Oct. 9, 1928. 1,687,308

T. E. PARADISE

BOILER BLOW-OFF MUFFLER

Filed Jan. 24, 1927

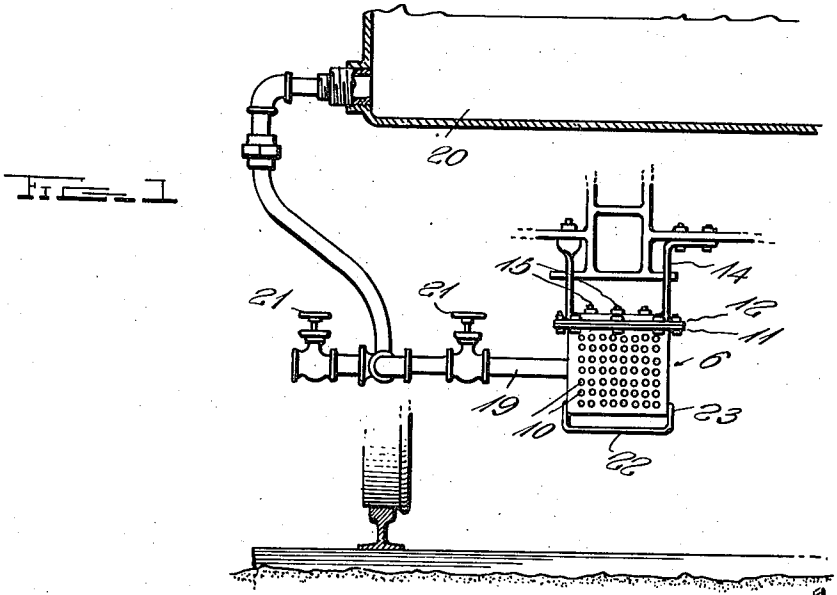


FIG. 1

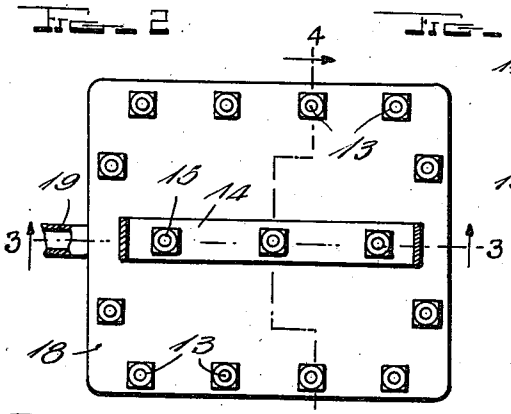


FIG. 2

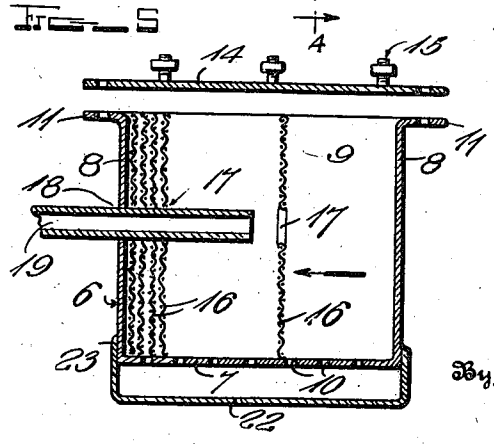


FIG. 5

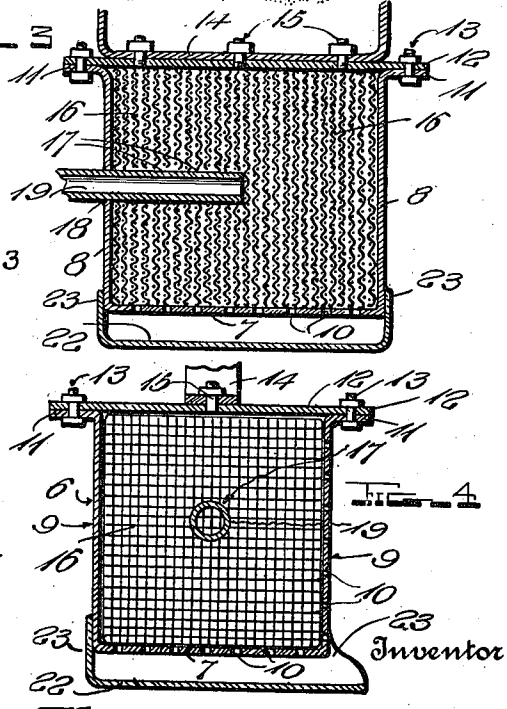


FIG. 3

FIG. 4

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UNITED STATES PATENT OFFICE.

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BOILER BLOW-OFF MUFFLER.

Application filed January 24, 1927. Serial No. 163,088.

The invention relates to improvements in mufflers for deadening the noise and checking the pressure incident to the blowing off of boilers, and while the present disclosure is directed to a locomotive blow-off muffler, it will be understood that the invention is applicable also for use in connection with stationary boilers.

It is one object of the invention to provide a device of the class described which embodies a new and improved muffling means formed by a multiplicity of apertured sheets (preferably woven wire) disposed side to side in compact relation.

The muffling mass formed by the apertured sheets, is disposed within a casing, which casing is provided with an inlet for the water, sediment and the like from the boiler, and is apertured for the discharge of the water and any materials carried in suspension thereby. It is a further object of the invention to provide the inlet in the form of a pipe and to extend it into the muffling mass so that the fluid discharged from said pipe may spread in numerous directions in the mass before reaching the atmosphere.

A still further aim is to so construct the casing as to permit easy insertion or removal of the apertured muffling sheets.

Yet another aim is to provide a muffler whose casing is so constructed that forcible downward discharge cannot take place when the boiler is being blown off, so that there is no danger of blowing any of the track ballast out of position.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Fig. 1 is a side elevation showing the invention applied to a locomotive.

Fig. 2 is a horizontal sectional view on line 2—2 of Fig. 1.

Figs. 3 and 4 are vertical sectional views on the correspondingly numbered lines of Fig. 2.

Fig. 5 is a view similar to Fig. 3 but illustrating the manner in which the muffler sheets may be readily inserted or removed.

In the drawing above briefly described, the numeral 6 designates a rectangular casing whose bottom 7 and two of its vertical sides 8 may well be formed from a single metal plate, as shown in Figs. 3 and 5, its other vertical side 9 being then formed from separate plates welded to the sides 8 and the bottom 7. In the present showing, the bottom 7 and one of the sides 9, are provided with a multiplicity of perforations 10 for the discharge of the dirty water blown off from the boiler.

I have shown outstanding flanges 11 on the upper ends of all of the sides 8 and 9, and a top 12 is removably secured by bolts 13 to these flanges. A hanger 14 for the entire device, may well be secured to this top by bolts 15.

16 denotes a multiplicity of flat, apertured sheets preferably formed of woven wire, said sheets being disposed side to side in contact with each other and forming a muffling mass which entirely fills the casing 6. These sheets are disposed in planes at right angles to the removable top 12 and about half of them are formed with registering openings 17 which register also with an opening 18 in one of the sides 8. A blow-off pipe 19, suitably connected with the boiler 20 and provided with one or more appropriate valves 21, passes through the opening 18 into the casing 6, has its inner end received in the registering openings 17 and terminates substantially at the center of the muffling mass formed by the sheets 16. By this arrangement, whenever the boiler is blown off, the dirty water from the pipe 19 may flow in all directions through the apertures of the sheets 16 and may finally discharge through the perforations 10. When traveling in this manner, the force of the water is checked and the noise which would otherwise occur, is effectively deadened.

When inserting the sheets 16 into the casing 6, those having the openings 17 are first passed into the casing, the top 12 being then of course detached. These sheets are moved first into the portion of the casing which is unoccupied by the pipe 19 and said sheets are then slid into the pipe-containing portion of the casing, so that their openings 17 then receive the pipe. When these sheets have been inserted, the remaining sheets may be readily placed in position and the cover plate 12 then secured in place.

Downwardly spaced from the bottom 7, I have shown an imperforate plate 22 which is provided with flanges 23 of imperforate nature. There are three of these flanges in the present disclosure and they are welded or otherwise secured to the casing sides 8 and

one of the sides 9, there being no flange however at the side 9 which is perforated. This side of the device, when the latter is used upon a locomotive, is preferably disposed toward the rear of the latter but this is not absolutely essential. However, it will be seen that the plate 22 prevents the water discharged through the perforated bottom, from forcibly striking the track ballast and washing any thereof out of place. Then too, by having perforated plate 9 disposed toward the rear or even toward the front of the locomotive there is no danger of the scalding water discharging laterally and causing injury to any nearby person.

The device is comparatively simple and inexpensive, may be easily assembled or disassembled, as occasion may demand, may be advantageously installed, and in actual operation has proven unusually effective. On account of these advantages flowing from the construction herein disclosed, such construction is preferably followed. However, within the scope of the invention as claimed, numerous variations may be made.

I claim:—

1. A boiler blow-off muffler comprising a casing apertured for the discharge of water, a series of woven wire sheets disposed side to side and forming a muffling means reticulate in all directions and filling said casing, and a water blow-off pipe entering the casing, passing through a plurality of the sheets of said series and terminating between the ends of said series.

2. A boiler blow-off muffler comprising a rectangular casing apertured for the discharge of water and having a removable side, a water inlet pipe projecting inwardly from a side of said casing at right angles to said removable side, said water inlet pipe extending into said casing to substantially a central point, a multiplicity of apertured rectangular sheets disposed side-to-side in planes at right angles to said removable side of said casing, substantially half of said sheets being formed with registering openings receiving said inwardly projecting pipe, while the remainder of said sheets are free from such openings, the sheets having said openings being shiftable from said pipe into an opposed portion of the casing, after removal of said remainder of said sheets from said casing portion.

3. A boiler blow-off muffler comprising a rectangular casing apertured for the discharge of water and having a removable side, a multiplicity of apertured sheets disposed side to side in planes at right angles to said removable side and forming a muffling mass which fills the casing, a side of the casing at right angles to said removable side being formed with an opening, a plurality of said sheets being also formed with openings which register with each other and with the first named opening, and a blow-off pipe passing into the casing and the aforesaid muffling mass through said registering openings, said sheets being removable from the casing after removal of said removable casing side.

4. A boiler blow-off muffler comprising a casing, muffling means completely filling said casing, said casing having a vertical side provided substantially throughout its area with a multiplicity of perforations, a bottom also provided substantially throughout its area with a multiplicity of perforations, and an inlet; an imperforate plate spaced below said bottom, and imperforate flanges rising from said plate to all vertical sides of the casing except said perforated side, the space between the lower end of said perforated side and said bottom being entirely open.

In testimony whereof I have hereunto affixed my signature.

THOMAS E. PARADISE.