

Jan. 18, 1927.

J. GEARON

1,614,466

PERISCOPE

Filed Jan. 14, 1926

Fig. 1.

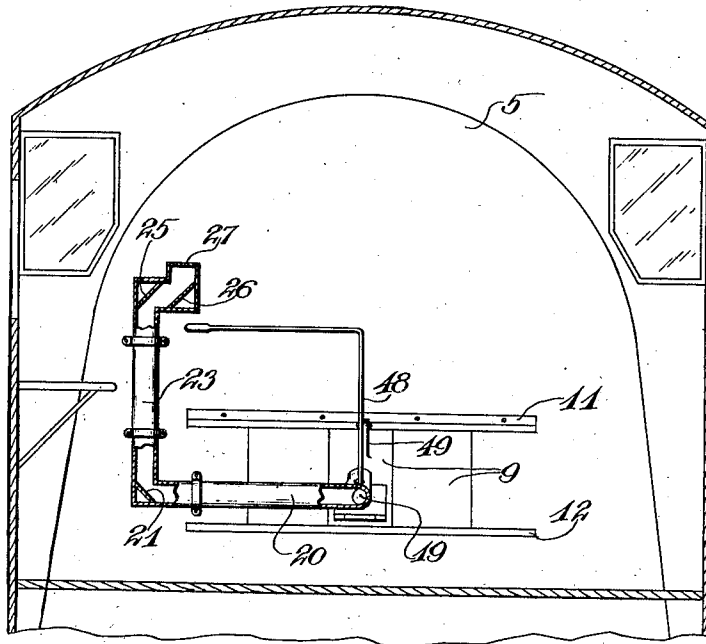


Fig. 2.

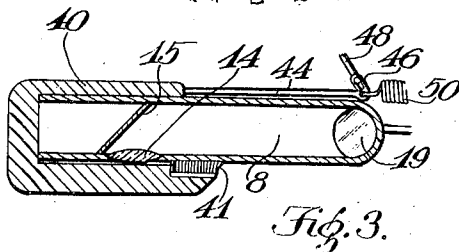
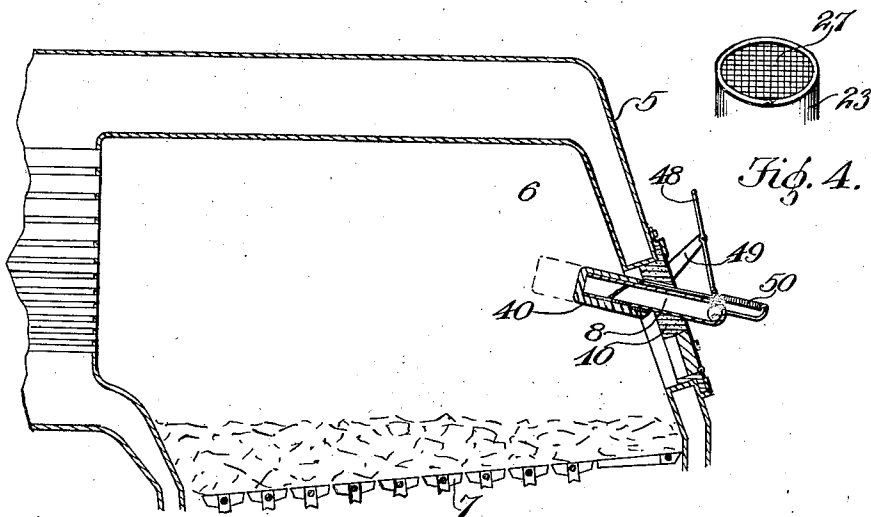
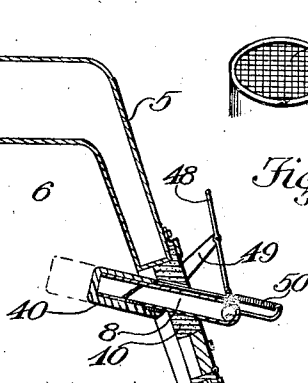


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN GEARON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-FOURTH TO MICHAEL V. GEARON AND ONE-FOURTH TO EDWARD GEARON, BOTH OF CHICAGO, ILLINOIS.

PERISCOPE.

Application filed January 14, 1926. Serial No. 81,276.

This invention relates to periscopes especially adapted for use in locomotive and other boilers for ascertaining the condition of the fire and fittings and other parts of the firebox, all without the necessity of opening the fire door.

A further object of the invention is to provide means in connection with the periscope whereby the firebox is divided into a number of separate areas or divisions to permit the fireman or other attendant to ascertain at a glance just which portions, if any, of the fire are burning improperly.

A further and equally important object of the invention is to provide a periscope of the character specified which is of highly simplified construction, easy to install and durable in use.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a front elevation of the improved periscope applied, parts of the periscope being shown in section.

Figure 2 is a vertical sectional view through a portion of the periscope applied, the two extreme positions of a protecting sleeve or guard being shown in full and dotted lines.

Figure 3 is an enlarged detail sectional view through one branch of the periscope and associated elements.

Figure 4 is a fragmentary perspective of the sighting tube and the means to chart or divide the firebox into a number of divisions or areas.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention the numeral 5 generally designates a boiler within which a firebox 6 of any preferred design is arranged and as shown in Figure 2 the firebox is provided with a grate 7 to support the fuel in place.

As previously stated, the invention forming the subject matter of this application is in the nature of a periscope and includes a tube 8 carried by one of the slides 9 at the front of the firebox. As shown in Figure 2 the slide which supports the tube 8 is provided with a heat insulating insert 10 and

the lower portion of the tube carrying slide may be hinged so that the fire may be manually stoked in case the automatic stoker is out of repair. Figure 1 plainly illustrates that flanges 11 and 12 slidably support the sections 9.

Referring now to Figure 3 it will be seen that the inner portion of the tube 8 is provided with a lens 14 arranged beneath a tilted mirror 15 so that the image of the fire below may be reflected through the mirror. The outer portion of the tube 8 is provided with a second mirror 19 arranged in operative relation to the original reflecting mirror 15 so that the image of the fire is reflected a second time.

Considering Figure 1 it will be seen that an intermediate horizontal tube 20 extends at substantially right angles from the tube 8 and has a mirror 21 at one end and tilted so that the image reflected through the mirror 19 will be reflected a third time by the mirror 21. Figure 1 further illustrates that an upright tube 23 is extended upwardly from one end of the intermediate tube 20 and has the upper portion thereof offset and provided with reflecting mirrors 25 and 26 by which the image of the fire and the interior of the firebox is reflected to a point where it may be conveniently seen by the fireman or other attendant.

Figure 4 illustrates that the final reflecting mirror 26 may be easily seen through a colored lens 27 divided by etching or other lines into a number of divisions or areas.

In the operation of the invention the attendant may view the image of the fire through the dial or window 27 and by the aid of the etching or other marks the operator may easily ascertain the particular portions, if any, of the fire which are burning improperly. When the condition of the fire has thus been ascertained the fire may be stoked if necessary or a particular part of the fire may be stoked or otherwise treated to bring about uniform combustion and the efficient operation of the boiler.

In carrying out the invention the inner-portion of the tube 8 may as shown in Figure 3 be provided with a protecting sleeve 40, the inner portion of which is provided with a brush 41 adapted to wipe over the convex outer surface of the window 14 so as to remove any smoke, dirt, or soot which may have accumulated thereon. Of course the

tube 8 is extended beyond the original reflecting mirror 15 to provide a support for the protecting sleeve 40. The protecting sleeve 40 has connection with a link 44, the
 5 outer portion of which is provided with an angularly extending slotted branch 46 to which the lower terminal of a lever 48 is slidably and pivotally connected. Figure 2
 10 clearly shows that the intermediate portion of the lever 48 is fulcrumed to a bracket 49 and when the handle portion of the lever is drawn away from the firebox the protecting sleeve 40 will be moved to expose the window
 15 14 and to cause the brush 41 to wipe over the window 14 whereby the image of the fire and the fittings will be reflected to the series of mirrors as described. Particular attention is directed to the fact that the protecting sleeve
 20 40 is of a heat resisting material and is normally held over the window 14 by a spring 50. Of course the tension of this spring is easily overcome by the operation of the lever 48.

With reference to the foregoing description taken in connection with the accompanying drawing it will be seen that the improved periscope may be applied to a locomotive firebox either during course of manu-
 30 facture or at any time thereafter without impairing the efficiency of the firebox and without a substantial expense.

Having thus described the invention what is claimed is:

1. A periscope comprising a tubular member provided at a point spaced from the inner end thereof with a window, a sleeve mounted on said tube and having a cleaning
 35 element adapted for engaging said window to remove soot from the same, and means connected to the sleeve for moving the same in operative relation to said window.

2. A periscope for use in fireboxes comprising a tube provided at a point spaced from the inner end thereof with a window, a cleaning element for said window, there
 45 being means whereby the cleaning element may be operated from the exterior of the firebox, a mirror, arranged adjacent the window to reflect the image of the interior of the firebox, a second mirror arranged at the
 50 outer portion of the tube, an intermediate tube having connection with the first named tube and having a mirror arranged in operative relation to the second named mirror, an upright tube having connection with said
 55 intermediate tube, the upper portion of the upright tube being provided with an offset portion and with a plurality of reflecting mirrors arranged in operative relation to the
 60 other tubes whereby the image of the interior

of the firebox may be viewed, and a window affording a view of one of the mirrors and having means to divide the firebox into a number of divisions.

3. A periscope for locomotive fireboxes 65 comprising a tube having a window provided with a convex outer surface, a mirror arranged within said tube adjacent said window, a protecting sleeve over said tube and having a brush to wipe over the convex outer
 70 surface of said window to clean the same, a link connected to said sleeve, and a lever having connection with said link.

4. A periscope for locomotive fireboxes 75 comprising a tube having a window provided with a convex outer surface, a mirror arranged within said tube adjacent said window, a protecting sleeve over said tube and having a brush to wipe over the convex
 80 outer surface of said window to clean the same, a link connected to said sleeve, a lever having connection with said link, and a spring connected to said link and normally holding said sleeve over said window.

5. A periscope for locomotive fireboxes 85 comprising a tube having a window provided with a convex outer surface, a mirror arranged within said tube adjacent said window, a protecting sleeve over said tube and having a brush to wipe over the convex outer
 90 surface of said window to clean the same, a link connected to said sleeve, a lever having connection with said link, a spring connected to said link and normally holding said sleeve over said window, an intermediate tube con- 95
 100 nected to said first named tube, an upright connected to said intermediate tube, and reflecting mirrors in said tubes.

6. A periscope for locomotive fireboxes 100 comprising a tube having a window provided with a convex outer surface, a mirror arranged within said tube adjacent said window, a protecting sleeve over said tube and having a brush to wipe over the convex outer
 105 surface of said window to clean the same, a link connected to said sleeve, a lever having connection with said link, a spring connected to said link and normally holding said sleeve over said window, an intermediate tube connected to said first named tube, 110
 115 an upright connected to said intermediate tube, and reflecting mirrors in said tubes, and a window carried by said last named tube and affording a view of one of said mirrors, said window being provided with intersecting lines dividing the interior of the firebox into a number of separate areas.

In testimony whereof I affix my signature.

JOHN GEARON.