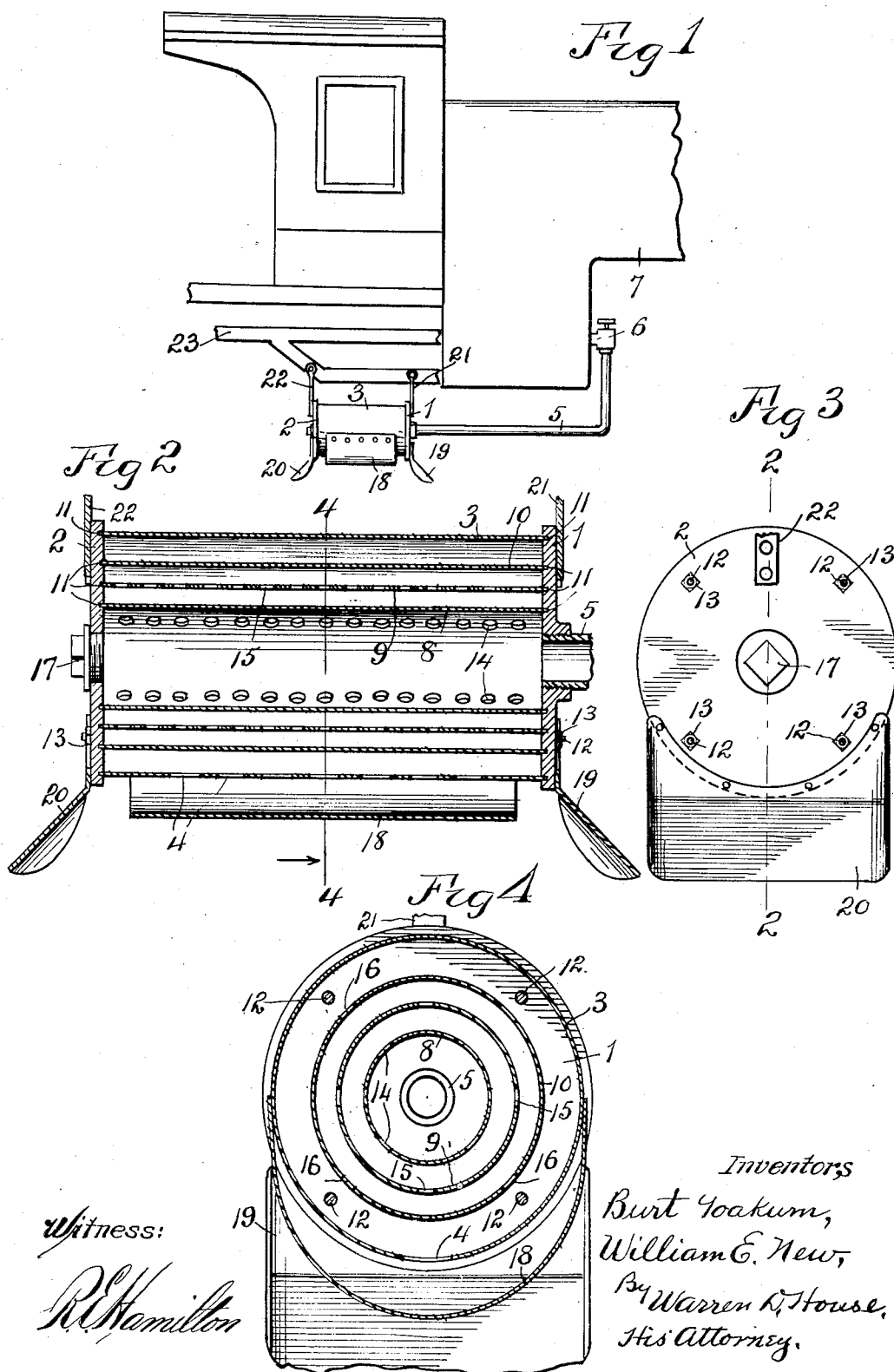


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B. YOAKUM ET AL
BOILER BLOW-OFF ATTACHMENT

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UNITED STATES PATENT OFFICE.

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BOILER BLOW-OFF ATTACHMENT.

Application filed May 23, 1921. Serial No. 471,811.

To all whom it may concern:

Be it known that we, BURT YOAKUM and WILLIAM E. NEW, citizens of the United States, residing, respectively, in Kansas City, in the county of Wyandotte and State of Kansas, and at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Boiler Blow-Off Attachments, of which the following is a specification.

Our invention relates to improvements in boiler blow-off attachments. It is particularly well adapted for use in connection with locomotive boilers.

The object of our invention is to provide an attachment which is simple, cheap to make, durable, not liable to get out of order, which will very much reduce the noise produced in blowing off a boiler through the blow-off cock, which will eliminate liability of injury to persons and to property in the vicinity, which can readily be attached to a locomotive boiler, and which is efficient in operation.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates the preferred embodiment of our invention,

Fig. 1 is a side elevation of our improved blow-off attachment, shown mounted on a locomotive.

Fig. 2 is an enlarged longitudinal vertical sectional view on the line 2—2 of Fig. 3, of our improved attachment.

Fig. 3 is an end elevation of the same.

Fig. 4 is a cross section on the line 4—4 of Fig. 2, partly broken away.

Similar reference characters designate similar parts in the different views.

The attachment comprises an expansion receptacle which may consist of two heads 1 and 2, connected with each other by a horizontal longitudinal outer cylindrical shell 3, having on its under side one or more openings comprising an outlet communicating with the atmosphere.

The head 1 is provided with a central threaded hole which forms a steam inlet for the receptacle and in which is fitted one end of a conducting pipe 5, the other end of which is connected to the discharge portion of a blow-off cock 6, of a locomotive boiler 7.

Intermediate of the steam inlet and the outlet opening 4 is provided baffling means

comprising preferably concentrically arranged inner shells 8, 9 and 10, which are spaced apart from each other and are spaced apart and located concentrically in the outer shell 3. The shells 8, 9, 10 and 3 may have their ends respectively located in concentric grooves 11, provided on the inner side of each head 1 and 2.

Longitudinal bolts 12 extend through the heads 1 and 2, between the shells 10 and 3, and have mounted on their respective ends nuts 13 which bear against the outer sides of the adjacent heads.

The conductor 5 discharges into the inner shell 8. The latter is provided with a plurality of longitudinal rows of openings 14, which discharge into the shell 9. The latter is provided with longitudinal rows of openings 15, which discharge into the shell 10. The latter is provided with longitudinal rows of openings 16, which discharge into the shell 3.

The holes 14, as shown in Fig. 4, are located out of alinement with the holes 15 and the latter are located out of alinement with the holes 16, the latter being disposed out of transverse alinement with the outlet openings 4. By means of this arrangement, an efficient baffling means is afforded.

The head 2 is provided with a central screw-threaded hole extending therethrough which is normally closed by a removable screw plug 17, which upon removal permits access to the inner shell 8, for the purpose of cleaning the latter.

Attached at its ends to the periphery of the shell 3, is a longitudinal arcuate plate comprising a deflector 18, which is spaced apart from and extends across the outlet openings 4.

The deflector 18 has open discharge ends, across which respectively extend curved inclined deflectors 19 and 20, which are respectively secured at their upper ends to the heads 1 and 2, and which are spaced apart from the adjacent ends of the deflector 18. The deflector 19 inclines forwardly and downwardly and the deflector 20 inclines rearwardly and downwardly, whereby steam discharged from the ends of the deflector 18 will be deflected downwardly at an angle against the ground.

The receptacle is supported by means of two vertical bars 21 and 22, which are respectively secured to the heads 1 and 2, and

which have their upper ends secured to the frame 23 of the locomotive.

In the operation of our invention, when the blow-off cock 6 is opened, water, sediment and steam will be blown through the conductor 5, into the shell 8, and thence through the openings 14 into the shell 9, and through the opening 15 into the shell 10, passing from thence through the openings 16, into the outer shell 3, and from thence through the opening 4, against the deflector 18, from which they will be discharged from both ends of the deflector 18, against the deflectors 19 and 20, which will deflect them obliquely downwardly against the ground.

The force of the discharge will be greatly reduced when the discharge is directed against the ground, so that no damage will be done to the right of way or the road bed, and the direction of the discharge is such that persons or cars which are at the side of the locomotive adjacent to the attachment will not be injured by the discharged material. By disposing the receptacle, as shown in Fig. 1, so that the discharge is longitudinally with respect to the locomotive, the liability of injury to a bystander or to adjacent property is eliminated.

The receptacle is made of sufficient size to permit of great expansion of the steam, whereby it is discharged therefrom at a very low pressure and with little noise.

We do not limit our invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of our invention.

What we claim is:—

1. The combination with a blow-off cock of a locomotive boiler, of a horizontal receptacle carried by the locomotive and having an inlet and provided with a bottom outlet communicating with the atmosphere, a deflector spaced apart from and extending across said outlet, and a conductor connecting said inlet with said cock, substantially as set forth.

2. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive having an inlet and a bottom outlet, the outlet communicating with the atmosphere, and having baffling means intermediate of said inlet and said outlet, a deflector spaced apart from and extending across said outlet, and a conductor connecting said inlet with said cock, substantially as set forth.

3. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and a bottom outlet, the outlet communicating with the atmosphere, a deflector spaced apart from and extending across said outlet and open at one end, a second deflector spaced apart from and ex-

tending across said open end, and a conductor connecting said inlet with said cock, substantially as set forth.

4. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and a bottom outlet, the outlet communicating with the atmosphere, and having baffling means intermediate of the inlet and said outlet, a deflector spaced apart from and extending across said outlet, and having an open end, a second deflector spaced apart from and extending across said open end, and a conductor connecting said inlet with said cock, substantially as set forth.

5. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and a bottom outlet, the outlet communicating with the atmosphere, a deflector spaced apart from and extending across said outlet and having an open end, a second deflector spaced apart from and extending obliquely across said open end, and a conductor connecting said inlet with said cock, substantially as set forth.

6. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and a bottom outlet, the outlet communicating with the atmosphere and having baffling means intermediate of the inlet and said outlet, a deflector spaced apart from and extending across said outlet and having an open end, a second deflector spaced apart from and extending obliquely across said open end, and a conductor connecting said inlet with said cock, substantially as set forth.

7. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and provided in its under side with a bottom outlet communicating with the atmosphere, a deflector supported by said receptacle below and spaced apart from said outlet, and a conductor connecting said inlet with said cock, substantially as set forth.

8. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and provided in its under side with a bottom outlet communicating with the atmosphere, a deflector carried by said receptacle below and spaced apart from said outlet and arranged to discharge longitudinally with respect to the locomotive, and a conductor connecting said inlet with said cock, substantially as set forth.

9. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive

and having an inlet and provided with a bottom outlet communicating with the atmosphere, a deflector spaced apart from and extending across said outlet and arranged to discharge longitudinally with respect to the locomotive, a second deflector spaced apart from and extending across said discharge end, and a conductor connecting said inlet with said cock, substantially as set forth.

10. The combination with a blow-off cock of a locomotive boiler, of an expansion horizontal receptacle carried by the locomotive and having an inlet and provided with a bottom outlet communicating with the atmosphere, a deflector carried by said receptacle and spaced apart and extending across said outlet and arranged to discharge longitudinally with respect to the locomotive, a second deflector spaced apart from and extending across said discharge end and arranged to deflect escaping steam downwardly, and a conductor connecting said inlet with said cock, substantially as set forth.

11. In a device of the kind described, an expansion receptacle comprising two heads, one having an inlet adapted to communicate with a blow-off cock of a boiler, an outer shell connecting said heads and having a lateral outlet communicating with the atmosphere an inner shell into which said inlet discharges and which discharges into the outer shell, a deflector spaced apart from and extending across said outlet, and a second deflector spaced apart from and extending across the discharge end of the other deflector, substantially as set forth.

12. In a device of the kind described, an expansion receptacle comprising two heads one having an inlet adapted to be connected with a blow off cock of a boiler, an outer shell connecting the heads and having a lateral outlet communicating with the atmosphere, inner shells located in the outer shell and one within the other, the inlet discharging into the innermost shell and each inner shell discharging into the next outer shell, a deflector spaced apart from and extending across said outlet, and a second deflector spaced apart from and extending across the discharge end of the other deflector, substantially as set forth.

13. In a device of the kind described, an expansion receptacle comprising two heads one having an inlet adapted to be connected with a blow off cock of a boiler, an outer shell connecting said heads and having a lateral outlet communicating with the atmosphere, inner shells located one within the other in the outer shell, the inlet discharging into the innermost shell, each inner shell having an opening discharging into the next outer shell, the openings of adjacent shells being out of transverse alinement with each other, a deflector spaced apart from and extending across said outlet and discharging at one end, and a second deflector spaced apart from and extending across the discharge end of the other deflector, substantially as set forth.

In testimony whereof we have signed our names to this specification.

BURT YOAKUM.
WILLIAM E. NEW.