J. L. HILLS.

LOCOMOTIVE ASH PAN.

APPLICATION FILED NOV. 26, 1909.

980,258. Patented Jan. 3, 1911.

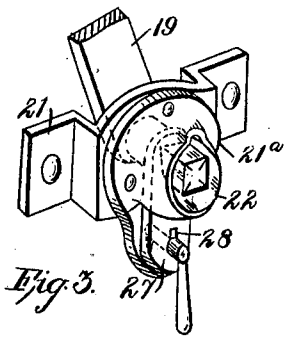


Fig. 3.

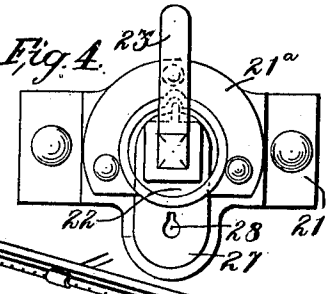


Fig. 4.

Fig. 1.

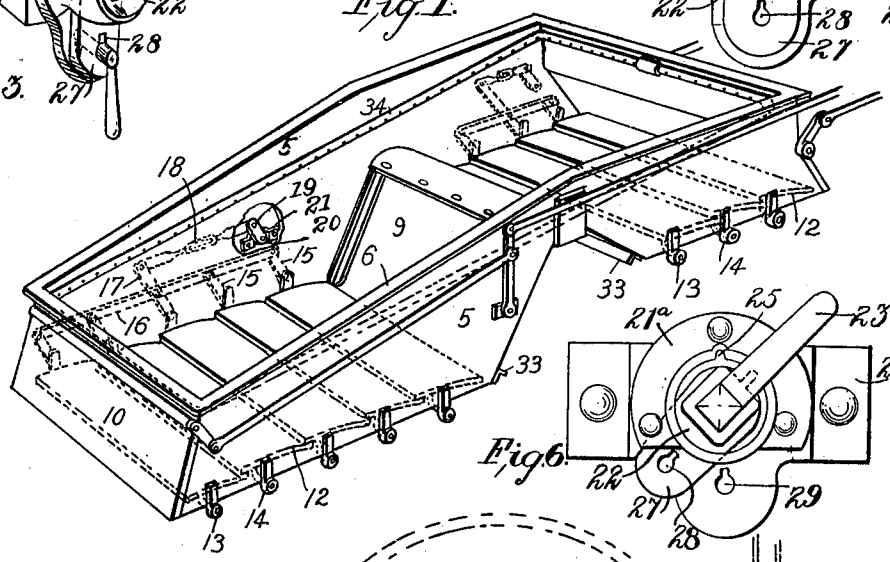
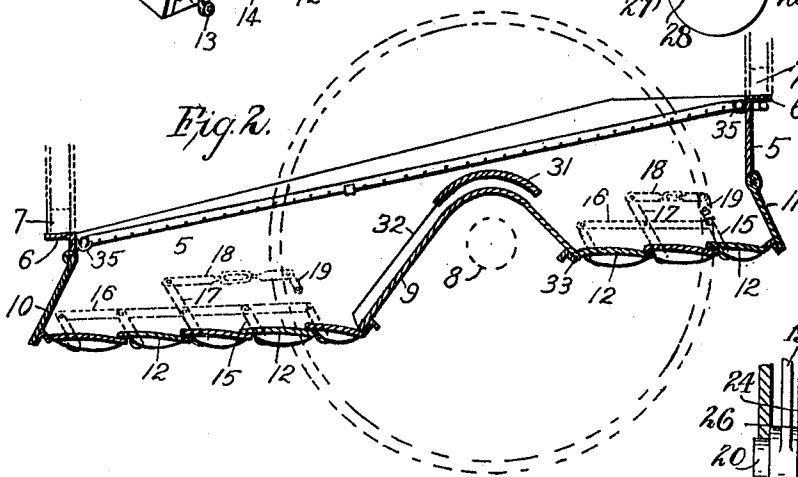


Fig. 6.

Fig. 2.



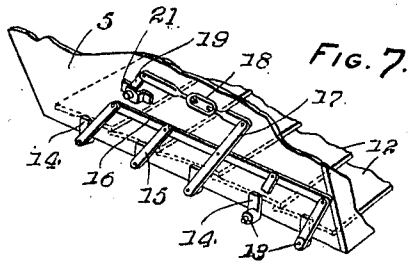


Fig. 7.

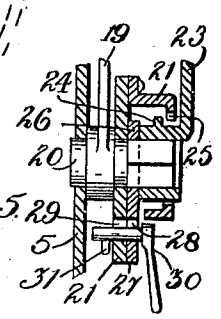


Fig. 5.

Witnesses.

A. Davis

P. Shee

Inventor.

John Lenton Hills

by

E. J. Richardson Langley

Atty.

UNITED STATES PATENT OFFICE.

JOHN LENTON HILLS, OF KALGOORLIE, WESTERN AUSTRALIA, AUSTRALIA.

LOCOMOTIVE ASH-PAN.

980,258. Specification of Letters Patent. Patented Jan. 3, 1911.

Application filed November 26, 1909. Serial No. 529,973.

To all whom it may concern:

Be it known that I, JOHN LENTON HILLS, a subject of the King of Great Britain and Ireland, residing at Kalgoorlie, Western Australia, in the Commonwealth of Australia, have invented certain new and useful Improvements in Locomotive Ash-Pans, of which the following is a specification.

The purpose of this invention is to provide an ashpan adapted to be easily and speedily attached to the firebox of a locomotive boiler, by the manipulation of certain movable parts in which, the contents can be discharged with less effort and greater certitude than is possible with any of the ashpans now in use.

With this object in view I form the bottom of my ashpan with a series of horizontal transverse pivoted plates or doors placed in echelon, that is, having their edges overlapping one another, each plate or door being capable of turning into a vertical or nearly vertical position, such movement being controlled and performed by means of a system of levers. The ashpan is provided with a damper at both ends, each of which is operated by a suitable lever connected therewith. But in order to make my invention more clearly understood I shall now refer to the accompanying drawings which show the ashpan applied and adapted to the firebox of a locomotive of ordinary type.

Figure 1 is a perspective view of the ashpan. Fig. 2 is a longitudinal sectional elevation thereof. Fig. 3 is a perspective view of the locking and operating device. Fig. 4 is an elevation of the same with the operating key in position. Fig. 5 is a vertical section of the same. Fig. 6 is an elevation of the same in the unlocked or open position. Fig. 7 is a perspective detail, showing the operating and locking mechanism connected with the bottom plates and the side of the casing.

The main casing or frame 5 of the ashpan, provided with external flanges 6, is attached thereby with bolts, studs, or set screws to the foundation ring 7 of the firebox, the sides extending downward but being cut away as much as may be necessary to permit a driving axle such as 8 to pass underneath the ashpan. To protect the axle from contact with the ashes the central portion of the bottom of the firebox is constructed of a solid arched plate 9. A similar method of construction may be used to protect other axles or shafts as may be necessary.

A front damper 10 is hinged to the casing 5 and provided with a crank arm connected by suitable means to an operating hand lever (not shown), or the like, in the cab of the locomotive. A similar back damper 11 is also provided connected by a rod to a similar operating hand lever or the like (not shown) in the cab.

The bottom of the pan between the front damper and the arch plate 9 consists of a series of plates or doors 12, 12, placed in echelon and each provided with a pair of trunnions 13 working in bearings 14 on the sides of the ashpan. To one of the trunnions 13 of each transverse door or plate is fixed a crank arm 15 connected to a rod 16. One of these crank arms 15 has an extension 17 connected by an adjustable link 18 to a lever 19 secured at its fixed end to a shaft or pin 20 pivoted in the side of the ashpan and supported by a double cranked bracket 21 attached to the side of the ashpan.

The shaft or pin 20 as shown in Fig. 5 is squared on its outer end and is protected by a cup shaped guard 21^a, having an orifice 22 through which is inserted the box key 23 for the purpose of turning the pin. The box key is provided with a feather or pin 24 arranged to pass through a slot 25 in the cup bracket (when the key is being inserted) for the purpose of insuring that the key and consequently the shaft 20, having once been turned must be brought back to the original position before the key can be withdrawn.

A washer 26 is fitted over the squared end of the shaft 20 and is provided with a dependent lug 27 projecting through a segmental slot in the bottom of the guard, the function of which is to limit the arc of movement of the pin to any desired point up to 90 degrees.

As a safeguard against accidental movement of the operating pin, a slotted hole 28 in the lug 27 coincides with a corresponding hole 29 in the bracket 21, when the pin 20 is in such a position that the ashpan plates are closed, and is retained in that position by the insertion of a key 30 having a weighted handle and provided with a feather 31 to prevent it dropping out. This arrangement is shown in Figs. 3, 4 and 5 while the unlocked or open position is shown in Fig. 6.

The bottom of the pan between the back damper 11 and the arch plate consists of

transverse plates or doors mounted on trunnions provided with lever arms connected by a common rod, all as previously described and operated similarly. The same numerals have been used to indicate on the drawings these parts and it is to be understood that the method of operation is the same as that described for the front plates, though if so desired the movement of the front and back plates may be made simultaneously by connecting the respective lever arms by suitable links or rods. The crown or apex of the arch is protected by a baffle plate 31. The arch plate 9 is attached to the sides of the pan by an internal angle iron 32, and the transverse edges of the arch plate and of the pan are strengthened by external angle irons 33.

Around the inner surface of the ashpan is arranged a system of perforated water pipes 34 supported by brackets 35 and connected to a branch of the waste water or overflow pipe of the injector, for the purpose of flushing out the ashpan as may be required in order to thoroughly remove the accumulated ashes, etc.

Assuming that the bottom of the pan is closed when it is desired to remove the ashes, the pin or shaft 20 is partly rotated by means of the box key 23 thereby giving movement to the various levers and rods connected therewith, which movement is communicated to the crank arms 15, fixed to the trunnions 13 of the transverse plates 12 which are thereupon inclined to a nearly vertical position and the ashes resting thereon are discharged. Prior to the discharge, the ashes may be damped with water by means of the perforated pipes, and after the bulk of the ashes have been removed the pan may be sluiced out by similar means to remove any ashes or dust clinging to the pan or plates. A reversal of the movement of the pin or shaft 20 closes the plates or doors 12.

The draft of the furnace may be regulated by the dampers 10 and 11 operated through their several crank arms and rods.

The elevation of the one section of the flooring of the pan is done to accommodate the axle of the wheels and facilitate reaching from end to end of said pan, in other words it is to provide a deep pan which may be dropped to the lowest possible level and yet not hinder the convenience of the fireman's operations.

What I claim and desire to secure by Letters Patent is:—

1. In locomotive ash pans, an axle, a casing having sides and slots in said sides over said axle, an arch piece joining the sides from the edges of the said axle slots, and a plurality of bottom plates pivotally secured in said sides and arranged in echelon.

2. In locomotive ash pans, the combination with a casing having a plurality of bottom plates pivotally secured in the sides, crank arms on said plates and a rod connecting said arms, of a pin rotatably mounted operatively connected with said crank arms, a bracket secured to the side of the ash pan and supporting said pin, a cup shaped guard having a feather slot adapted to permit the insertion of a box key for turning said pin, and a box key having a feather corresponding to said feather slot and adapted to turn said pin and operate coincidently the several crank arms.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN LENTON HILLS.

Witnesses:
EDWARD ARTHUR GRIFFITH,
ROBERT DONALD MCKENZIE.