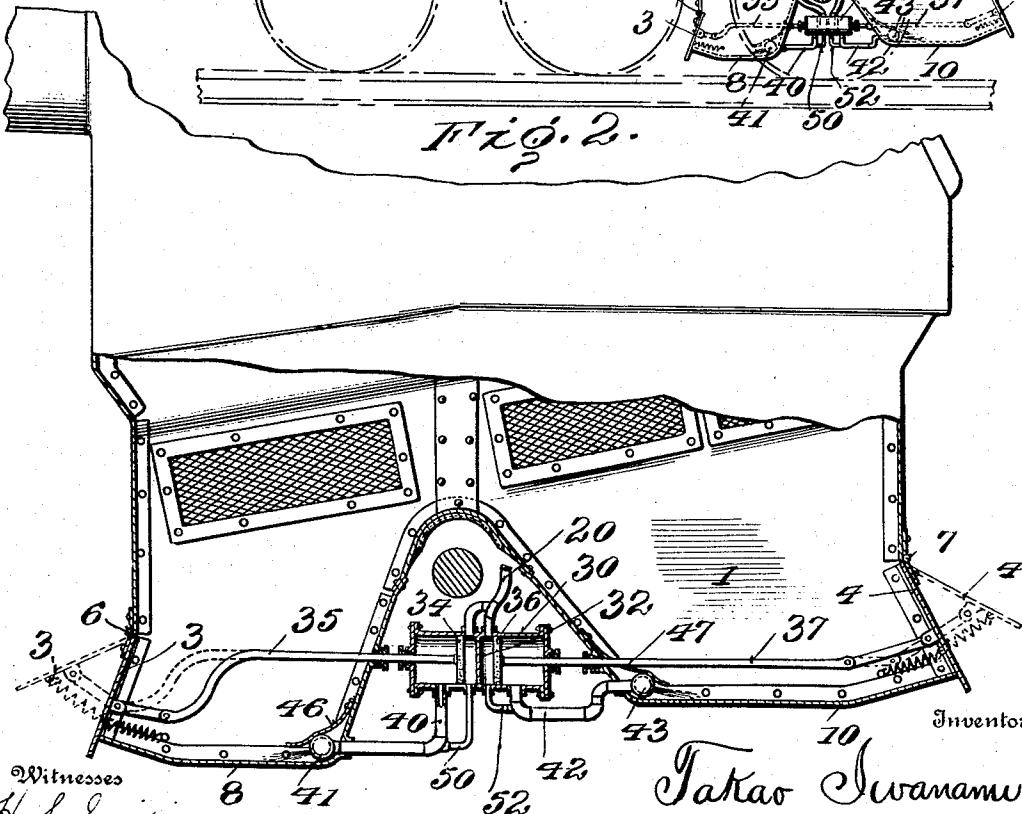
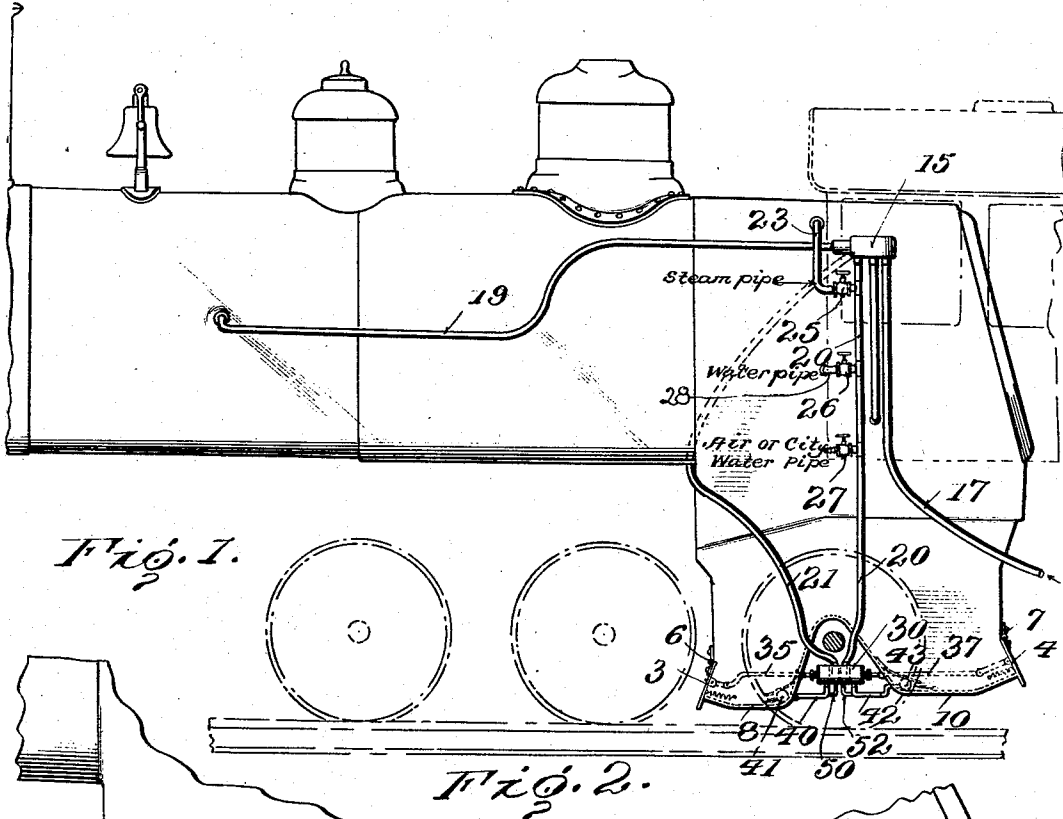


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LOCOMOTIVE ASH PAN CLEANER.
APPLICATION FILED JAN. 7, 1909.

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Patented Aug. 31, 1909.



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TAKAO IWANAMI, OF WASHINGTON, DISTRICT OF COLUMBIA.

LOCOMOTIVE-ASH-PAN CLEANER.

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To all whom it may concern:

Be it known that I, TAKAO IWANAMI, a subject of the Emperor of Japan, and a resident of the United States, whose post-office address is 312 South Carolina avenue, Southeast, Washington, District of Columbia, have invented certain new and useful Improvements in Locomotive-Ash-Pan Cleaners, of which the following is a specification.

10 This invention relates to improvements in locomotive ash pan cleaners and the object of my invention is to provide a device of this character which makes it possible to forcibly eject the ashes from the ash pan without making it necessary for an attendant to rake them out manually, and to also open the ash pan doors by the same power which is utilized to eject the ashes.

20 With this brief statement, my invention consists in the ash pan cleaner shown in its preferable embodiment in the accompanying drawings and as hereinafter more particularly described and then claimed.

25 In the drawings accompanying and forming part hereof: Figure 1 is a side elevation of part of a locomotive of typical form showing my improvements applied thereto. Fig. 2 is a view on a larger scale of the ash pan proper showing the mechanism for opening the doors and for ejecting the ashes.

30 Referring now to the details of the drawings by numerals: 1 designates the ordinary ash pit of a locomotive such as is in quite general use on the large railroads in this country and as shown it is provided with two doors 3 and 4 which are pivoted at 6 and 7 so that the ashes which fall on the bottoms 8 and 10 of the two sections of the ash pit 1 may be removed through said doors. 40 The construction so far described is identical with that in very common use except that special rods and levers are employed for the purpose of manually opening the said doors, and these rods and levers are dispensed with in the present apparatus.

45 In Fig. 1 is shown, in conventional form, an injector 15 having a water supply pipe 17 to connect it with the tender (not shown), said injector also being connected with the boiler by means of a pipe 19 and has what is usually known as an overflow pipe 20 which ordinarily conveys the overflow down to the point when it may drop on the road bed. The parts so far described are those commonly employed on locomotives now in use and they are therefore shown only in con-

ventional form and need no further description. The only change I make is to provide a steam pipe 23 leading from the steam space to the aforesaid pipe 20 and to also connect three valves 25, 26 and 27 with said overflow pipes, the valve 25 connecting the steam pipe 23 with the overflow pipe 20; the valve 25 connecting the overflow pipe 20 with a small pipe 28 leading into the boiler, and the valve 27 being arranged to connect the overflow pipe 20 with the city water supply or a source of compressed air (not shown). The said overflow pipe 20 instead of dropping down to form a common waste, is connected to the means for opening the door 3 and 4, which means will now be described.

55 Located between the two parts of the ash pit 1, as clearly seen in Fig. 1, is a cylinder 30 which is divided into two sections by means of a divisional wall 32. Within the cylinder are two pistons 34 and 36, the piston 34 being connected by means of a connection 35 with the left hand ash pit door 3, and the piston 36 being connected by means of a connection 37 with the right hand ash pit door 4. This construction is such that when steam in the pipe 23, or water from the pipe 28, or water or compressed air through the valve 27 is admitted to the pipe 20, such fluid will enter the cylinder 30 and force the piston 32 outward, thus operating upon the connections 35 and 37 opening the ash pit doors 3 and 4 in a manner readily understood from an inspection of Fig. 2 of the drawings. The said doors are provided with springs 5 to automatically close them when the supply of steam or water leading to the cylinder 30 is shut off.

65 The steam cylinder 30 is also provided with two pipe connections 40 and 42, the section 40 leading to a blower nozzle 41 in the left hand ash pit section and the pipe 42 connecting with a blower nozzle 43 in the right hand ash pit section and these connections are such that when the pistons are thrown outwardly sufficiently to pass by the points where the connections 40 and 42 are made in said cylinder 30, the same fluid which operated the pistons 34 and 36 will pass through said pipe connections 40 and 42 and operate through the blower nozzles 41 and 43 to forcibly eject any ashes which may be in the bottoms 8 and 10 of the ash pit. In order to protect the said blower nozzles from ashes or hot coals which would

otherwise drop directly upon them, I provide shields 46 and 47 and it will be observed that these are so shaped that the ashes will naturally fall by gravity off said shields onto the bottom of the ash pit. The afore-
 5 said cylinder 30 is also provided with two small connections 50 and 52 which are arranged to conduct any overflow from the pipe 20 into the connections 40 and 42 and they are by these connections led into the
 10 bottoms 8 and 10 of the ash pit 1 and thus any hot cinders are extinguished by the water and the ashes are moistened so that there is no danger of burning the cross ties and any annoyance from dust is prevented.

As shown in Fig. 1 I connect two sources of supply 20 and 21 to the two sections of the steam cylinder 30 in order that the source of supply may be fed independently to the two pistons and thus each half of the
 20 ash pit can be cleaned independently of the other half. Inasmuch as the two sections of the ash pit are often of different sizes this will make it possible to prevent waste of water or steam, but if it is desired, the same
 25 source of supply may be connected to both sides of the steam cylinder 30 as indicated in Fig. 2 in which case it is only necessary to open one valve in order to operate both sections.

The operation of my invention is so simple that it seems almost unnecessary to describe it; yet it may not be amiss to state that when it is desired to clean the ashes by the use of
 35 steam, the attendant needs only to open the valve 25 when steam will be conducted through the pipe 23 to the pipe 20 and from thence to the steam cylinder, as shown in Fig. 2. As the steam enters said cylinder the pistons 34 and 36 are forced outward thus opening the ash pit doors 3 and 4 and at the same time uncovering the pipe connections 40 and 42 and permitting the steam to enter said connections and be forced out
 45 through the blower nozzles 41 and 43 to forcibly eject the ashes out of the two sections of the ash pit 1. On the other hand, if it is desired to use the hot water from the boiler instead of using the steam, the valve 26 is opened when hot water will be fed instead of steam, in the manner just described. But if the locomotive is in a station where city water or compressed air is available or is in a round-house, the city water or compressed
 55 air may be connected so that the valve 27 may be opened to admit the water or compressed air to operate in the same manner as has been described with relation to the steam valve 25.

It will be observed that my invention is extremely simple and that I have not changed in any respect the shape of the ash pit now in use and therefore my invention may be applied to locomotives already in service by
 65 simply taking off the levers and connections

for opening the doors and applying my device in their stead. And for locomotives in process of building my invention may be applied for about the same cost as it now takes to fit the doors with elaborate connections
 70 and levers for operating the doors manually.

What I claim as my invention is:

1. In a device of the character described, an ash pan, a door therefor, fluid operated means to open the door and fluid means to eject the ashes, and a positive connection between said fluid operated means and said door, the same fluid which operates the door opening means also acting to eject the ashes, substantially as described.

2. In a device of the character described, an ash-pan, a door therefor, a cylinder, a piston connected with said door for opening the same, and a spray nozzle located to eject the ashes from said pan, said nozzle being supplied with the same fluid which operates the piston in the cylinder to open the door, substantially as described.

3. In a device of the character described, an ash-pan, a door therefor, a cylinder, a piston therein having a connection with said door, a nozzle, and a connection between said cylinder and said nozzle, said piston uncovering said connection to the nozzle as it operates to open said door, substantially as described.

4. In a device of the character described, an ash-pan, a door therefor, a cylinder, a piston connected with said door for opening the same, and a spray nozzle supplied with the same fluid which operates the piston in the cylinder to open the door and valves for connecting both steam and water with said cylinder, substantially as described.

5. In a device of the character described, and in combination with an injector overflow an ash-pan, a door therefor, a cylinder, a piston connected with said door for opening the same, and a spray nozzle co-acting with said ash pan to spray the ashes therefrom, said cylinder having a connection with the aforesaid injector "overflow" and said overflow having a valve also connecting it with fluid supply, substantially as described.

6. In a device of the character described, and in combination with an injector overflow an ash-pan, a door therefor, a cylinder, a piston connected with said door for opening the same, and a spray nozzle co-acting with said ash pan to spray the ashes therefrom, said cylinder having a connection with the aforesaid injector "overflow" and said overflow having valves also connecting it with steam and water supply, substantially as described.

7. In a device of the character described, and in combination with an injector overflow an ash-pan, a door therefor, a cylinder, a piston connected with said door for opening the same, and a spray nozzle co-acting with

said ash pan to spray the ashes therefrom, said cylinder having a connection with the aforesaid injector "overflow" and said overflow having valves also connecting it with steam and water supply, said cylinder also having a further connection for feeding the water from the overflow to said nozzle independently of the position of the piston, whereby the cinders are extinguished, substantially as described.

8. In a device of the character described, an ash-pan, doors therefor, a cylinder, two pistons therein connected with said doors, spray nozzles, and connections supplying fluid to operate the pistons to open the doors and also to said nozzles to eject the ashes the same fluid which operates the pistons acting through the nozzles to eject the ashes, substantially as described.

9. In a device of the character described, an ash-pan, doors therefor, a cylinder, two pistons connected with said doors, spray nozzles also connected with said cylinder, means for connecting fluid pressure with said cylinder to operate said pistons, said pistons as they operate to open the doors opening communication to said nozzles, whereby the same fluid which operates the pistons to open the doors also ejects the ashes, substantially as described.

10. In a device of the character described, an ash-pan arranged in two sections, a cylinder located between said sections and having pistons therein, doors connected with said pistons and operated thereby, spray nozzles also located in said ash-pans and connected with said cylinder and connections supplying fluid to operate the pistons to open the doors and also to said nozzles to eject the ashes the same fluid which operates the pistons acting through the nozzles to eject the ashes, substantially as described.

11. In a device of the character described, and in combination with an injector overflow an ash-pan, a door therefor, a cylinder, a piston connected with said door for open-

ing the same and a spray nozzle, said cylinder having a connection with the aforesaid injector overflow, and said cylinder also having a connection to lead the overflow from the cylinder to the ash-pan whereby the cinders are extinguished, substantially as described.

12. In a device of the character described, an ash-pan arranged in two sections, a door for each section, a cylinder having two sections, a piston in each section, a connection between the pistons and their ash pit doors, means for conducting fluid pressure to each section of the cylinder, a spray nozzle in each section of the ash pan, and connections between said nozzles and sections of said cylinder, the said pistons opening communication to said nozzles as they are forced outward by the fluid pressure, substantially as described.

13. In a device of the character described, an ash-pan formed in two sections, a door for each section, a cylinder arranged between said sections and having two compartments, a piston for each compartment and a connection between said pistons and said doors, a spray nozzle in each section of the ash-pan and a connection between each nozzle and the sections of said cylinder, and a fluid connection with said cylinder whereby the fluid pressure operates to force the pistons outward thus opening the doors and also to eject the ashes from said ash-pan sections, a valve connecting said fluid connection with the boiler, a second valve for connecting with the steam chamber and a third valve for connecting with an independent source of supply, substantially as described.

Signed by me at Wash. D. C. this 7th day of Jan'y. 1909.

TAKAO IWANAMI.

Witnesses:

THOS. E. ROBERTSON,
S. C. HILL.