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G. H. SARGENT

INSPECTION PLUG

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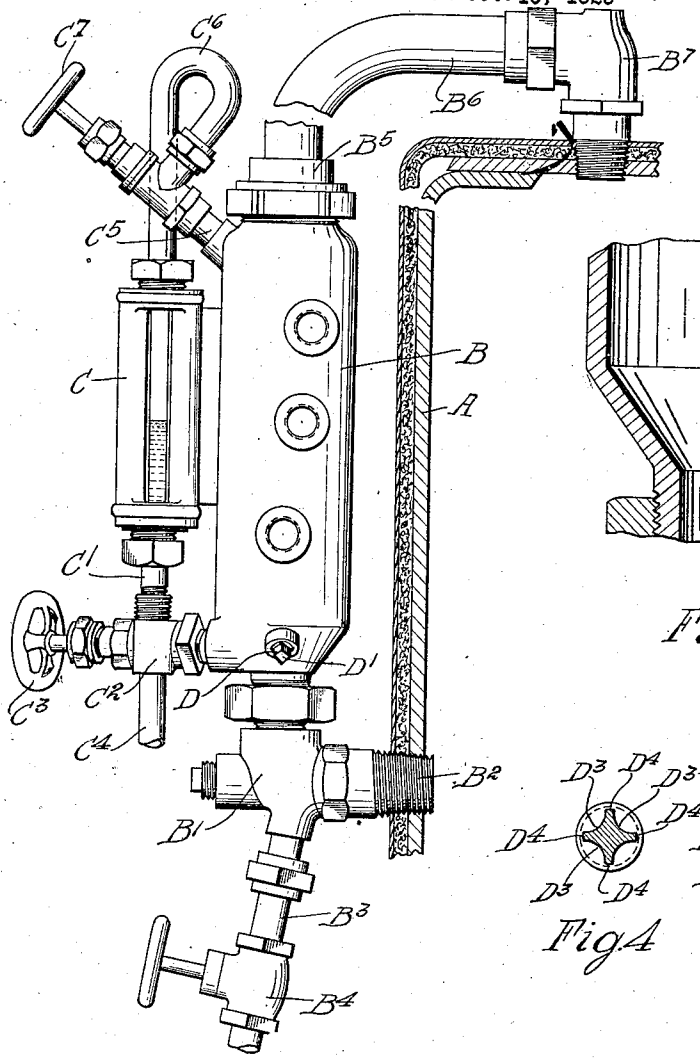


Fig. 1

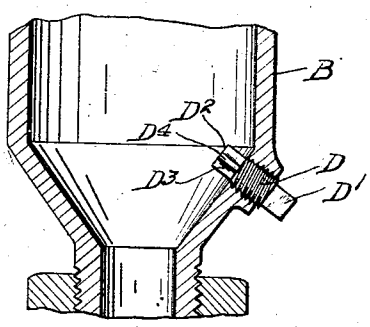


Fig. 2

Fig. 4

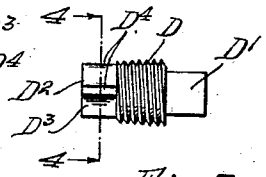


Fig. 3

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UNITED STATES PATENT OFFICE.

GEORGE H. SARGENT, OF CHICAGO, ILLINOIS.

INSPECTION PLUG.

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This invention relates to an inspection plug, or device whereby it is possible to determine the condition of the interior of the water column or other water container without breaking any of the usual connections. One object therefore is to provide inspection means for a water column. Another object is to provide an inspection means for a water column in connection with a boiler and gauge whereby an inspection may be made of the interior of the water column and whereby a sample of whatever sediment has been deposited may be readily withdrawn therefrom. Other objects will appear from time to time throughout the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawing, wherein:

Figure 1 is a side elevation with parts in section showing a water column in conjunction with a boiler and gauge with the inspection plug in position;

Figure 2 is an enlarged vertical cross section of the water column showing the inspection plug;

Figure 3 is an enlarged elevational view of the plug removed;

Figure 4 is a transverse cross section taken on line 4—4 of Figure 3.

Like parts are indicated by like characters throughout.

A designated generally a boiler. B is a water column provided with a lower connection B^1 which communicates as at B^2 with the interior of the boiler. Extending from the connection B^1 is a pipe B^3 provided with a valve B^4. The details of this latter construction form no part of the present invention. At the upper end of the water column is a connection B^5 which, through a pipe B^6 and connection B^7 communicates also with the boiler.

C is a gauge connected through the pipe C^1 and the fitting C^2 adjacent the bottom of the water column. C^3 is a valve or cock which controls the passage of liquid from the water column to the gauge. C^4 is an outlet connection. C^5 is a connection passing from the water column adjacent its top, and through a pipe C^6 communicating with the upper end of the gauge. C^7 is a valve controlling this passage. The details of construction of the gauge form no part of the present invention.

D is an inspection plug. It is provided with a squared or angularly shaped end D^1. It is threaded as shown and is provided with an inner end D^2 having a plurality of cup-shaped pockets D^3 formed by laterally extending vanes D^4. Each of these vanes is formed preferably with two comparatively sharp or cutting edges, although this is not essential. The pockets in the inwardly projecting end of the plug protect the material deposited therein from displacement during the removal of the plug.

Although I have shown an operative device, still it will be obvious that many changes might be made in size, shape and arrangement of parts without departing materially from the spirit of my invention; and I wish, therefore, that my showing be taken as in a sense diagrammatic.

The use and operation of my invention are as follows:

The parts are assembled as shown and water is conducted to the water column so that the inner end of the threaded portion of the plug D corresponds generally with the interior of the water column and thus the outer or bottom ends of the pockets D^3 are on a line with the interior of the water column.

During the operation of the devices with which the water column is associated the water, of course passes more or less constantly through the column. In the course of time various sediments and solid matters will be deposited out of the water and will lodge in the water column or adhere to its walls, or otherwise become more or less permanently fixed within it. This makes it necessary to clean out the water column. Heretofore, in order to do this, it has been necessary to drain the boiler below the bottom water column connection and then to disconnect all of the various connections so as to remove the water column before even the inspection can be made. Sometimes after all of this has been done, it is found by the inspection that cleaning is not yet necessary. By the use of the inspection plug shown it is not necessary to remove the water column. The boiler may be drained to a point below the level of the inspection plug and then without the necessity of breaking any of the connections the inspection plug is screwed out and removed. If sediment has formed within the water column or if any solid matter has separated out and adhered to the column, it will also adhere to the

inspection plug. Thus when the inspection plug has been removed, there will adhere to it some of the material adhering to or remaining within the water column, and this will show the depth or thickness and quality of the sediment. Thus by an inspection of the sample adhering and lodging within the pockets of the inspection plug, it is possible at once to tell the condition of the interior of the water column. Where further inspection is desired, an inspecting or testing tool or rod may be inserted through the hole from which the plug was removed and the necessary further inspection can be carried out. It is possible also to clean the water column through the opening.

The shape of the portion of the plug which extends into the water space within the member B is such that at all times one of the cavities or depressions in this part of the plug faces upward. Thus whatever settlement takes place from the water or other fluid passing through will find ready lodging place in one or more of the depressions of the plug, and thus no matter what the quality of the liquid, and no matter what the quality of the material which settles out from it, it will always find a settling place on the plug where it may be received and retained.

I claim:

1. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug provided with a portion having a receiving depression within it.

2. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug provided on its inner end with a portion having a receiving depression within it.

3. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug provided with a portion having a receiving depression within it, and a cutting edge adjacent said depression.

4. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug provided on its inner end with a portion having a receiving depression within it, and a cutting edge adjacent said depression.

5. A container, means adapted to permit the passage of fluid therethrough, means for determining the condition of the interior of said container, said means comprising an inspection hole in the wall of said container, and a plug adapted to fit into said hole to close the same, that portion of the inner end of said plug which projects into said container being provided with a receiving portion shaped to receive material which may be deposited from the fluid within the container and to protect such material from displacement from the plug during removal of the plug.

6. A container, means adapted to permit the passage of fluid therethrough, means for determining the condition of the interior of said container, said means comprising an inspection hole in the wall of said container and a plug adapted to fit said hole and to close it, the inner end of said plug extending inwardly beyond the wall of such container, such inwardly extending portion being provided with a receiving portion shaped, throughout its entire length within the container, to receive material which may be deposited from the fluid within the container, and to protect such material from displacement from the plug during removal of the plug.

7. A container, means adapted to permit the passage of fluid therethrough, means for determining the condition of the interior of said container, said means comprising an inspection hole in the wall of said container, and a plug adapted to fit into said hole to close the same, the inner end of said plug adapted to extend inwardly beyond the wall of such container, and being provided with a receiving portion adapted to receive material which may be deposited from the fluid within the container, the outer end of such receiving portion terminating at the wall of the container.

8. A container, means for determining the condition of the interior of said container, said means comprising an inspection hole in the wall of said container, and a plug adapted to fit into said hole to close the same, the inner end of said plug adapted to extend inwardly beyond the wall of such container, and being provided throughout its entire length within the container with a receiving portion shaped to receive material which may be deposited from the fluid within the container and to protect such material from displacement from the plug during removal of the plug.

9. A container, means for determining the condition of the interior of said container, said means comprising an inspection hole in the wall of said container, and a plug adapted to fit into said hole to close the same, the inner end of said plug adapted to extend inwardly beyond the wall of such container, and being provided with a receiving portion adapted to receive material which may be deposited from the fluid within the container, the outer end of such receiving portion terminating at the wall of the container.

10. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug extending within the container, and shaped to retain material deposited thereon and to protect such material from displacement

from the plug during removal of the plug.

11. In combination with a liquid container through which liquid passes, an inspection hole and a plug located therein, said plug extending within the container, and shaped to retain material deposited thereon and provided with a cutting edge.

12. In combination with a liquid container, means for determining the condition of the interior of such container and the presence, depth, condition and nature of any material deposited on the inside of such container, said means including an inspection hole in such container adapted to be opened to permit inspection of the interior of the container and to permit the insertion of inspecting tools, and a plug to close such hole, said plug provided on its inner end with an irregularly shaped end adapted to project within the container, to receive in equal measure with the sides of such container material deposited thereon.

13. In combination with a liquid container, means for determining the condition of the interior of such container and the presence, depth, condition and nature of any material deposited on the inside of such container, said means including an inspection hole in such container adapted to be opened to permit inspection of the interior of the container and to permit the insertion of inspecting tools, and a plug to close such hole, said plug provided with pockets adapted to retain material deposited thereon when the plug has been removed from the container.

14. In combination with a liquid container, means adapted to permit the circulation of liquid therethrough, and means for determining the condition of the interior of such container and the presence, depth, condition and nature of any material deposited on the inside of such container, said means including an inspection hole in such container adapted to be opened to permit inspection of the interior of the container and to permit the insertion of inspecting tools and a plug to close said hole, said plug provided on its inner end with an irregularly shaped end adapted to project within the container, to receive in equal measure with the sides of such container, material deposited thereon, said irregularly shaped end comprising pockets adapted to retain material so deposited when the plug has been removed from the container.

Signed at Chicago, county of Cook and State of Illinois, this 13th day of October, 1925.

GEORGE H. SARGENT.