

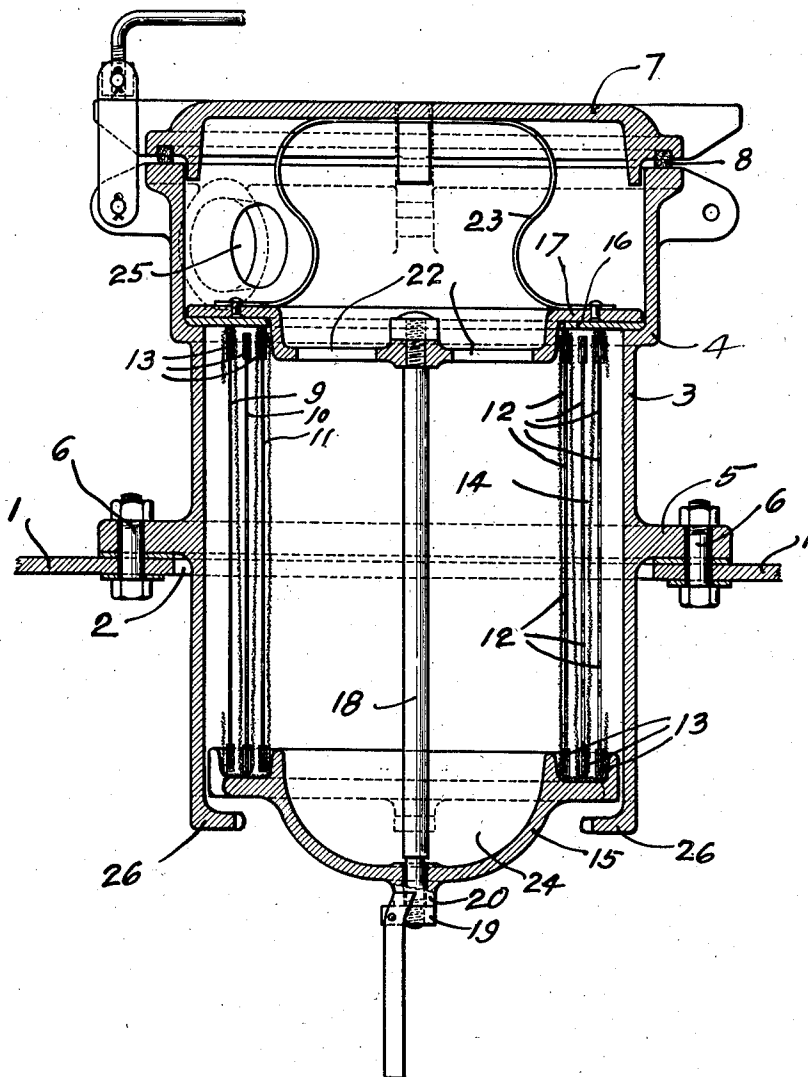
Dec. 8 1925.

1,564,666

J. F. GRIFFIN

FILTER

Filed June 20, 1923



Joseph F. Griffin, INVENTOR.

BY

O. V. Thiele
his ATTORNEY.

UNITED STATES PATENT OFFICE.

JOSEPH FRANCIS GRIFFIN, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE SUPER-
HEATER COMPANY, OF NEW YORK, N. Y.

FILTER.

Application filed June 20, 1923. Serial No. 646,716.

To all whom it may concern:

Be it known that I, JOSEPH FRANCIS GRIFFIN, citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Filters, of which the following is a specification.

This invention refers to filters, particularly those used in connection with locomotive feed water heaters. The object of the invention is to provide a new filtering apparatus of this kind which shall be efficient as a filter, not too expensive in construction, readily assembled and dismantled, easily cleaned, of sufficient capacity to meet all the requirements of the service and rugged enough in construction to withstand the usage it is apt to get. While the invention has particular reference to filters for the service spoken of, yet it will be obvious that the apparatus will be useful also in other relations. While, therefore, I describe the apparatus as installed and used on a tender in a locomotive, this is not to be interpreted as being by way of limitation.

The invention is illustrated in a single figure in the accompanying drawing, this figure being a vertical central section.

The filter is set directly on the upper sheet 1 of the water space of a tender and extends through an opening 2 in said sheet into the water space, so that the filtered liquid falls directly into the tank. The filter comprises a housing or casing 3 which is generally cylindrical in shape, having a shoulder both internally and externally at 4 and a circumferential flange somewhat below its middle at 5. This flange 5 rests on the sheet 1, to which it is secured by means of the bolts 6. The housing is closed at the top by a lid or cover 7 between which and the housing there is a gasket 8. The lid can be held in place by any preferred means but this should be of such a nature that it can be readily removed.

Within the lower cylindrical part of the housing 3 are located the three cylindrical elements 9, 10 and 11. These are nested one within the other and are each perforated as shown at 12. At their ends there are stiffening rings 13. The filtering proper is performed by a filtering cloth 14 which is cylindrical in shape or slightly tapering in one direction and extends in one continuous piece over the upper end of the outer

element 9, down between the outer and middle elements around the lower end of the middle element, upward between the middle and inner elements, over the top of the inner element, down on its inside and over the lower ends of all three elements.

The three elements 9, 10 and 11 bear at their lower ends on the plate or head 15 while their upper ends preferably come into engagement with a gasket 16 made of any suitable material when the filter is completely assembled. Against the upper side of this gasket 16, if one is used, bears the plate 17. The two heads 15 and 17 are perforated at their centers and a bolt 18 extends through both of them at this point, the head of which bears against the upper plate while the nut 19 is screwed on the lower end and bears against the boss 20. Bolt 18 is provided with a shoulder immediately below head 17 and with a second shoulder immediately above head 15, which prevent the lower head from being pulled up too far and buckling the elements 9, 10 and 11. When the nut 19 is completely pulled up the upper ends of the elements 9, 10 and 11 will bear against the gasket 16.

The upper head 17 is perforated at 22 and has riveted to it a spring 23 which bears against the inside of the lid or cover 7 whereby the plate 17 is held against the shoulder 4.

The lower head 15 has a deep depression 24 which is provided to hold solid matter filtered out of the water passing through the filter, such solid matter dropping downward from the inside of the inner element.

The wall of the housing 3 is provided at 25 with an opening for attaching the pipe supplying the water to be filtered. In the application to locomotive feed water heaters this water is the condensate from the feed water heater, that is, the condensed exhaust from the main engine which has heated the feed water in the feed water heater. A number of inwardly turned feet 26 are provided at the bottom of housing 3, which prevent the bottom head 15 and the element 12 together with the filtering cloth from falling into the water space of the tank if nut 19 should become unscrewed or bolt 18 should break.

The operation of the device will be obvious from the above description and needs no detailed statement. The water to be filtered

enters the central space, seeps through the several layers of the filtering cloth and the elements 12, and flows out at the bottom of the casing into the tank. It will be noted
5 that it is a very easy matter to open the filter casing and remove the entire inner structure comprising the upper and lower plates and the three filter elements, in which removal the spring 23 serves as a handle
10 after which the portions removed can be quickly dismantled, the cloth 14 removed and replaced by a new one; and the entire apparatus cleaned and reassembled. It is unnecessary, as will be noted, to remove the
15 housing or casing 3 from the tender for this purpose.

What I claim is:

1. In apparatus of the class described, the combination of a water reservoir, a filter
20 housing extending through and secured to the top of said reservoir and having a ledge extending around its interior near its upper end, a filter element comprising a top plate adapted to rest on said ledge, a lid secured
25 to and closing the upper end of the housing,

and resilient means engaging the lid and the top plate and keeping the latter in engagement with the ledge.

2. In apparatus of the class described, the combination of a water reservoir a cylin- 30
drical filter housing extending through its top and provided with an interior annular ledge near its upper end, a cylindrical filter within and spaced from the walls of the housing, plates closing top and bottom of 35
said filter, means to admit liquid to the top of the filter, the upper plate resting on said ledge and being apertured to admit the liquid to the inside of the filter, a lid secured to and closing the upper end of the housing, 40
resilient means engaging the lid and the upper plate and keeping the latter in engagement with the ledge, and means rigidly connecting the upper and lower plates, the lower plate being spaced from the housing 45
and having a central depression to form a space for holding solids which have been filtered out.

JOSEPH F. GRIFFIN.