

J. S. DOWNING.
LOCOMOTIVE ASH PAN.
APPLICATION FILED DEC. 24, 1908.

931,580.

Patented Aug. 17, 1909.
2 SHEETS—SHEET 1.

Fig. 1.

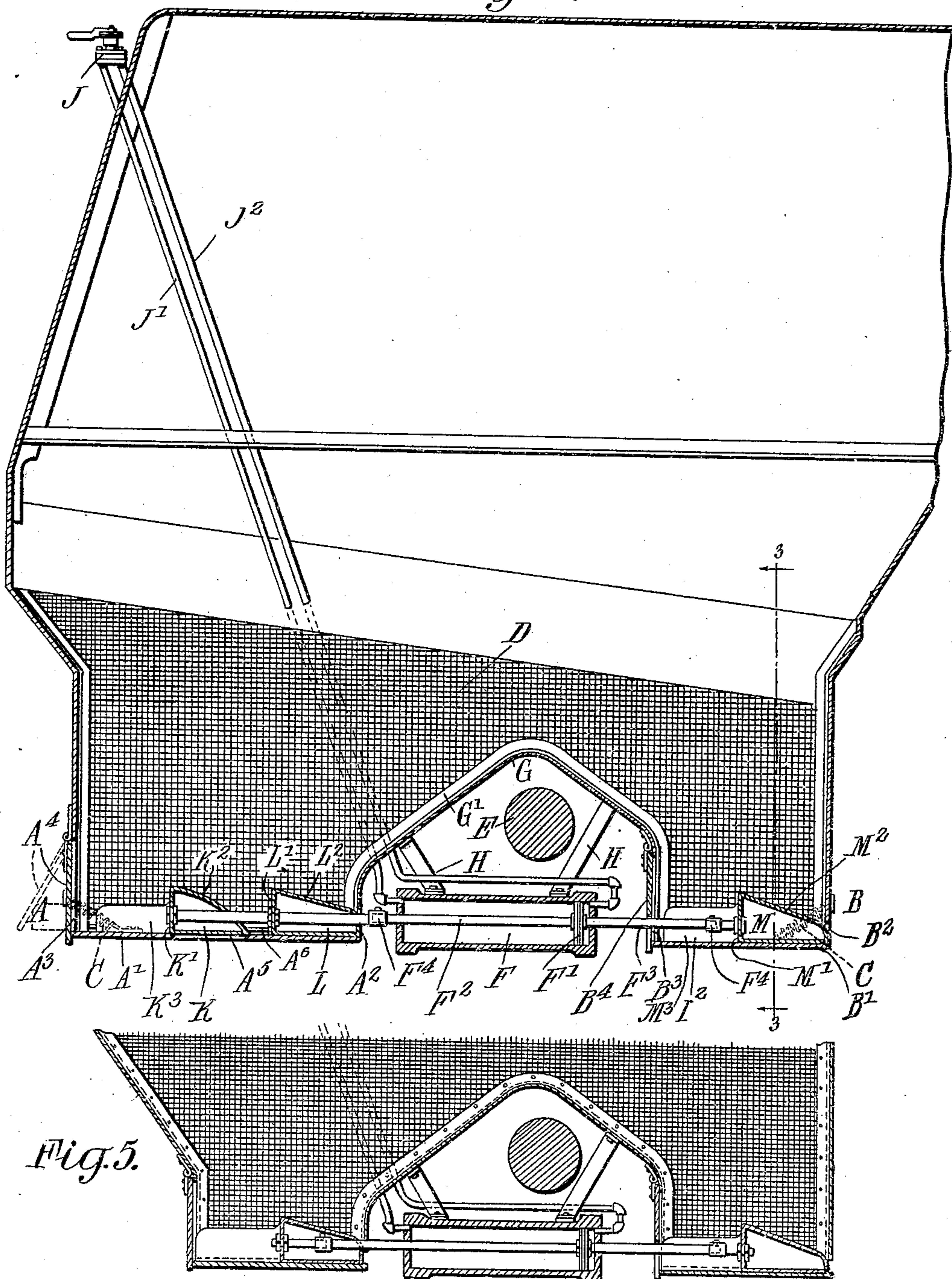


Fig. 5.

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2 SHEETS—SHEET 2.

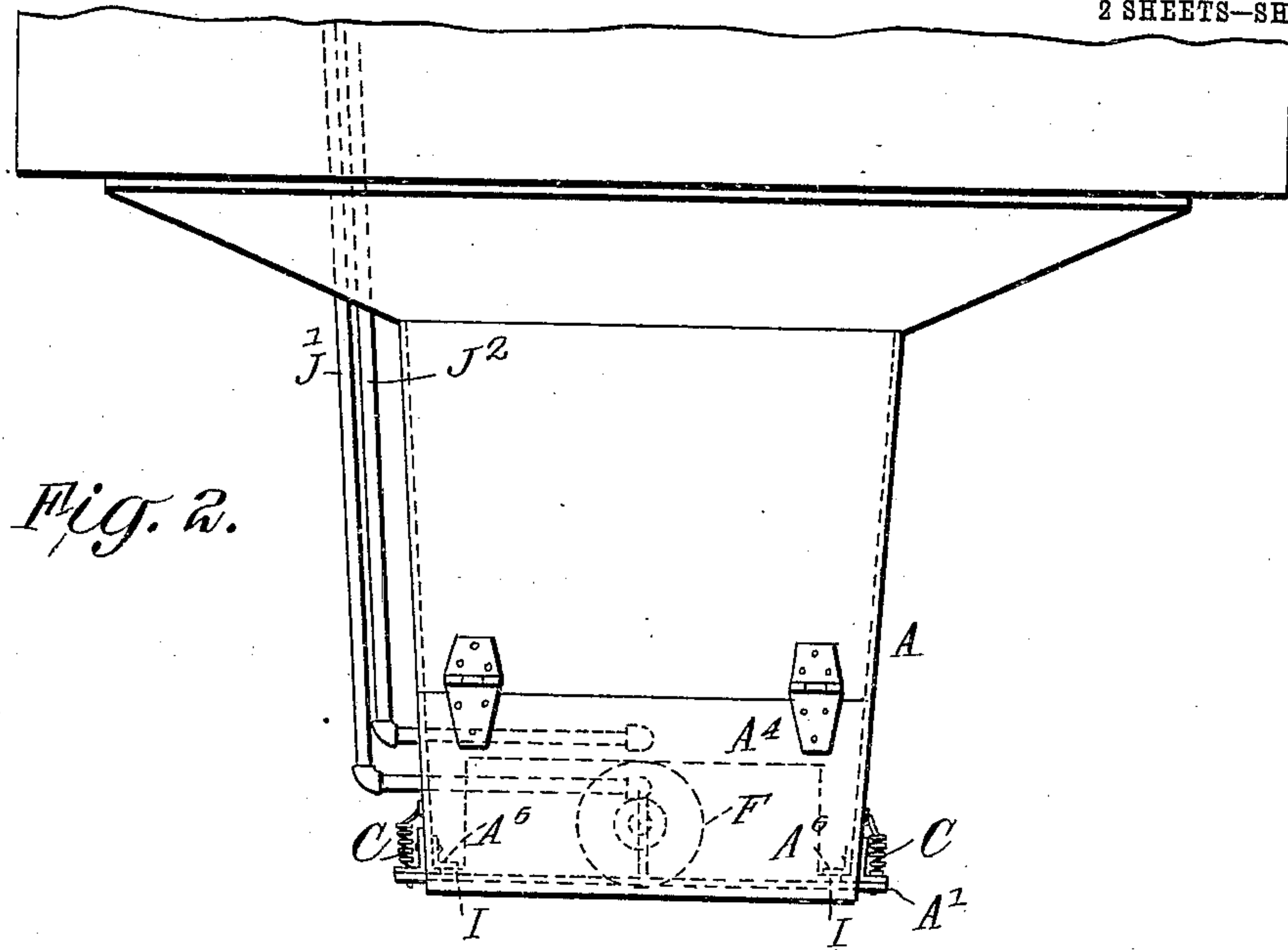


Fig. 2.

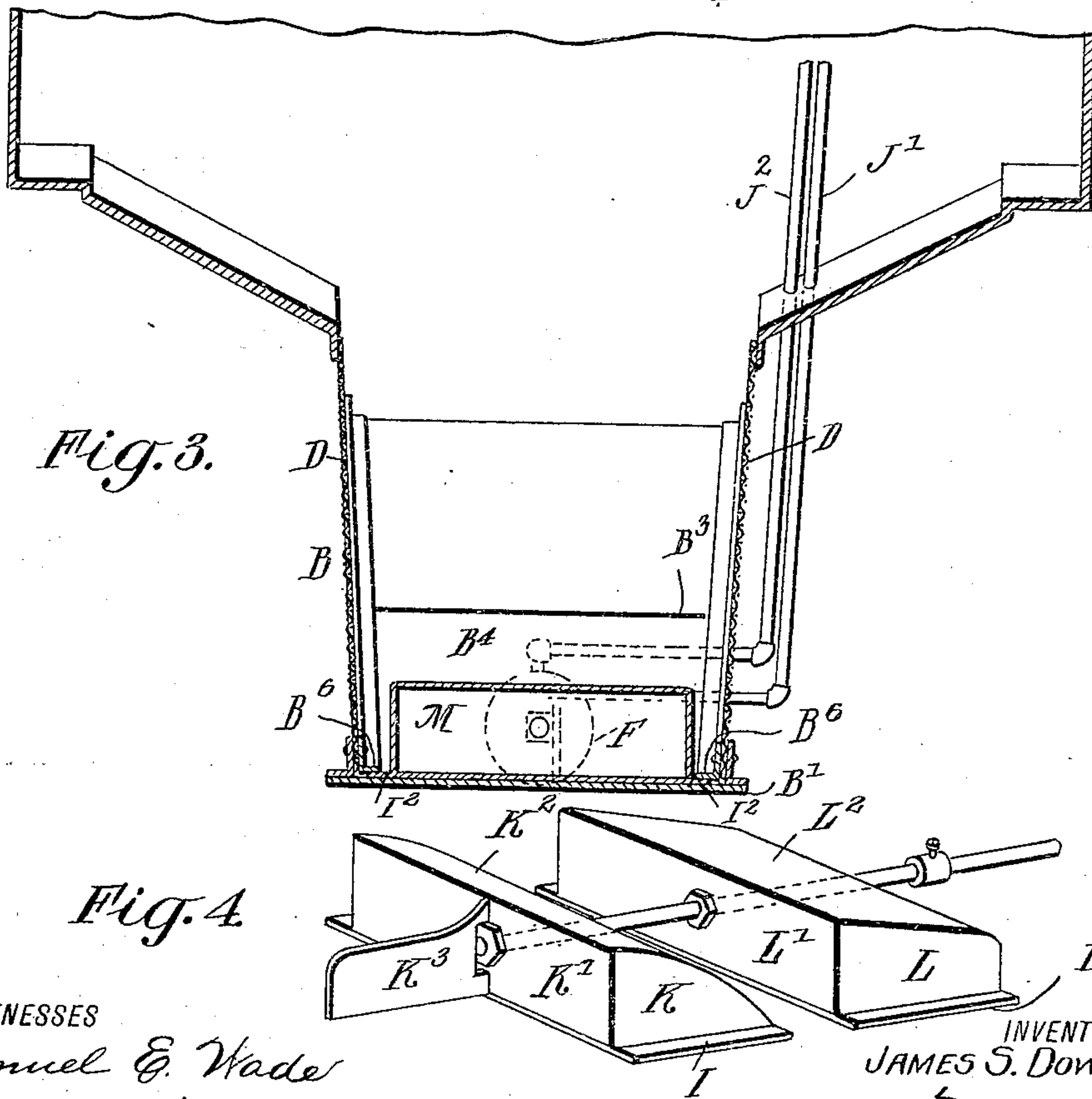
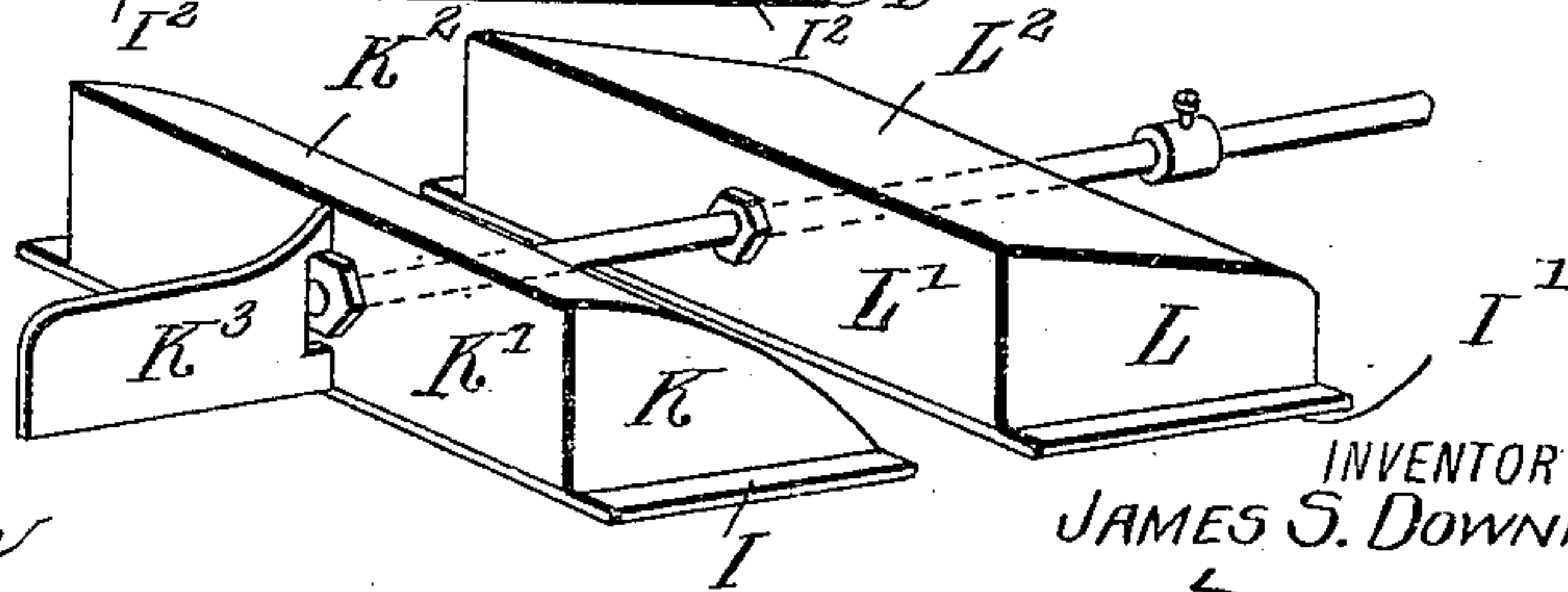


Fig. 3.

Fig. 4



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UNITED STATES PATENT OFFICE.

JAMES S. DOWNING, OF ATLANTA, GEORGIA.

LOCOMOTIVE ASH-PAN.

No. 931,580.

Specification of Letters Patent.

Patented Aug. 17, 1909.

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To all whom it may concern:

Be it known that I, JAMES S. DOWNING, a citizen of the United States, and a resident of Atlanta, in the county of Fulton and State of Georgia, have made certain new and useful Improvements in Locomotive Ash-Pans, of which the following is a specification.

This invention is an improvement in ash pans, and particularly in ash pans for locomotives, having for an object to provide a novel positively operating construction for discharging the ashes from the ash pan; and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawings, Figure 1 is a vertical longitudinal section of an ash pan embodying my invention. Fig. 2 is a front elevation thereof. Fig. 3 is a vertical longitudinal section on about line 3—3 of Fig. 1, and Fig. 4 is a detail perspective view of the double hoe construction used in the front pan, and Fig. 5 shows a somewhat different construction from that illustrated in Fig. 1.

By my invention I provide an automatic self cleaning ash pan having a system of hoes attached to the piston rod, and a cylinder adapted to receive fluid pressure for reciprocating the hoes in the ash pans for discharging the ashes therefrom.

In the construction shown, I provide a front ash pan A, and a rear ash pan B, having bottom plates A' and B', the said pans A and B having discharge openings A² and B² at their rear ends, and also having discharging openings A³ and B³ at their front ends, the latter discharge openings being controlled by dampers A⁴ and B⁴, pivoted at their upper ends to open as indicated in dotted lines Fig. 1, and readjusted to closed position by springs C, as shown in Figs. 1 and 2 of the drawings.

The front pan has in its bottom, about midway between its front and rear ends, a discharge opening A⁵, and the ashes delivered into this pan may therefore be discharged through its end openings and through its intermediate opening in the operation of the double hoe construction, shown in said pan, as more fully described hereinafter.

While I have referred to the pans A and B as front and rear pans, it will be understood that these may be regarded for some purposes as ash compartments or as parts of a double pan whose sides D may be of wire mesh, as shown in Figs. 1 and 2, and whose

ends are of suitable sheet metal provided with the discharge openings before described, and the front and rear pans are spaced apart affording an opening for the axle E, and for the cylinder F and covered by an arch G extending between the two pans as shown.

The bottoms of the pans may be of sheet iron or malleable cast steel, and the pans are braced at their sides and ends by angle irons including the angle bars A⁶ and B⁶ at the opposite sides of the bottom plates A' and B', and the angle irons G' extending over the intermediate space between the front and rear pans, and from which depend the brackets H, which support the cylinder F in convenient location between the said pans A and B, as best shown in Fig. 1 of the drawings.

The bars A⁶ and B⁶ at the sides of their pans A and B form guides for the laterally extending flanges I, I' and I² of their respective hoes, as shown in Figs. 1, 3 and 4 of the drawings, thus guiding the hoes accurately as they are reciprocated in their respective pans, and preventing any bending of the piston rod in the operation of the invention.

The cylinder F operating as a motor mechanism has a piston F', and rods F² and F³ connecting it with the hoes in the front and rear pans, and these piston rod connections may preferably be made detachable and connected by suitable couplings as shown at F⁴ in Fig. 1.

The movement of the piston F' is controlled by a three-way valve J, which may be of any suitable construction and controls the pipes J' and J² so steam or other fluid pressure may be adjusted to the front or rear end of the cylinder to operate the piston in either direction as may be desired in the operation of the invention.

As shown, two hoes K and L are provided in the front pan, and but a single hoe M in the rear pan. The hoes M and L are alike, and have their rear ends adapted to close their respective openings A² and B² when the hoes are in the position shown in Fig. 1. All of the hoes it will be noticed, have an upright pusher plate K' or L' or M' at their front sides, and inclined covers K², L², and M² which slope downwardly toward their rear ends to deliver any ashes that may fall upon the hoes in rear of said hoes so that it may be discharged as the hoes are reciprocated. I also provide the hoes K and M with forwardly projecting blades K³ and M³, which open their respective dampers A⁴ and B⁴ so

their upright plates K' and M' may discharge the ashes through the openings controlled by the said dampers.

In the operation of the described construction, when the parts are in the position shown in Fig. 1, if fluid pressure be admitted through the pipe J² in rear of the piston F', the hoes will move forwardly, the hoes K and M discharging any ashes in advance thereof through the open dampers A⁴ and B⁴, and the hoe L discharging any ashes in advance thereof through the opening A⁵. On the return movement the hoes L and M will discharge ashes in rear thereof through the openings A² and B² until they move to the position where the said hoes will close their respective openings A² and B².

The ash cleaner may be operated in short double pans with one hoe, and the invention may be utilized in single pans involving either the construction shown at the rear in Fig. 1, or that shown at the front in Fig. 1, and which therefore needs no separate illustration or description.

In practice the three-way valve J may be located at the boiler head in convenient position for operation by either the engineer or fireman, and may be operated to reciprocate the hoes whenever desired. In this operation it will be understood that when live steam is being supplied through the pipe J², exhaust steam is being discharged through the pipe J', and vice versa, the valve J permitting this operation.

In Fig. 5, I show a construction in which the front and rear pans are alike, and a single hoe is used in each pan.

I claim—

1. The combination substantially as herein described consisting of spaced apart ash pans, frame bars extending between said pans and above the intervening spaces, a cylinder between said pans, brackets supporting said cylinder from the said frame bars, and hoes in the pans and operated from the intermediate cylinder for discharging ashes from their respective pans, substantially as set forth.

2. A locomotive having ash compartments spaced apart, a cylinder between said spaced apart compartments, and hoe devices in said compartments and operated from said cylinder substantially as set forth.

3. The combination with an ash pan having a discharge opening, and a bodily movable damper controlling the same, of a hoe having a hoe body movable toward and from the damper, and having means extended toward the damper to open the same when the hoe body is moved in the direction thereof whereby the damper will be opened independently of the pressure of the ashes thereagainst, substantially as set forth.

4. The combination of an ash pan and spring pressed damper, a hoe movable in the ash pan toward and from said damper, and having a hoe body, and means carried by the hoe in advance of its said body for opening the damper against the action of its spring.

5. An ash pan having a discharge opening, and a damper closing the same combined with a hoe operating toward and from said damper, and having a forwardly projecting blade to open the damper in the movement of the hoe toward the said damper, substantially as set forth.

6. The combination with an ash pan having a discharge opening, and a damper controlling the same, of a hoe movable toward and from the damper, and having means extended toward the damper to open the same when the hoe is moved in the direction thereof, substantially as set forth.

7. The combination of two spaced apart ash pans, a cylinder between the said pans, means for admitting pressure into one or the other end of said cylinder at will, a piston in the said cylinder and adapted to be operated therein in opposite directions, and hoe devices in the spaced apart ash pans and connected with said piston for operation thereby substantially as set forth.

8. An ash pan having a bottom discharge opening, and discharge openings at its opposite ends, and provided with hoe devices including a hoe arranged to cover the bottom discharge opening in one position, and to discharge ashes through one end opening in its other position, and a second hoe arranged to discharge ashes in one direction of movement through the other end discharge opening, and to discharge ashes through the bottom discharge opening when moved in the other direction, substantially as set forth.

9. The combination of spaced apart ash pans, framing between said pans and above the intervening space, fluid operated means within said space and between the pans, devices supporting said fluid operated means from the framing, and hoes in the pans and operated from the fluid operated means, for discharging ashes from their respective pans, substantially as set forth.

10. A locomotive having ash compartments spaced apart, hoe devices operating in their respective compartments, a motor mechanism in the space between the said compartments, and means for operating the hoe devices in the spaced apart compartments from the said motor mechanism, substantially as set forth.

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Witnesses:

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