H. A. HOKE.

ASH PAN.

APPLICATION FILED DEC. 31, 1908.

954,100. **Patented Apr. 5, 1910.**

2 SHEETS—SHEET 1.

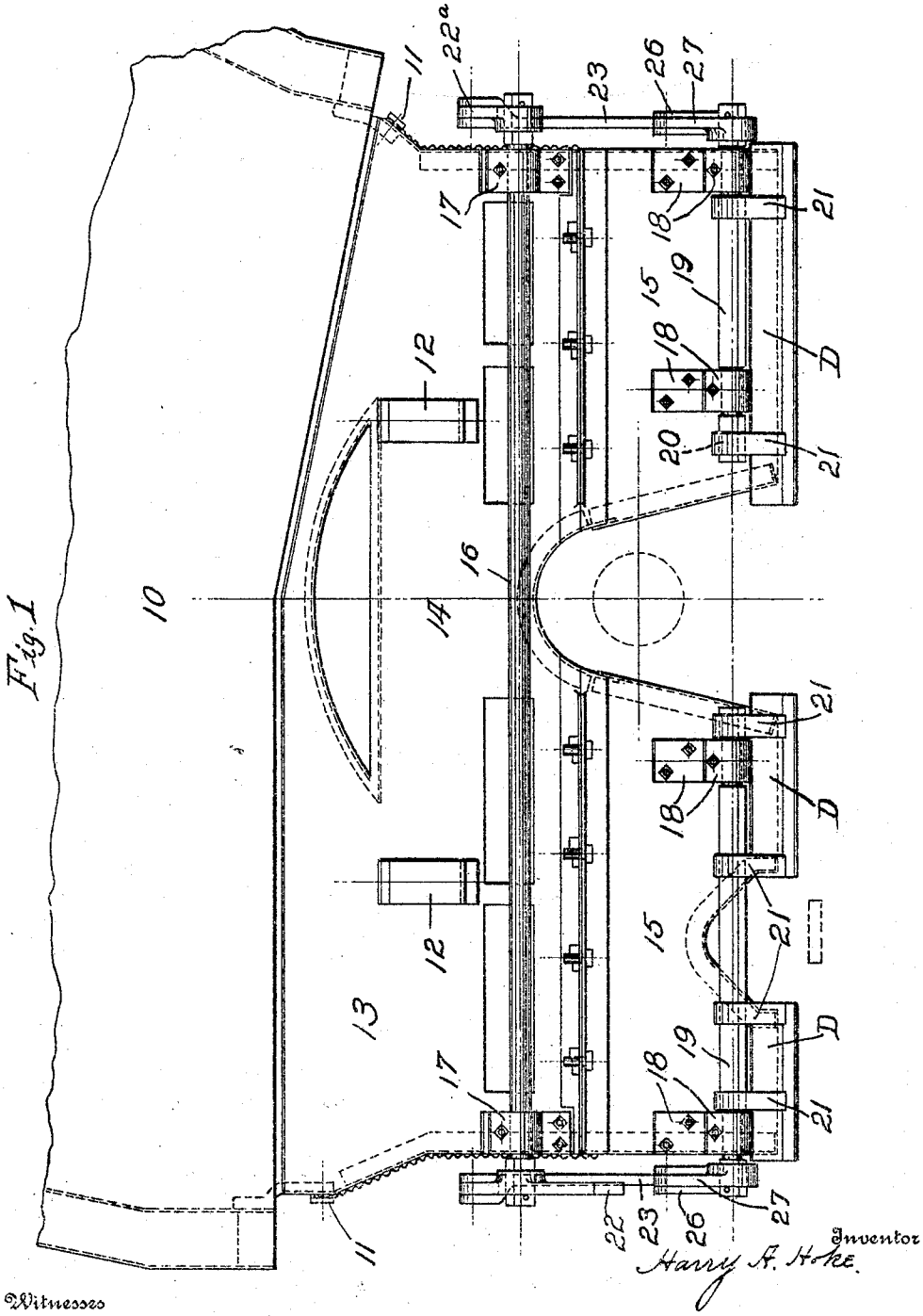

Fig. 1

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2 SHEETS—SHEET 2.

Fig. 2.

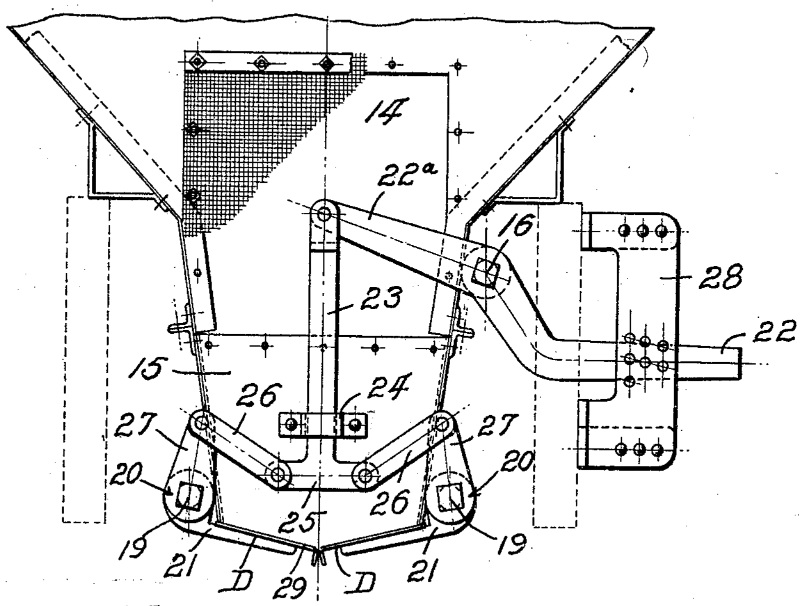
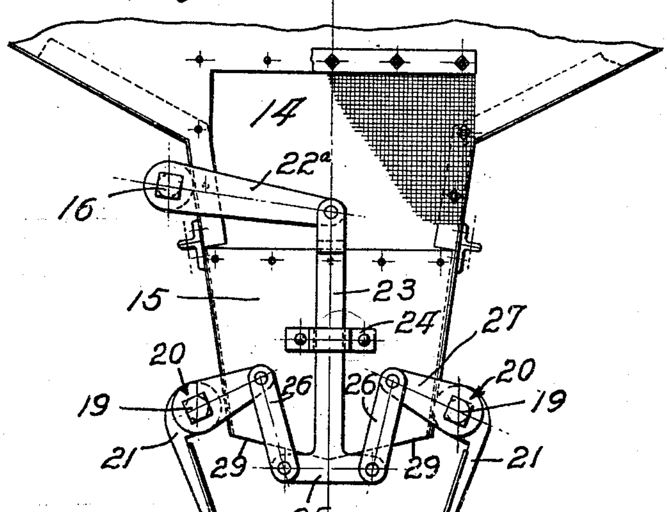


Fig. 3



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UNITED STATES PATENT OFFICE.

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ASH-PAN.

954,100. Specification of Letters Patent. Patented Apr. 5, 1910.

Application filed December 31, 1908. Serial No. 470,193.

To all whom it may concern:

Be it known that I, HARRY A. HOKE, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Ash-Pans, of which the following is a specification.

This invention relates to ash pans for locomotive furnaces, wherein the ashes from the firebox are collected in a receptacle carried by the locomotive below the grates, and designed to be opened over ash pits, discharging the ashes into pit buckets.

To these ends the invention contemplates a pan of the self-cleaning type, wherein the cleaning operation is easily accomplished by one man without the necessity of going below the locomotive in the ash pit, thus reducing the danger to workmen, as well as reducing the time necessary to clean the pans.

A further object of the invention is to provide a simple means for opening and closing a plurality of ash pan drop doors through the medium of a single shaft designed to run lengthwise of the ash pan body.

Another object of the invention is to provide means whereby the dead weight of the ashes collected on one half of the bottom of the pan is counteracted by the same weight on the other half, thus reducing the strains on the operating lever and the locking pins to a minimum.

Another object of the invention is to provide means whereby the action of the doors is positive, thus enabling the operator to open both drop doors at the same time, this feature being very essential when operating locomotives during the winter months.

As general objects, the invention provides means for admitting air through the pan to the grates to complete combustion in the locomotive furnace; to provide means for building the pan in sections, thus enabling a variety of classes of locomotives to use the same pan by altering the upper section, and also means for attaching the pan on the locomotive furnace.

With these and many other objects in view, which will be readily apparent to persons skilled in the art, the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in carrying out the objects above stated, are necessarily susceptible to a wide range of structural modification without departing from the scope of the invention, but a practical embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved ash pan, showing the drop bottom doors in a closed position, and also showing a portion of the locomotive furnace to which the ash pan is attached. Fig. 2 is a rear end elevation of the parts shown in Fig. 1, and clearly shows the operating mechanism. Fig. 3 is a front elevation of the parts shown in Fig. 1, and shows the operating mechanism with the drop doors open as they would appear when ashes are being discharged from the pan.

Like characters of reference designate corresponding parts in the several figures of the drawings.

In carrying out the present invention, no change is necessary in the locomotive furnace grate or ash pan supports, hence there is shown the usual locomotive furnace 10 which contains the grates and grate bars on which the fuel is deposited to be burned, ash pan supports 11, and auxiliary supports 12.

The ash pan which is designated in its entirety by the number 13, is preferably made in sections 14 and 15 thus enabling the lower section 15 to be used on a variety of locomotives without alteration. Running lengthwise of the pan and immediately above the lower section 15, is the main operating rod 16, which rests in bearings 17 at the extreme ends of the ash pan 13.

Journaled in bearings 18 located near the bottom of each section 15 is the drop door operating shaft 19, which is preferably square in cross-section except at the journals 18, the square portion of the shaft engaging corresponding sockets 20 in the drop door hinges or side extensions 21.

Attached to the shaft 16 is the operating lever 22, the end 22^a of which is attached to a vertically disposed T-bar 23, said T-bar being inverted and engaging with a guide 24 near its head 25. The object of this guide 24 is to prevent one drop door from opening while the other door remains closed. The doors are designated D. In further explanation of the function of the guide 24, it will be observed from the dotted lines appearing on said guide 24 in both Figs. 2 and 3 of the drawings, that a

slight side play is permitted for the vertically arranged T-bar therein, whereby the articulated or jointed lever elements are permitted to cause the force applied to be wholly shifted to either door in the event of the latter being temporarily stuck or otherwise restrained. After the stuck or restrained door is started in this manner, both doors open simultaneously.

Attached with pin connections to either side of the T-head 25, are the connecting links 26, which are preferably made in pairs and fitted in their respective places, thus placing the connecting pins in double shear, thereby making the parts rigid and able to resist wear. Attached to the upper and outer end of each link 26 is the arm 27, which with its square socket engages a corresponding square surface on the door operating rod 19.

The perforated bracket 28 receives the usual pin or other suitable holding means for the lever 22 to hold the doors in their closed position.

The operation of the drop bottom mechanism will be obvious from the several figures of the drawings, but it may be stated in a general way that any movement upward of the lever 22 will depress the end 22^a and the T-bar 23 will move downward. The head 25 of the T-bar connecting with links 26 to the operating arms 27 of the drop door, necessarily pulls the doors open as is clearly shown in Fig. 3 of the drawings.

The bottom 29 of the pan is preferably inclined upwardly on either side from the center line of the ash pan, as is plainly illustrated in Figs. 2 and 3 of the drawings.

From the foregoing it is thought that the many advantages of the herein described ash pan will be readily apparent without further elaboration; but it may be noted at this point by way of recapitulation that the distinctive features of the invention reside in the use of a shaft running lengthwise of the locomotive ash pan for the purpose of opening and closing cleaning doors, and the use of vertically arranged bars with novel connections for operating the cleaning doors, the connections for the doors being separated in a horizontal direction thus forming a T-shaped or triangular link. The object of this link is to reduce the travel of the operating mechanism and at the same time to retain the toggle joint effect thus reducing the load of the panful of ashes on the locking pin.

By reference to Fig. 2 of the drawings, it will be noticed that by raising the guide block 24, shortening the T bar 23 and likewise the links 26, the total weight of ashes can be made to be taken by the pin connections between the arms 27 and the head 25 of the T bar 23. With the links arranged as thus described, it will be apparent that the force tending to open one door is directly counteracted by the force tending to open the other and opposite door, and that the head 25 of the T bar 23 would necessarily have to be shifted below the center line of force before the doors would open, thus transferring all the weight of the ashes from the locking pin in the rack 28 to the head of the T bar and its link and pin connections. This condition would be readily permissible where warping of the pans, due to the excessive heat and sudden changes in temperature, was eliminated.

Claim:—

In a locomotive ash pan provided with a discharge opening, the combination with two oppositely movable doors for closing the opening, means for receiving motion from a source of power, a fixed guide arranged on the body of the pan, an inverted vertically arranged T-bar articulated with said means and slidably working through said fixed guide and also having slight lateral play therein, rock arms extending upwardly from the axles of the doors, and upstanding links articulated with said rock arms and respectively to the opposite terminals of the T-bar head, said fixed guide and said articulated lever elements coöperating to cause the force applied to be wholly shifted to either door in the event of the latter being temporarily restrained.

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

HARRY A. HOKE.

Witnesses:

D. Lloyd Claycomb,

N. E. Gee.