No. 851,914. PATENTED APR. 30, 1907.

A. C. BOTTGER.

FEED WATER STRAINER FOR LOCOMOTIVES.

APPLICATION FILED MAY 12, 1906.

Fig. 1.

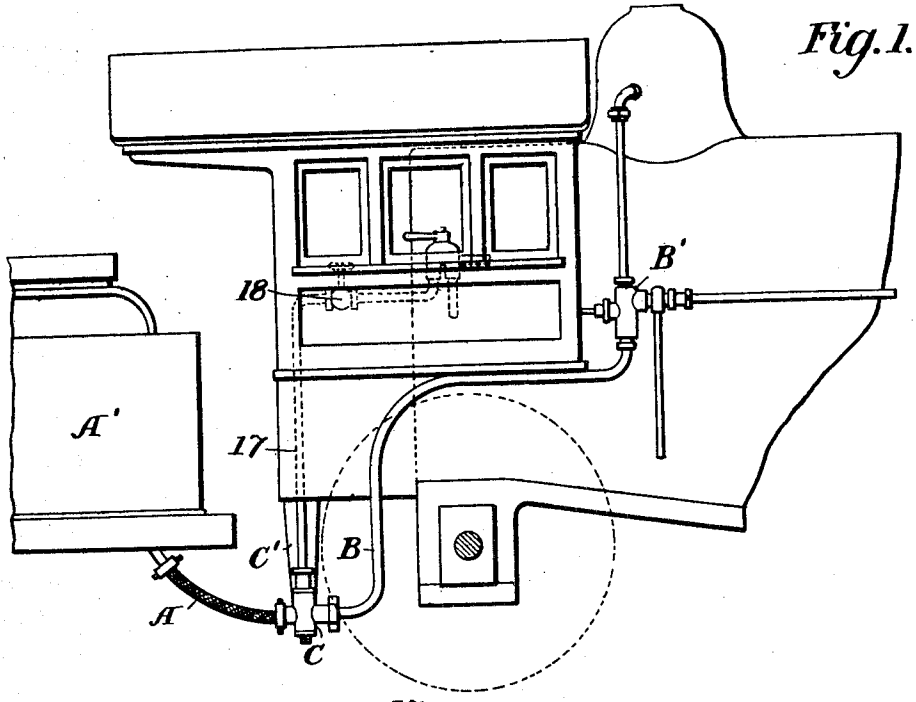


Fig. 2.

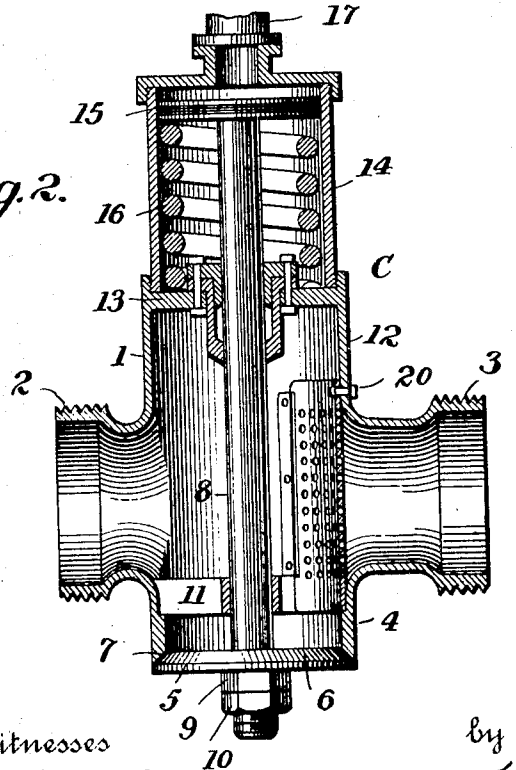
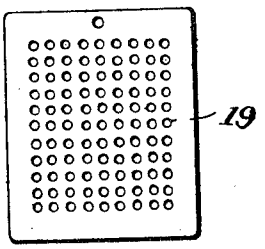


Fig. 3



Witnesses

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FEED-WATER STRAINER FOR LOCOMOTIVES.

No. 851,914. Specification of Letters Patent. Patented April 30, 1907.

Application filed May 12, 1906. Serial No. 316,514.

To all whom it may concern:

Be it known that I, ALBERT C. BOTTGER, a citizen of the United States, residing at Wilkes-Barre, Luzerne county, State of Pennsylvania, have invented certain new and useful Improvements in Feed-Water Strainers for Locomotives, of which the following is a specification.

My invention relates to feed water strainers for locomotives, and has for its object to provide an improved and simplified strainer of the kind described; and to these ends my invention consists in a strainer embodying the various features of construction and arrangement of parts, having the general mode of operation substantially as hereinafter set forth.

Referring to the accompanying drawing,—Figure 1 is a side elevation in outline of a part of a locomotive and tender indicating the manner of applying my invention; Figure 2 is a vertical longitudinal section of the strainer; and Figure 3 is a detail view of the strainer proper.

The general object of my invention is to provide improved and simplified means whereby the sediment or other foreign matter will be prevented from entering the boiler of a locomotive and by which this sediment and foreign matter may be ejected from the connections or hose leading from the tank to the boiler, and can be ejected without the necessity of manually operating the strainer. It is well known that sediment and foreign matter is likely to get into the tank and tends to pass from the tank into the boiler when the water in the tank is forced under pressure, as by a steam injector, into the boiler, and this is a serious objection for reasons apparent to those skilled in the art. Attempts have been made to provide devices for accomplishing this general result, and the object of my present invention is to provide an improved device and means of operation of the device whereby the result can be perfectly and satisfactorily effected, and the sediment or foreign matter collected and discharged by the engineer from his position in the locomotive without the necessity of manually manipulating the strainer and without danger of injuring its parts and connections. With this general statement of the objects of my invention, I will now proceed to describe the preferred embodiment thereof and mode of operating the same.

In modern practice, the water from the tank is usually supplied to the boiler by means of an injector, which operates on a principle well understood, and the tank is connected to the injector pipe usually mounted on the cab or locomotive frame by a flexible connection or hose for reasons also well understood, and in utilizing my invention, I apply my improved strainer by locating it intermediate the hose and injector pipe. Thus in the drawing, A represents a flexible hose or connection leading from the tank A′, and B represents the pipe leading to the injector B′ mounted on the frame of the locomotive. The strainer C is shown as coupled at its opposite sides respectively to the flexible hose A and the rigid injector pipe B, and it may be supported in any suitable way, as by a hanger or bracket C′, connected to the frame of the locomotive.

The strainer C comprises a valve casing 1, of any suitable shape, and preferably made of metal, as brass, so as to avoid rust. It is provided on one side with a coupling 2 to which the flexible hose A is connected, and on the other with a coupling 3 to which the injector pipe B is connected. These couplers are made of a standard size so that the strainer can be readily attached to the ordinary apparatus in connection with which it is used. These couplers are formed on bosses or projections of the valve casing which constitute the inlet and outlet thereof, and are preferably arranged in line as shown. The valve casing is also provided with a central downward extension 4 preferably having an opening relatively larger than the inlet opening to the casing, and this opening is adapted to be closed by a valve 5. This valve is shown in the form of a plate, and is of a size to fit the end of the extension 4 and is preferably beveled, as at 6, to aid in forming a valve seat in connection with the similar beveled portion 7 on the extension 4. In this way I provide for a free passage at the dumping or discharge opening or exit.

Connected to the valve 5 is a valve stem

8, and this may be connected in any suitable way, being shown as passing through the center of the valve 5 and as having jam and lock nuts 9, 10, on its end.

It is generally found desirable to provide a brace or guide as 11 for the valve stem, and this may vary in shape, and is shown as a cross brace or guide, the ends of which are secured to the walls of the extension 4.

The upper part of the valve casing 1 is shown in the form of a cylindrical extension 12, having a cover 13, in which may be fitted a packing or stuffing box 14, through which the valve stem passes so as to make an air tight joint.

Mounted upon the valve casing proper is a spring casing 14, which may be secured to the valve casing in any suitable way and in which is fitted the head 15 of the valve stem 5. This head is supplied with a proper packing so as to fit the interior of the spring casing 14 tightly, but so as to be able to move therein under proper pressure.

Between the valve stem head 15 and the cover 13 is arranged a spring 16 shown in the form of a coiled spring, and this tends to force the valve stem head upward and to hold the valve 5 in closed position. The spring must be of such a resiliency as to accomplish this under ordinary circumstances and yet be capable of yielding under pressure.

In order to operate the valve 5 I connect to the spring casing 14 a pipe 17 leading to the air reservoir on the engine, or as indicated to a pipe connected to the reservoir or with a three-way air cock, and it is provided with a proper valve 18 controlling the supply of air through said pipe.

The strainer proper may be of any suitable construction, but I have found that a sheet of perforated metal, as indicated at 19, secured over the outlet opening in any suitable way, as by guides 21, and a bolt 20, is effective in producing the desired result, and this is the preferable construction.

The strainer being thus constructed substantially as indicated and arranged and connected as set forth, its operation will be readily understood by those skilled in the art, and it will be seen that when the water from the tank is supplied to the boiler and forced therein in any suitable way as by the injector B′, the water passes through the strainer and all sediment and foreign matter falls on to the valve 5, and is prevented from passing into the injector pipe and thence into the boiler by means of the strainer plate 19. When it is desired to discharge the sediment or foreign matter thus collected, all that it is necessary to do is for the engineer to operate the valve 18 and air from the reservoir passing into the casing 14 above the valve stem head 15, compresses the spring 16 allowing the valve 5 to be moved directly downward from its valve seat so that there will be a discharge opening all around the edge of the valve permitting the sediment and other foreign matter to be completely and freely discharged. I have found this form of valve to be exceedingly effectual, in that it being larger than the inlet, any foreign matter which can get through the inlet can be discharged through the discharge valve and the valve discharging from all sides prevents the accumulation of foreign matter in any part thereof; and further, this has an important advantage in that as the valve is opened, the water from the tank passing through the hose will pass through this valve, wash out the strainer and spread in all directions around the edge of the valve, effecting a thorough cleaning of the apparatus.

Heretofore it has been proposed to empty or discharge the strainer by means of steam pressure through the injector B′, and while this is a possible mode of operation in cleaning the strainer, it has been found a disadvantage owing to the fact that the hot steam or water from the boiler is liable to come in contact with the flexible hose A and destroy the same; and more than that, the high pressure of the steam and water has a tendency to force back through the inlet 2 some of the sediment or foreign matter so that the strainer is not thoroughly cleaned. By my arrangement of operating the valve by air pressure independent of the action of the injector, not only are the above objections avoided, but the strainer can be opened and held open so as to be thoroughly washed and cleansed by the water from the tank without in any way affecting or depending upon the pressure of steam in the boiler.

What I claim is,—

1. A feed water strainer for locomotives comprising a valve casing having an inlet and outlet on opposite sides thereof, a strainer plate covering the outlet, a discharge opening at the bottom thereof, a valve for said opening normally under spring pressure, and means for operating said valve by air pressure.

2. A feed water strainer for locomotives comprising a casing having an inlet and outlet on opposite sides thereof, a strainer controlling the flow from the outlet, a valve opening in the bottom thereof, a valve plate controlling said opening, a stem extending through the top of the casing, a head on the stem, a spring, a spring casing inclosing the head and spring, and an air pipe connection leading to the spring casing for operating the valve.

3. A feed water strainer for locomotives comprising a casing having an inlet and outlet on opposite sides thereof, a discharge opening at the bottom thereof having an in-

clined valve seat on its edge, a disk shaped valve having an inclined seat, a brace extending across the opening, a valve stem extending through the top of the casing, a head on the stem, a spring casing surrounding the head, an air pipe connection leading to the spring casing, and a strainer plate opposite the outlet, the whole being adapted to be connected to the ordinary hose pipe leading from the tank and the injector pipe leading to the boiler and the air pipe being adapted to be connected to the air reservoir.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT C. BOTTGER.

Witnesses:
C. E. SMITH,
ALEXANDER COMB.