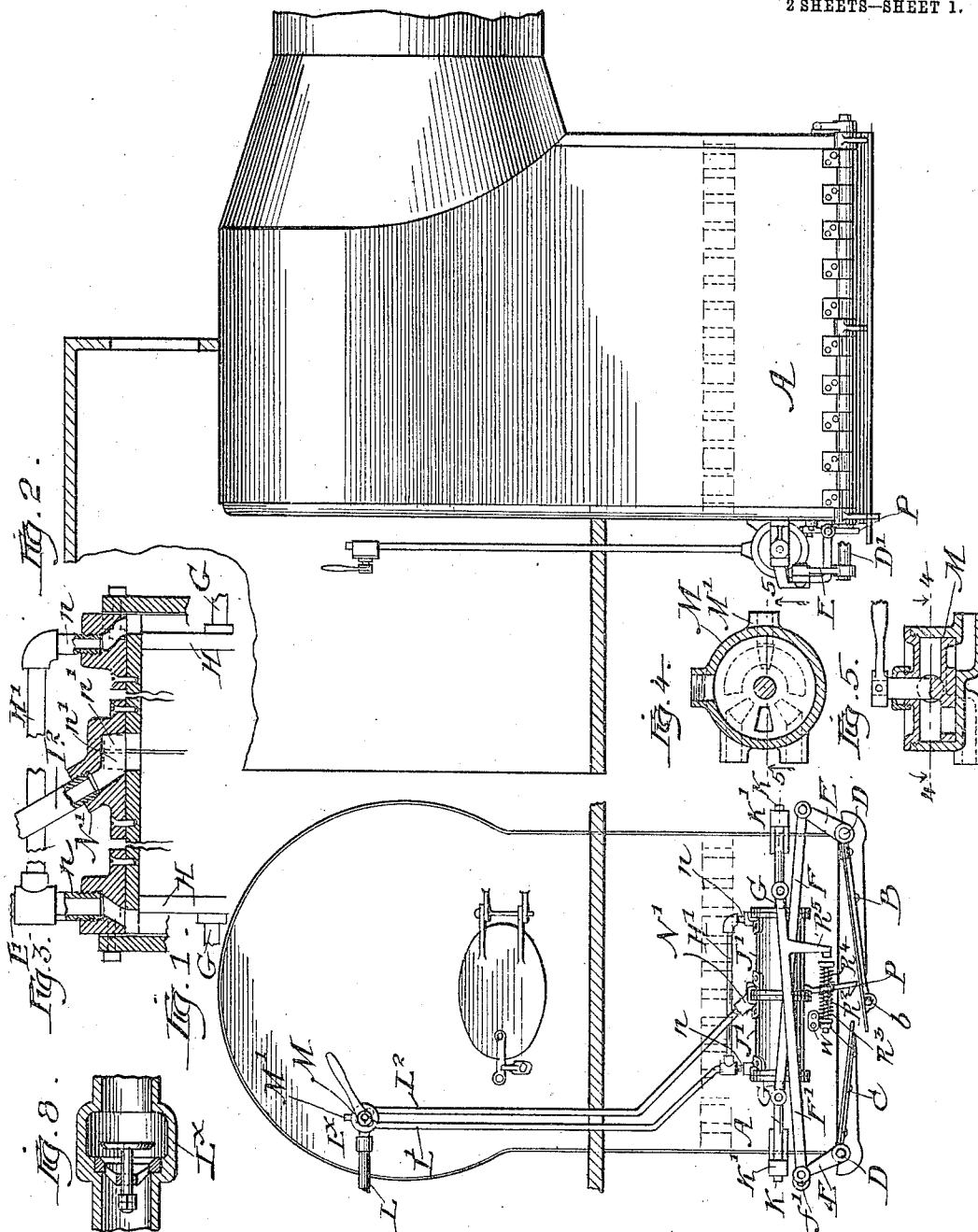


W. J. BROWN.
LOCOMOTIVE ASH PAN DUMPING DEVICE.
APPLICATION FILED DEC. 11, 1908.

960,806.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



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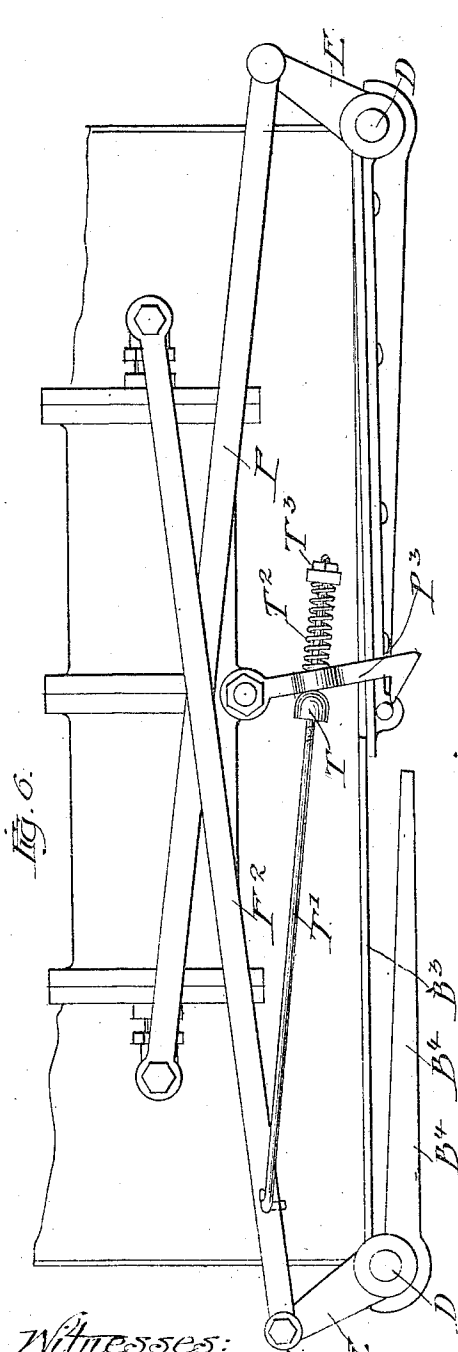


Fig. 6.

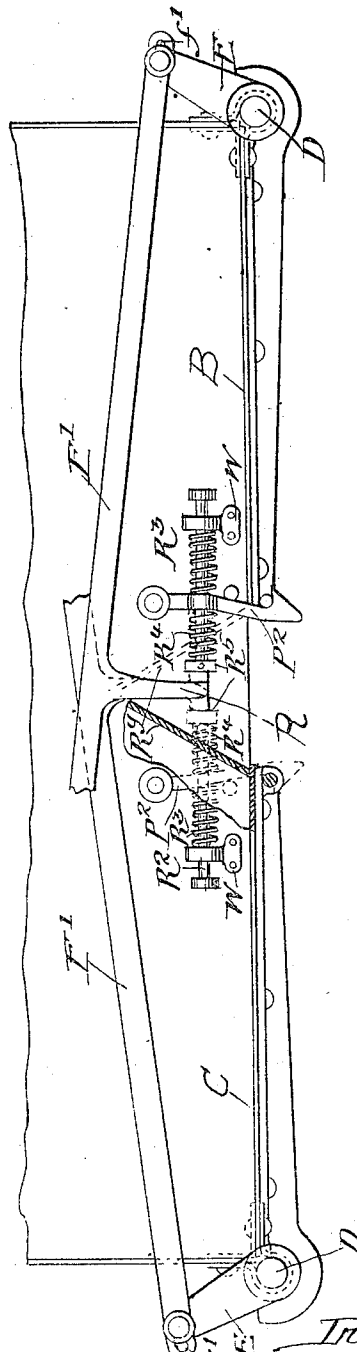


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM J. BROWN, OF CHICAGO, ILLINOIS.

LOCOMOTIVE-ASH-PAN-DUMPING DEVICE.

960,806.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed December 11, 1908. Serial No. 467,054.

To all whom it may concern:

Be it known that I, WILLIAM J. BROWN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Locomotive-Ash-Pan-Dumping Devices, of which the following is a specification, reference being had to the drawings forming a part thereof.

The purpose of this invention is to provide an improved device for dumping a locomotive ash pan.

It consists in the features of construction shown and described and as indicated in the claims.

In the drawings:—Figure 1 is a transverse vertical section of a locomotive cab showing in end elevation, boiler and fire box having the ash pan provided with this invention, the cab being broken away except as to the floor. Fig. 2 is a longitudinal section of a cab showing in side elevation the rear end portion of boiler and fire box having its ash pan provided with the same equipment for dumping. Fig. 3 is a vertical axial section of the compressed air cylinder for operating the dumping device. Fig. 4 is a partly sectional elevation of the air-controlling valve, the casing being broken away and section being made at the line 4—4 on Fig. 5. Fig. 5 is a section at the line 5—5 on Fig. 4. Fig. 6 is a modification of the invention shown in this application. Fig. 7 is another modification of the invention shown in this application. Fig. 8 is a vertical axial section of the check valve.

For embodying this invention in the form shown in Figs. 1 and 2, the bottom of the ash pan, A, of a locomotive fire box is formed by two members, constituting downwardly swinging leaves or drop bottoms, B and C, hinged to the lower edges of the opposite side walls of the ash pan, as clearly seen in Fig. 1, each member being adapted to close substantially one-half the width of the ash pan, and each being adapted to swing downward from closed position for dumping the contents of the pan. For hinging to the side walls of the ash pan each member has a rock shaft, D, constituting the pintle of the hinge and extending rearward beyond the rear end of the fire box, as seen at D¹, to receive a rigid lever arm, E, which extends up from the rock shaft nearly at right angles to the general extent of the

leaf to which it pertains. The two lever arms, E, E, are connected respectively by links, F¹, F, with stems, G, G, of two pistons, H, H, which play in a horizontal cylinder (which may be transversely partitioned, as shown, to form two chambers, J¹, J¹) secured rigidly in position on the outer side of the rear wall of the ash pan. For guidance of the pistons, H, H, they are provided with slide bearings, K, and brackets, K¹, mounted at the opposite corners of the ash pan. From any source (not shown) a pipe, L, supplies, past the check valve, L^x, compressed air or other fluid under tension, which, through two branches, L¹ and L², is conducted to the cylinder chambers, J¹, J¹, the pipe, L¹, supplying such fluid to the remote ends of the two chambers by way of the duct, H¹, having branches, *n*, while the pipe, L², supplies the fluid to the proximate ends of said chambers through the fitting, N¹, having branches, *n*¹. At the junction of the branches, L¹, L², with the main supply pipe, L, there is located a valve, M, which at one position admits the compressed air from the main pipe, L, to the branch, L¹, while the pipe, L², is in communication with an exhaust passage, M¹, and at another position admits compressed air from the pipe, L, to the pipe, L², while opening communication of the pipe, L¹, with the exhaust passage. At a third position communication of both cylinders with both supply and exhaust is closed for retaining the fluid under tension in both cylinders when so desired.

It will be understood from the foregoing description that when the compressed air is admitted to the pipe, L¹, the pistons, H, H, are both forced to and held at the proximate ends of their respective chambers, in which position both leaves, B and C, are held closed; and when the valve is shifted to reverse the air connections the air is exhausted back through the pipe, L¹, from both chambers and admitted between the pistons at the opposed or proximate sides through the pipe, L², forcing the pistons apart or outward and causing them, through the connections described, to swing the leaves downward, permitting the contents of the pan to be dumped. One of the leaves, as B, is constructed to lap under or outside of the edge of the other leaf, as seen in Fig. 1, and is provided with a projecting stud, *b*, which engages a hook, P, hung in proper

position near the lower edge of the rear side of the ash pan, so that when the two leaves are swung upward to closed position the stud, *b*, becomes engaged with the hook and the leaves are locked closed so as to be held without the necessity of retaining the air pressure in the cylinders for that purpose. For automatically disengaging the hook at the initial movement of the pistons for swinging down the leaves, one of the links, *F*¹, is provided with an arm, *R*, extending downwardly to a rod, *R*², loosely mounted in the hook, *P*, and the post, *W*, projecting from the rear wall of the ash pan. Mounted on the rod, *R*², on opposite sides of the hook, *P*, are springs, *R*³ and *R*⁴, stopped respectively at the ends remote from the hook by the post, *W*, and the nut, *R*⁵. To provide enough movement of the rod, *F*¹, to disengage the hook, *P*, from the projecting stud, *b*, by the reaction of the compressed spring, *R*³, the link, *F*¹, is slotted at *f*¹, as shown. Thus, at the initial movement of the pistons, the link, *F*¹, carrying the arm, *R*, moves enough, before the action of the pistons takes effect on the leaves, *B* and *C*, to allow the compressed spring, *R*³, to disengage the hook, *P*, from the projecting stud, *b*. The operator may at any time disengage the hook at will without the action of the other connections described.

In the modification shown in Fig. 6, a rod, *T*¹, is loosely connected to the link, *F*², and extends through the pivoted hook, *P*³. A stop, *T*, on the rod, *T*¹, limits the play of the rod through the hook, and a spring, *T*², at the other side of the hook, stopped at the end of the rod by a nut, *T*³, operates as a yielding stop to the play in the other direction. In this construction one of the drop bottoms, *B*³, is pivotally hung from the rock shaft, *D*, and the arms, *B*⁴, by which the drop bottom, *B*³, is lifted, are detached therefrom. In the initial movement of the pistons the link, *F*², causes the stop, *T*, on the rod, *T*¹, to encounter the hook, *P*³, disengaging the hook from the stud, *b*. The spring, *T*², acts to retract the hook for engagement with the nose, and to hold the hook securely engaged so as not to be liable to jar it out of engagement which would permit the leaves to fall, in absence of any sustaining tension in the cylinder.

In the modification shown in Fig. 7 the ash pan is provided with a fore-and-aft inverted V-shaped rib or upraise, *R*⁷, which operates to part and divert the ashes into two bodies in the discharge through two separate openings in the bottom, closed respectively by the two leaves, *B* and *C*, which in this form are identical in all respects, being each narrower than the leaves in the other form, as permitted by the fact that instead of closing the entire width of the ash pan they only close each half of the remainder of

such width after deducting the width of the base of the inverted V-shaped rib, *R*⁷. The connections and mode of operation of these leaves are the same as that already described. For securing them in closed position each of the leaves, *B*¹ and *C*¹, is provided with a separate hook, *P*², hung from its upper end, and an arm, *S*, corresponding to the arm, *R*, of the other construction, is extended from the link, *F*¹.

I claim:—

1. In a locomotive ash pan, a drop bottom comprising two leaves hinged at the lower side of the pan and adapted to swing upwardly for closing the same; two pistons and chambers in which they respectively reciprocate; operating connections from the pistons to the leaves respectively for opening and closing them, one of said leaves having an extension which laps under the other leaf at their proximate edges for upholding said other leaf, and a catch for securing the leaf having such extension.

2. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan and adapted to swing upwardly for closing same; two pistons and their respective chambers; operating connections from the pistons to the leaves; a depending hook for engaging one of the leaves; a link connecting said hook with the operating connections of one of the leaves, and a stop on the link for operating the hook for disengagement upon the initial movement of the piston for opening the leaf.

3. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan and adapted to swing upwardly for closing same; two pistons and their respective chambers; operating connections from the pistons to the leaves; a depending hook for engaging one of the leaves; a link connecting said hook with the operating connections of one of the leaves, and a spring interposed in such connection for yielding in the closing movement of the leaf and for holding the hook in engaged position at the closed position of the leaf.

4. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan and adapted to swing upwardly for closing same; two pistons and their respective chambers; operating connections from the pistons to the leaves; a depending hook for engaging one of the leaves, and a connection from such hook to the operating connections of one of the leaves; a spring interposed in such connection in position to be put under tension by the latter part of the closing movement of the leaf, and a stop on the link for actuating the hook in the commencement of the opening movement.

5. In a locomotive ash pan a drop bottom comprising two leaves hinged at the lower side of the pan and adapted to swing up-

wardly for closing the pan, means for operating the two leaves independently of each other, one of said leaves having an extension which laps under the other leaf at their proximate edges for upholding said other leaf, and a catch for securing the leaf having such extension.

6. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan and adapted to swing upwardly for closing the same, independently moving power devices and connection therefrom to the leaves respectively operating the latter; a depending hook for engaging one of the leaves, a link connecting said hook with one of the lever arms, and a stop on the link for operating the hook for disengagement upon the initial movement of the power device for opening the leaf.

7. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan, and adapted to swing upwardly for closing the same, power devices and operating connections to the leaves for operating them; a depending hook for engaging one of the leaves; the leaf operating connections comprising a lever arm for swinging one of the leaves; operating connections from the

hook, to such lever arm and a spring interposed in such connection for yielding in the closing movement of the leaf and for holding the hook in engaged position at the closed position of the leaf.

8. In a locomotive ash pan, a drop bottom comprising two leaves hinged to the pan and adapted to swing upwardly for closing the same; means for operating the leaves for opening and closing; a depending hook for engaging one of the leaves to lock it in closed position, operating connection from such hook to the means for operating one of the leaves; a spring interposed in such connection in position to be put under tension by the latter part of the closing movement of the leaf and a stop on the leaf for actuating the hook at the commencement of the opening movement.

In testimony whereof, I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 28th day of November, A. D. 1908.

WILLIAM J. BROWN.

In the presence of—

J. S. ABBOTT,
M. GERTRUDE ADY.