

No. 695,968.

Patented Mar. 25, 1902.

M. TOLTZ & A. LIPSCHUTZ.

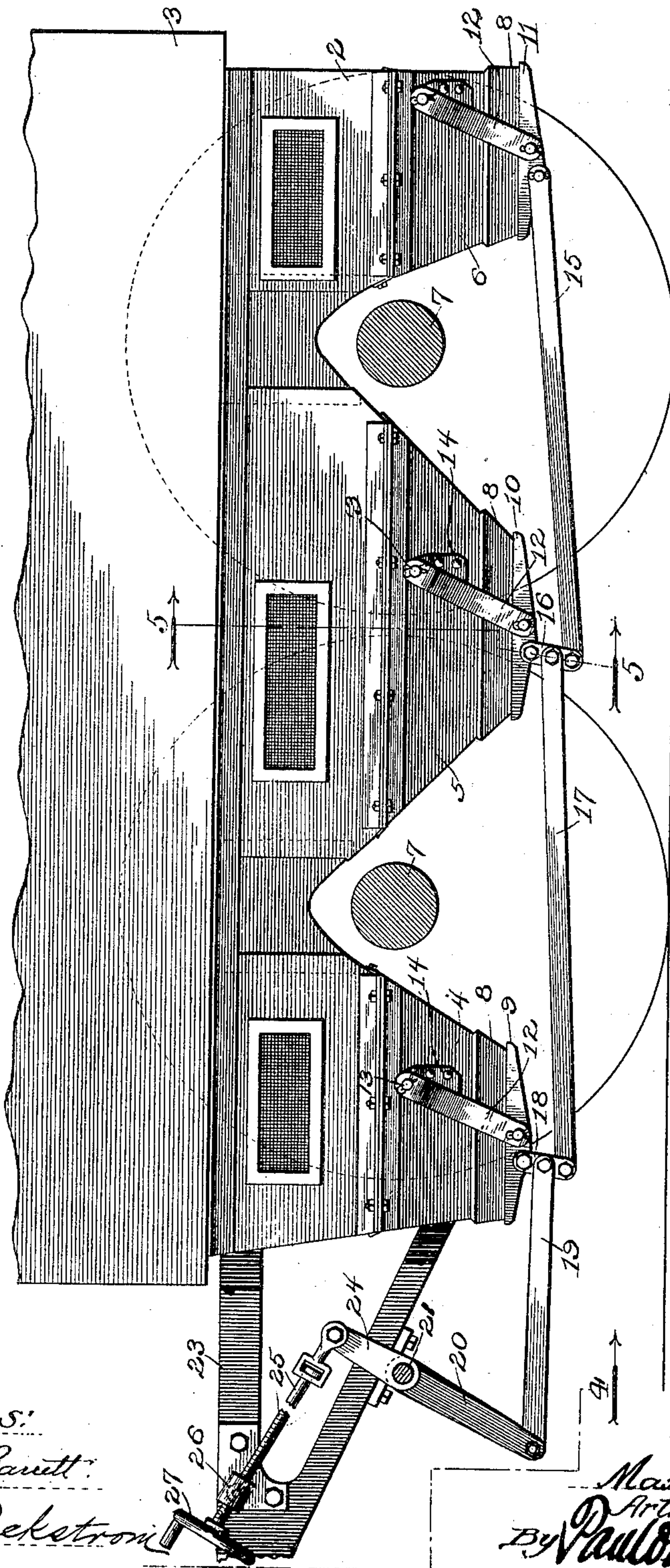
LOCOMOTIVE ASH PAN.

(Application filed July 1, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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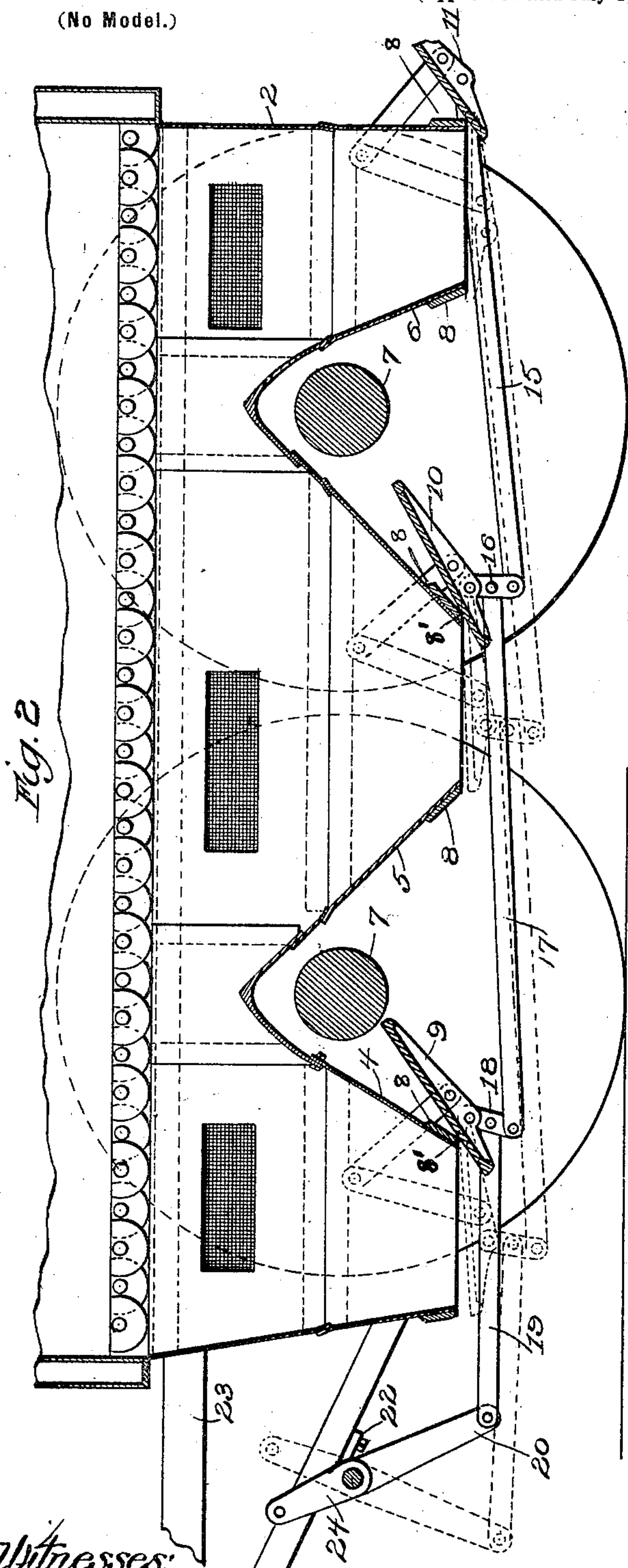
M. TOLTZ & A. LIPSCHUTZ.

LOCOMOTIVE ASH PAN.

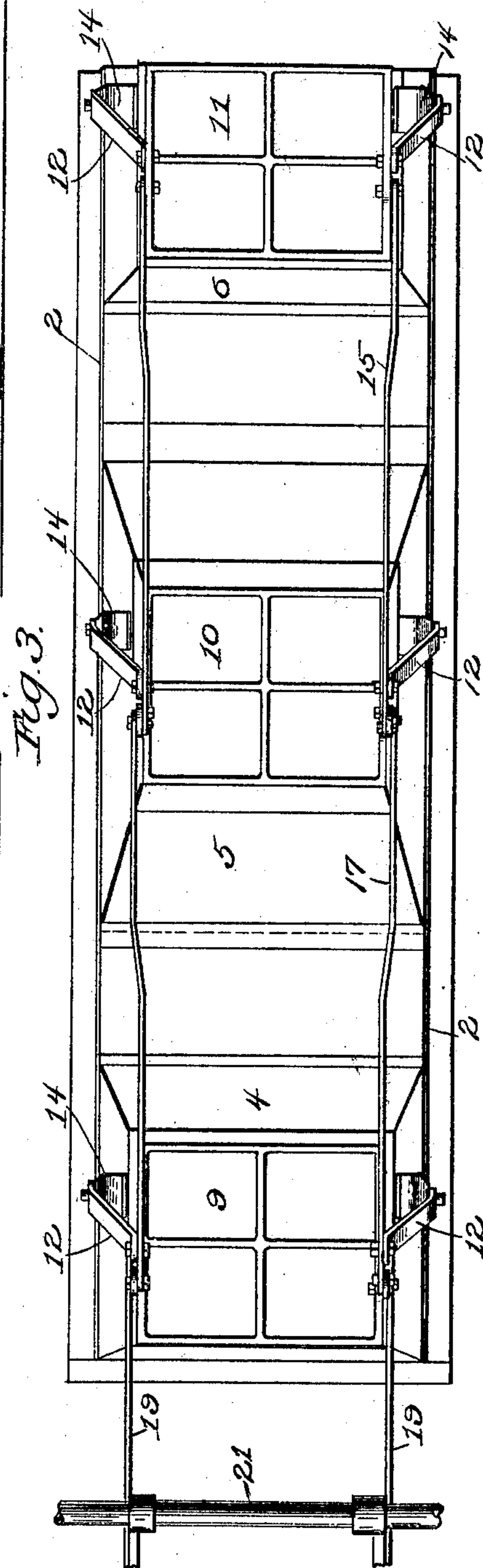
(Application filed July 1, 1901.).

(No Model.)

3 Sheets—Sheet 2.



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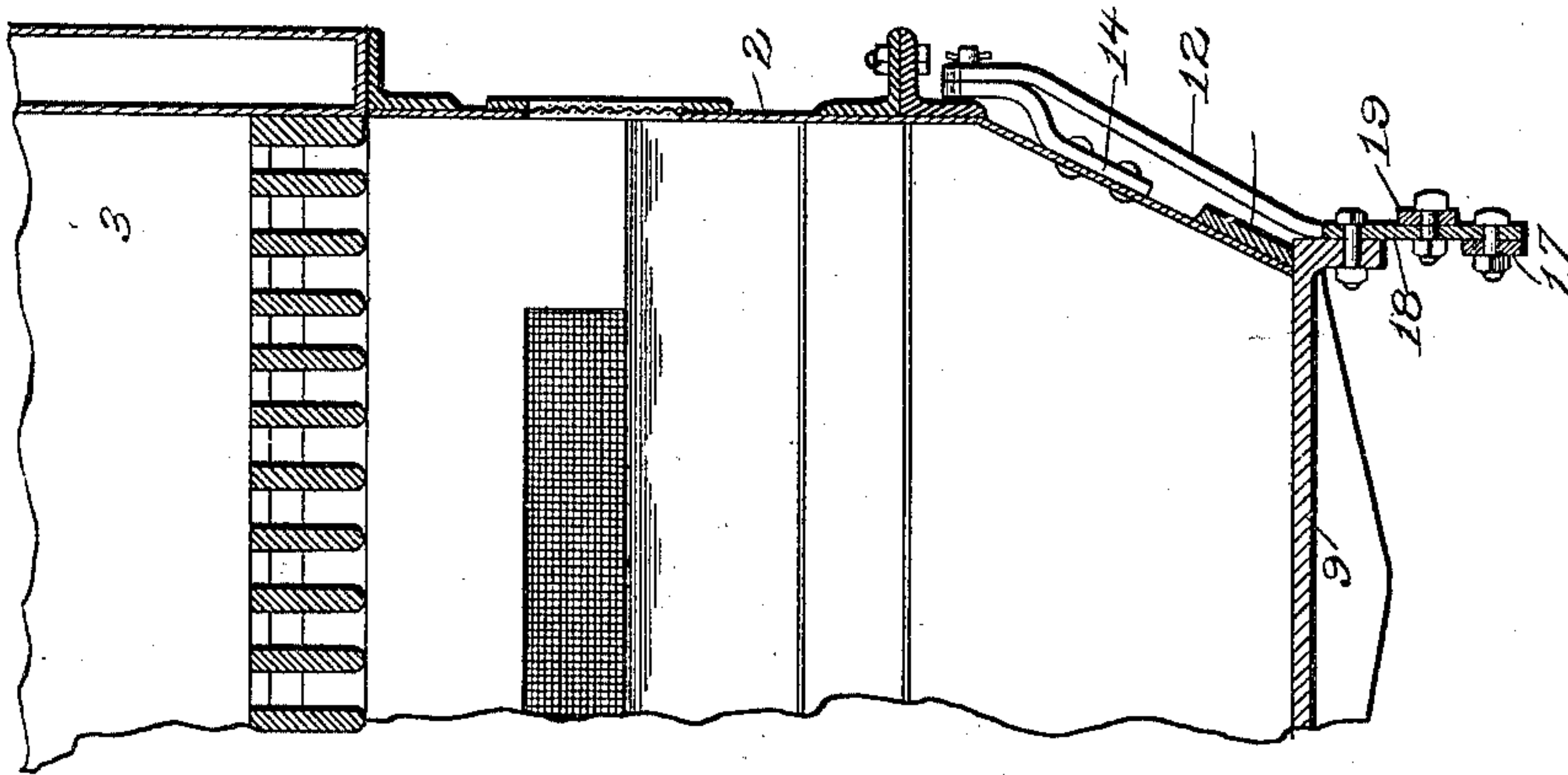
**M. TOLTZ & A. LIPSCHUTZ.**  
**LOCOMOTIVE ASH PAN.**

(Application filed July 1, 1901.)

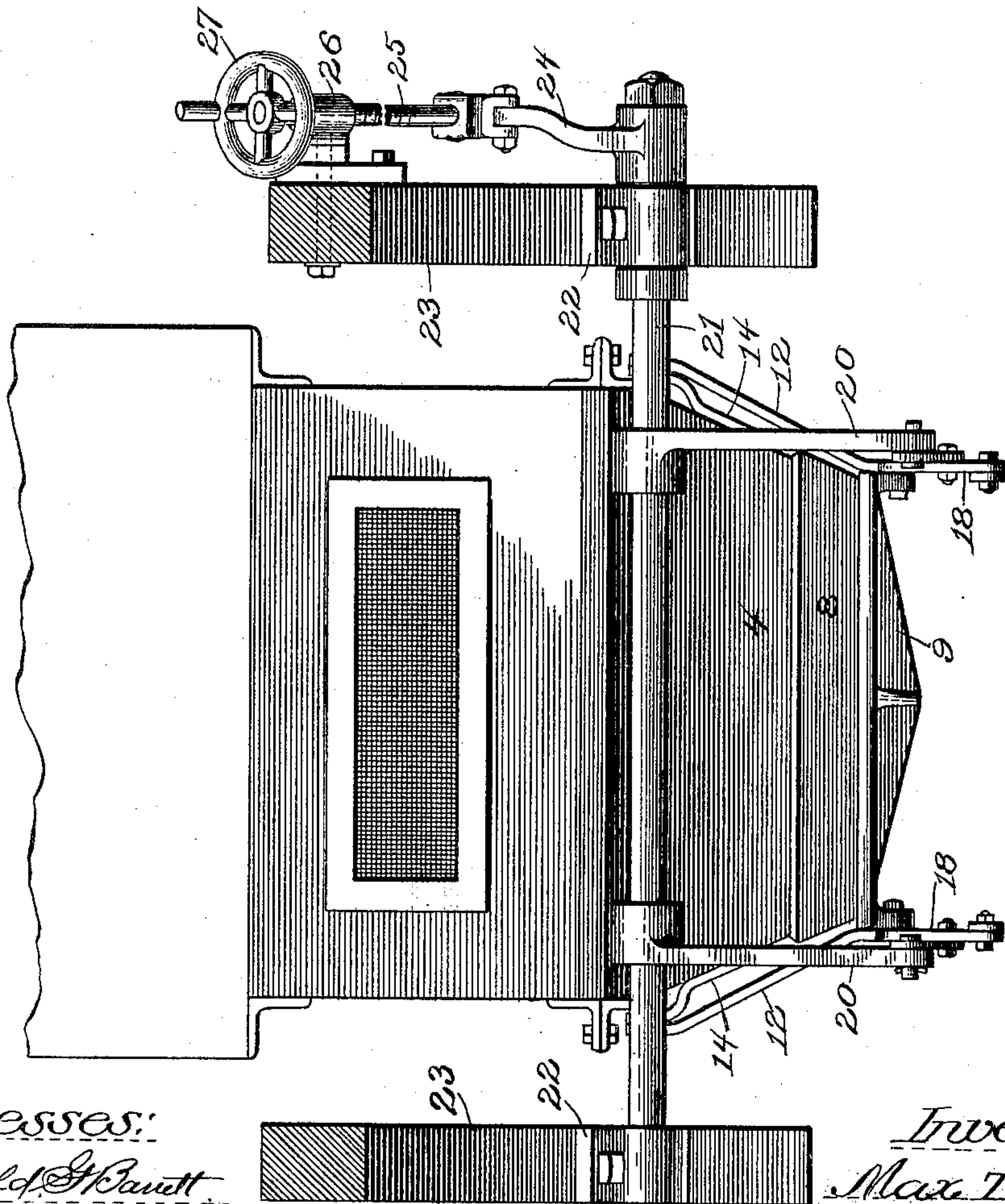
(No Model.)

3 Sheets—Sheet 3.

*Fig. 5*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

MAX TOLTZ, OF ST. PAUL, MINNESOTA, AND ARTHUR LIPSCHUTZ, OF ST. LOUIS, MISSOURI.

## LOCOMOTIVE ASH-PAN.

SPECIFICATION forming part of Letters Patent No. 695,968, dated March 25, 1902.

Application filed July 1, 1901. Serial No. 66,627. (No model.)

*To all whom it may concern:*

Be it known that we, MAX TOLTZ, of St. Paul, Ramsey county, Minnesota, and ARTHUR LIPSCHUTZ, of St. Louis, Missouri, have  
5 invented certain new and useful Improvements in Locomotive Ash-Pans, of which the following is a specification.

Our invention relates to locomotive ash-pans, and has particular reference to the bot-  
10 toms of such pans and the mechanism for opening and closing the plates or closers of the same.

The ash-pans of locomotives used in the colder climates or which come in contact with  
15 large amounts of snow often freeze or clog up on account of the snow or moisture getting on the pan and the joints or by its melting on the warmer parts, running down, and freezing in the lower parts of the pan. It is also  
20 a frequent occurrence in engines that the bottom plates or closers become so warped as to bind upon their seats and in their retaining-guides. As the ash-pans of locomotives have been constructed heretofore the plates  
25 or closers have consisted either of a single large plate or several smaller plates connected to be operated as a single plate, and as a consequence when the same became stuck, as by freezing, clogging, or warping, it has  
30 often necessitated more power to start the same than the operator could apply. As a consequence of this inability to dump the ashes locomotives have frequently choked on the road and have had to be hauled to the re-  
35 pair-shop to be cleaned.

The object of our invention is to construct a locomotive ash-pan so that it may be opened or dumped and closed air-tight, even in the  
40 severest weather, by the application of an ordinary force, such as may be exerted by the fireman, or in case the plates or closers have become warped or gotten out of alinement that they may each be closed tightly upon its seat.

45 A further object of our invention consists in the construction of the ash-pan bottom and the arrangement of the plates or closers whereby the said parts are cleaned of ashes or other matter tending to adhere thereto.

A still further object of our invention is to  
50 provide an ash-pan having plates or closers which cannot clog or stick in consequence of cinders or other matter tending to adhere to the plates.

Our invention consists, therefore, in a lo-  
55 comotive ash-pan having a hopped bottom and connecting the plate or closer thereto by means which when the said plate or closer is being opened exerts a powerful thrust down-  
60 wardly upon the same to force it from its seat and then permit of its horizontal movement from beneath the hopper-opening or when the said plate or closer is being shut exerts a pow-  
65 erful pull upwardly upon said plate or closer, drawing it up singly to its seat and permit-  
70 ting at the same time a horizontal sliding motion thereon, whereby it is seated air-tight.

Our invention consists also in a locomotive ash-pan having a hopped bottom and piv-  
75 otally connecting therewith a plate or closer, which when operated is adapted to scrape  
80 along some stationary part of the bottom and free itself of ashes or other matter adhering thereto.

Our invention further consists in a locomotive ash-pan having a bottom provided with  
75 a plurality of hoppers, each having a separate plate or closer and means for operating said plates or closers, whereby substantially  
80 the entire force exerted upon said means may be applied to each of the plates or closers in-  
85 individually.

Our invention further consists in various details of construction and in combination of  
85 parts, all as hereinafter described, and particularly pointed out in the claims.

Our invention will be more readily under-  
90 stood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side view of an ash-pan em-  
95 bodying our invention. Fig. 2 is a sectional view thereof, showing the bottom plates or closers and the operating parts in open position. Fig. 3 is a plan view thereof looking  
95 from below. Fig. 4 is an end view on the line 4 4 of Fig. 1, and Fig. 5 is a sectional view on the line 5 5 of Fig. 1.



As illustrated in the drawings, the locomotive ash-pan is provided with a plurality of bottom hoppers 4, 5, and 6, each of which is provided with a bottom plate or closer, which latter are connected by operating equalizer means adapted for actuation from a point forward of the ash-pan. We prefer that the ash-pan bottoms shall open backwardly, the operating means being located a distance forward of the cab to prevent the fireman from dumping the ash-pan while the locomotive is in motion. The lower ends of these hoppers have rectangular openings provided with frames 8 8', having heels 8' 8', which serve as seats for the bottom plates or closers 9, 10, and 11 of the hoppers 4, 5, and 6, respectively. These bottom plates or closers are pivoted at their sides to links 12, one on each side of each hopper, and each of these links is in turn pivoted at 13 to plate 14, bolted upon the side of the hopper. The links 12 have their pivots so located upon the sides of the hoppers and the bottom plates or closers, respectively, that in closing the latter the links swing past the normal and occupy an obtuse angle with relation to the bottom plates or closers when in closed position, as shown in Fig. 1. This arrangement is such that when a horizontal force is applied to the bottom plates or closers to close them the links 12 operate by a toggle action to lift the plates or closers and hold them snugly against their respective seats, and when an opposite horizontal force is applied to the plates or closers the links 12 act at once to force the said plates or closers down away from their seats. By pivoting the bottom plates or closers upon links 12 and weighting down the forward ends of the respective plates or closers, as by suspending therefrom the mechanism for applying the horizontal actuating forces, Figs. 1 and 2, the plates or closers are caused to tilt and bear with more or less pressure upon the rear heel 8' of frames 8 the hoppers, whereby the said plates or closers are scraped clear of ashes and cinders as they move or slide beneath said heels 8'. In order to apply a horizontal operating force to the bottom plates or closers, we provide controlling and operating mechanism as follows, (this mechanism being in duplicate, one set upon each side of the hoppers, a description of one will serve for both:) Upon the bottom 11 on the forward side of, or, as shown in the drawings, to the left of, the link 12 is attached a rod 15, which extends substantially horizontal to and beneath the bottom 10, where it is pivoted to the lower end of equalizing-lever 16, the other end of this lever being pivoted to the bottom 10 in the same position in which the rod 15 is pivoted to the bottom 11. A second rod 17, similar to the rod 15, is pivoted to the middle of the lever 16 and also to the lower end of equalizing-lever 18. A driving-rod 19 is pivoted to

the middle of lever 18. The other end of said rod is pivoted to the lower end of crank-arm 20. The two rocker-arms 20 are keyed to a rock-shaft 21, journaled in bearings 22, bolted upon the under side of the framework 23 of the engine. Upon one end of the shaft 21 is keyed an operating arm or lever 24, by means of which the power is applied to the whole mechanism. In Fig. 1 we have illustrated this operating arm or lever as operated by means of a screw pivotally mounted at 26 upon the framework 23 and operated by a hand-wheel 27; but sometimes we prefer a simple hand-lever formed by extending lever 24 to the proper length and holding it in position by a toothed quadrant similar to that in connection with the reversing-lever in the cab of a locomotive.

The operation of our device is as follows: Assuming the parts to be in the position indicated in Fig. 1 and a force to be applied to the upper end of the lever 24 to draw it forward, or to the left, rocker-arms 20 will tend to move backward, transmitting the force to equalizing-levers 18. Since the lower ends of these levers 18 under ordinary conditions are held from horizontal movement by the resistances of the bottom plates 10 and 11 and communicated thereto by rods 17, the force transmitted to said levers 18 will tend to move bottom plate or closer 9 backward, or to the right; but on account of the toggle connection, through links 12, between the plate or closer and the hopper it is forced downward away from its seat. So soon as bottom plate 9 has been started it moves with comparative freedom to the right, throwing the upper ends of equalizing-levers 18 over into alinement, or approximately in alinement, with rods 19 and 17. Further application of power to lever 24 is now communicated to rods 17 and equalizing-levers 16, forcing bottom plate 10 to the right and away from its seat, as in the case of plate 9, and at the same time bottom plate or closer 9 is moved farther to the right, corresponding to the distance through which rods 19 and 17 have moved in moving bottom plate or closer 10. A further application of power to lever 24 causes bottom plate or closer 11 to be forced away from its seat and all of the bottom plates or closers to be moved to the right clear of the hopper-openings. If, however, the forward bottom plate or closer should from any cause be stuck, the force applied to lever 18 would be transmitted through rods 17 to levers 16, forcing bottom plate or closer 10 from its seat and then operating to force bottom plate or closer 11 from its seat. After bottom plates or closers 10 and 11 have been started the lower ends of equalizing-levers 18 move into alinement with rods 19 and 17, and the whole force as communicated by rods 19 is applied directly to plate 9 to force it from its seat. It will therefore be noted that when the bottom plates or closers



are seated so as to require equal amounts of force to start them the rear one will start first, then the one next to it, and so on. Also when one of the plates is stuck more tightly than the others and requires more force to start it, then those bottom plates or closers which require the less force to start them will move first and then permit the entire force to be applied to the bottom plate or closer which was stuck most tightly. It will further be noted that we are able to do away with all guides and grooves in our arrangement of plates or closers, whereby the liability to become obstructed or clogged up is overcome to a large extent. However, if for any reason a plate should become obstructed in closing, so that it fails to move up to its normal position, the equalizing-levers and connecting-rods will nevertheless cause the other plates to be moved to their usual closed position. Moreover, this arrangement of equalizing-levers and rods permits of a twisting or wrenching action upon the plates or closers should they become stuck at one side or corner only.

While we have confined the description of our invention to the construction shown in the drawings, it is apparent that the same is capable of many modifications, and we therefore do not restrict ourselves to the construction shown and described herein.

What we claim as our invention is—

1. In a locomotive ash-pan having a hopped bottom, the combination of a counter-weighted bottom plate or closer, supporting-links pivoted to the sides of said plate or closer and to some stationary part of the ash-pan, respectively, the pivotal axes being so located that as the plate moves horizontally said supporting-links move past the normal, whereby said plate or closer is pulled up to or forced from its seat and caused to scrape along a corner or heel of said hopper in opening and closing, substantially as described.

2. In a locomotive ash-pan having its bottom provided with a plurality of hoppers, the combination of a bottom plate or closer for each of said hoppers and means adapted for starting and seating said plates or closers non-simultaneously, substantially as described.

3. In a locomotive ash-pan having its bottom provided with a plurality of hoppers, the combination of a bottom plate or closer for each of said hoppers, equalizing-levers pivotally connected to said plates or closers, rods connecting said equalizing-levers and means for applying force to said rods whereby said plates or closers may be seated and started non-simultaneously, substantially as described.

4. In a locomotive ash-pan having its bottom provided with a plurality of hoppers, the combination of a bottom plate or closer for each of said hoppers, equalizing-levers piv-

otally connected at their upper ends to each of said plates or closers, except the rearmost rods pivotally connected to the said rearmost plate or closer and to the lower ends of the levers of the adjacent forward plate or closer, other rods pivotally connected to the levers of each of the plates or closers except the said rearmost and to the lower ends of the levers of each adjacent forward plate or closer and means for applying pressure to the levers of the foremost plate or closer, substantially as described.

5. In a locomotive ash-pan having its bottom provided with a plurality of hoppers, the combination of a plurality of bottom plates or closers one for each hopper, means for operating said plates or closers comprising an actuating-lever and shaft, two rock-arms connected to said shaft, a system of equalizing-levers and rods connected to said plates or closers and connecting-rods pivotally connected to the free ends of said arms and to the said system of equalizer-levers and rods, substantially as described.

6. In a locomotive ash-pan having its bottom provided with a plurality of hoppers, the combination of a plurality of bottom plates or closers one for each hopper, links pivotally connected to each of said bottom plates or closers and to some stationary part and means adapted for starting and seating said plates or closers non-simultaneously, substantially as described.

7. The combination of the ash-pan having a plurality of hoppers, with the flat bottom for each hopper hung to close upwardly and slide thereon and the equalizing-levers connecting said bottoms and operable to open and close all thereof in regular and irregular succession, substantially as described.

8. The locomotive ash-pan having a plurality of hoppers, in combination with the plates or closers therefor occupying substantially horizontal positions when closed and occupying inclined positions when open, swinging supports for said bottoms and the system of equalizing-levers connecting and for operating said plates, substantially as described.

9. The locomotive ash-pan having a plurality of hoppers, in combination with the bottom plates or closers suitably supported and adapted to close upwardly upon the lower edges of respective hoppers, and means for moving said plates longitudinally away from their hoppers or toward the same to open and close the hoppers non-simultaneously, substantially as described.

10. The locomotive ash-pan having a plurality of hoppers, in combination with a bottom plate for each hopper, the supporting-links for each plate attached to the middle thereof, the system of equalizing-levers connected to said plates at other points thereon



and the power-applying mechanism, substantially as described.

11. The locomotive ash-pan having a plurality of hoppers, in combination with the  
 5 bottom plates therefor, the links 12 pivoted upon said hoppers and supporting said plates to swing and move vertically beneath the respective hoppers, the toggle-links and the connecting-bars connected together and to said  
 10 plates, and means for operating said bars to move said plates non-simultaneously, substantially as described.

In witness whereof I have hereunto set my

hand, in the presence of two witnesses, this 27th day of May, 1901.

MAX TOLTZ.

Witnesses:

JOSEPH FRIEDMAN,

R. D. HAWKINS.

In witness whereof I have hereunto set my hand, this 31st day of May, 1901, in the presence of two witnesses.

ARTHUR LIPSCHUTZ.

Witnesses:

CHAS. A. LIDDLE,

WM. STEVENSON.