</sup> into the front open end of the valve-body C and out of the same into the open air.

It is understood that when the valve D is opened for sprinkling only, as previously described, only a small amount of water passes to the pipes O and O'. When, however, the operator desires to blow off, as above described, a large quantity of water and mud rushes into the valve-body C and out of the same, as before described, whereby the boiler is cleaned of the accumulated impurities. It will further be seen that when the operator desires to close the valve D he moves the lever I back to its original position, as indicated in Fig. 2, the catch J then dropping into the notch K'. It will further be seen that as the valve D is inside of the boiler a pressure-valve is formed, which remains closed in case of a wreck and prevents accidents from escaping steam. As no water remains in the valve-body C after the valve D is closed, said valve-body is prevented from being frozen up.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to the lower end of the boiler, perforated pipes connected with the said annular chamber, a valve

held on the inner end of the said valve-body, and a piston secured on the stem of the said valve and operating with the same, substantially as shown and described.

2. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to the lower end of the boiler, perforated pipes connected with the said annular chamber, a valve held on the inner end of the said valve-body, a piston secured on the stem of the said valve and operating with the same, and means, substantially as described, for operating said valve and piston from the cab of the locomotive, as set forth.

3. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to one end of the boiler, a valve held on the inner end of the said valve-body and adapted to open and close said central opening, a valve-stem carrying said valve, and a piston secured on the said valve-stem and held to slide in the said central opening, substantially as shown and described.

4. In a combined blow-off cock and fire-extinguisher, the combination, with a valve-body provided with a central opening and an annular chamber, which latter is connected by ports with the central opening, of a valve adapted to open and close the inner end of the said valve-body, a valve-stem extending from the said valve through the said central opening, a piston secured on the said valve-stem and held to slide in the said central opening over one set of the said ports, and means, substantially as described, for opening the said piston and valve simultaneously, as set forth.

5. In a combined blow-off cock and fire-extinguisher, the combination, with a valve-body provided with a central opening and an annular chamber, which latter is connected by ports with the central opening, of a valve adapted to open and close the inner end of the said valve-body, a valve-stem extending from the said valve through the said central opening, a piston secured on the said valve-stem and held to slide in the said central opening over one set of the said ports, means, substantially as described, for opening the said piston and valve simultaneously, and perforated pipes connected with the said annular chamber, as set forth.

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Witnesses:

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