

(No Model.)

E. M. FITZGERALD.
LOCOMOTIVE ASH PAN.

No. 446,608.

Patented Feb. 17, 1891.

Fig. 1.

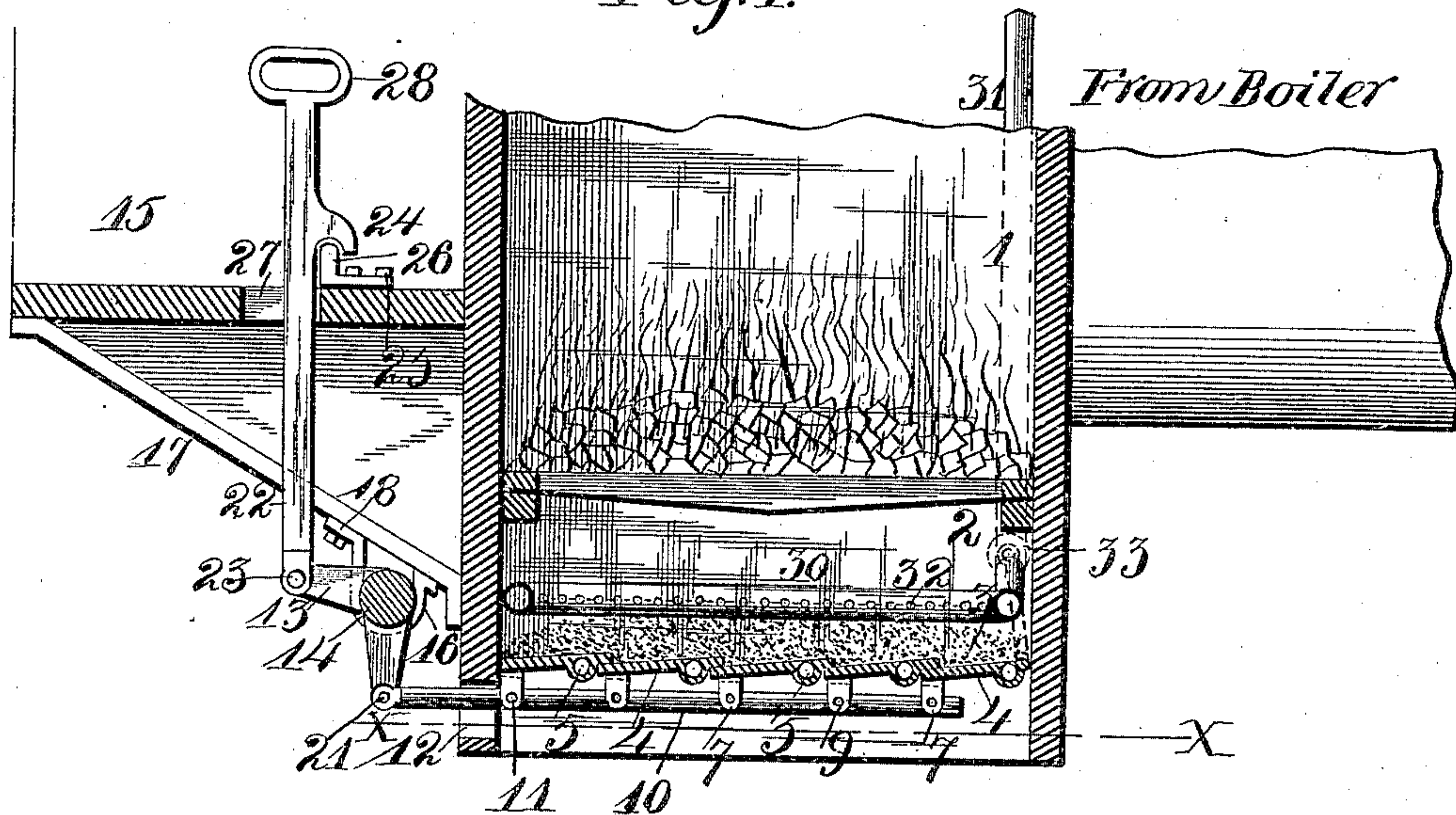


Fig. 5.

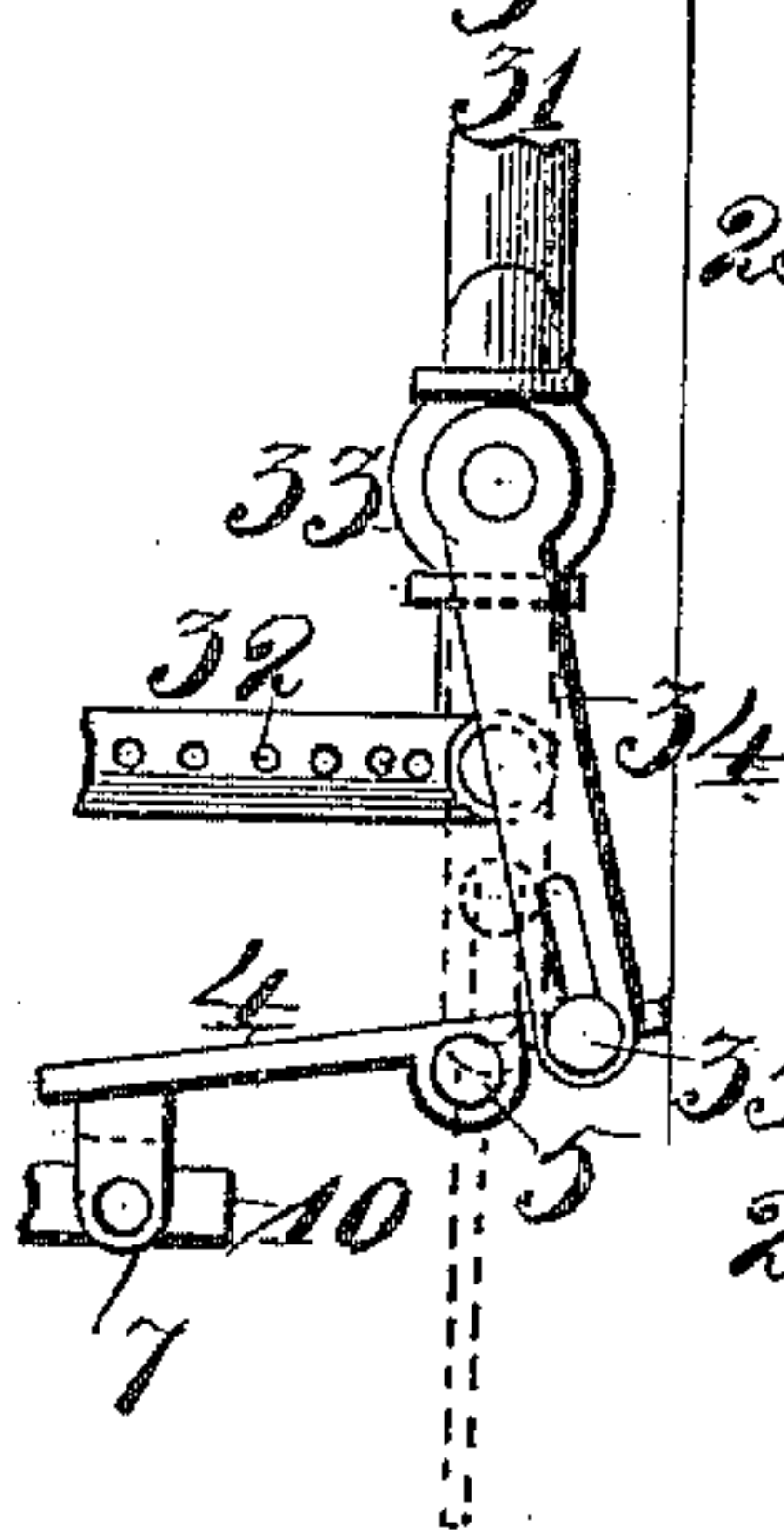


Fig. 2.

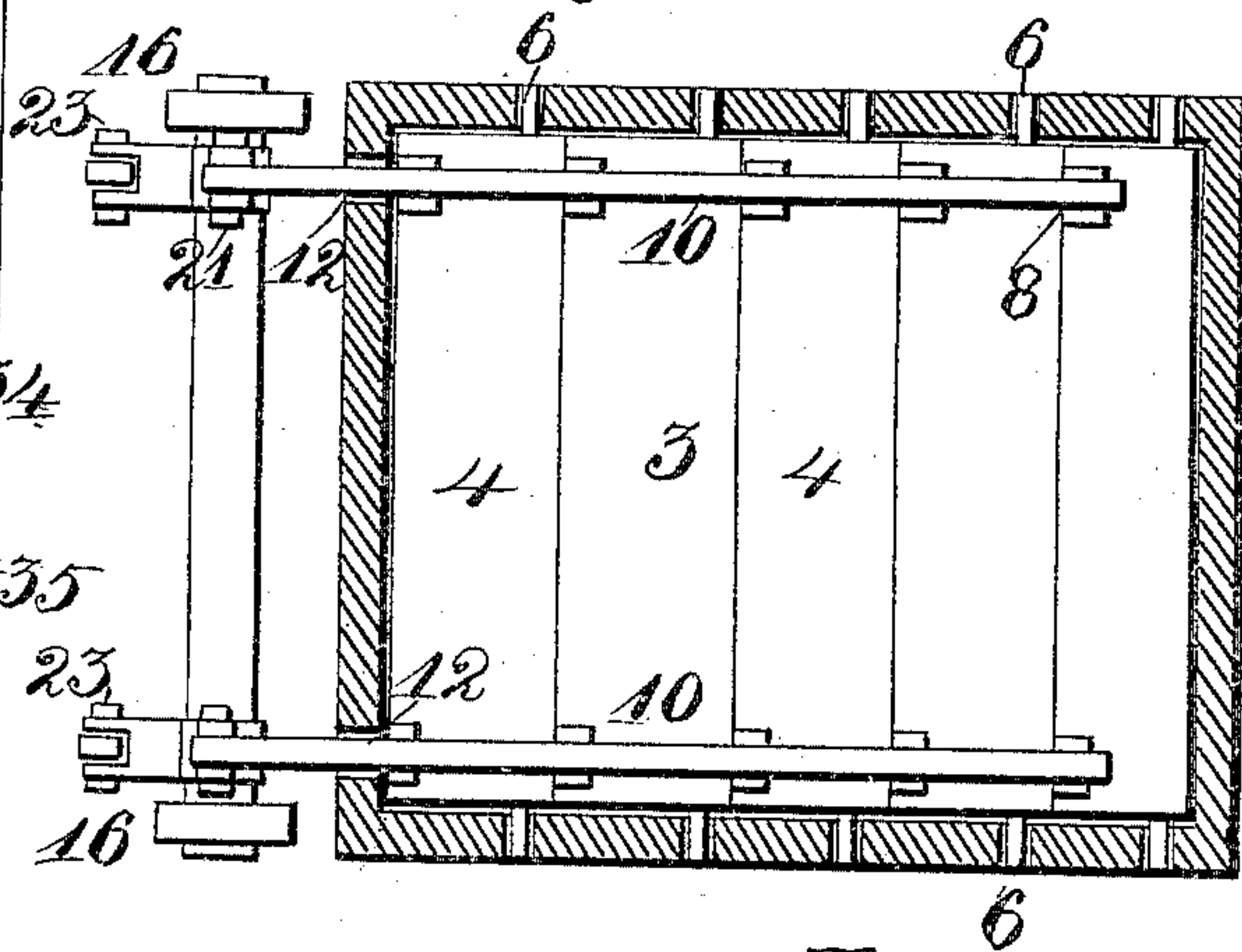
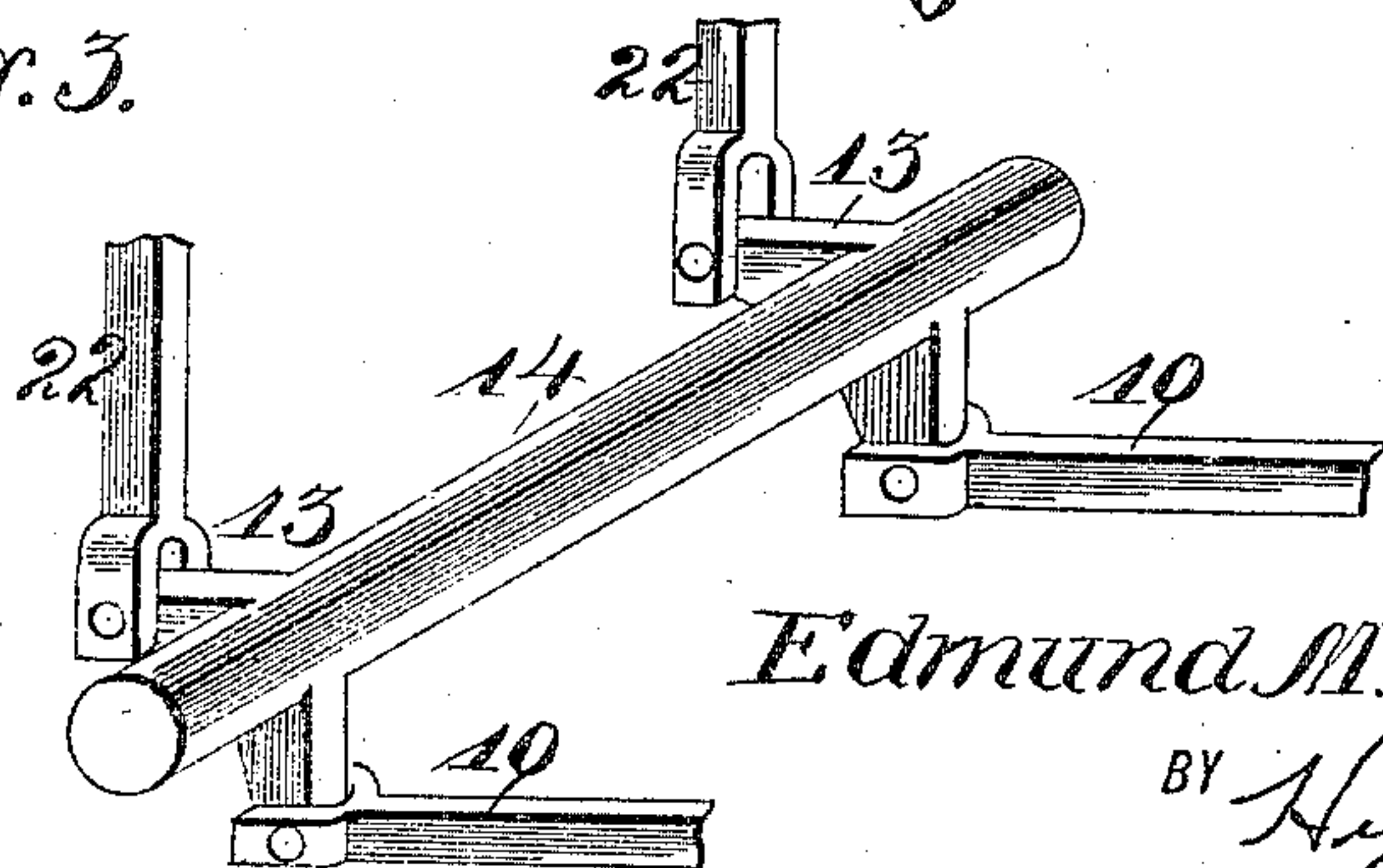


Fig. 4.



Fig. 3.



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EDMUND M. FITZGERALD, OF ST. LOUIS, MISSOURI.

LOCOMOTIVE ASH-PAN.

SPECIFICATION forming part of Letters Patent No. 446,608, dated February 17, 1891.

Application filed September 15, 1890. Serial No. 365,053. (No model.)

To all whom it may concern:

Be it known that I, EDMUND M. FITZGERALD, of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Locomotive Ash-Pans, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in locomotive ash-pans; and it consists in the novel arrangement and combination of parts, as will be hereinafter more fully described, and designated in the claims.

In the drawings, Figure 1 is a vertical longitudinal section of my invention. Fig. 2 is a cross-section of the same, taken on the line *xx* of Fig. 1, showing a plan view of the bottom. Fig. 3 is a perspective view of the shaft and its connections. Fig. 4 is a cross-sectional view of one of the rotating plates detached. Fig. 5 is a detailed view of an automatic cut-off used in the operation of washing the plates.

Referring to the drawings, 1 represents the fire-box, having a series of grate-bars 2 secured therein, and my improved ash-pan 3, suspended at a suitable distance beneath said grate-bars.

4 represents a series of sheet-iron plates, which are mounted around stiffening-bars 5. Said plates are bent over said stiffening-bars, the bend being in the direction of the length of the plates. These plates are made of a single piece of sheet metal, as shown in Fig. 4, the metal being first bent over and around the stiffening-bar, so as to partially encircle it, and then being bent back upon itself and over the top of the said bar, the edge of the upper layer thus formed being bent down and under the edge of the lower layer, as will be evident from an inspection of the said figure, and, as will also be seen therein, the stiffening-bar is near that edge of the plate that will be thrown up in emptying the contents of the ash-bars, thus decreasing the resistance to be overcome and increasing the effective leverage in so doing. Said stiffening-bars project a suitable distance beyond the ends of said plates, thereby forming a series of tenons or gudgeons 6, on which said plates are pivoted in the fire-box in suitable bearings, or in a frame, and said frame secured in said fire-box. The terminal portions of said

plates are provided with a series of lugs 7, which lugs are provided with elongated recesses 8 and perforations 9. Both ends of said plates are similarly provided.

10 10 represent connecting-rods, which are loosely connected in recesses 8 by means of pins or rivets 11. Said connecting-rods pass through perforations 12 12, made in the ash-pan, and are fastened to arms 13 13, secured to a horizontal shaft 14, which shaft passes transversely across beneath the bottom of cab 15 and mounted in bearings 16 16. Said bearings are secured to supporting-bars 17 17, which bars connect the bottom of the cab and the bottom of said fire-box. Said bearings 16 16 may be secured to the upper or lower side of supporting-bars 17 17 by means of bolts or rivets 18. Said arms 13 may be made separately with perforations formed therein and slipped over shaft 14, and secured thereto by means of set-screws, or they may be welded to said shaft, as shown in the drawings. Said arms are provided with perforations, and the inner projecting portions of said arms are loosely pivoted to connecting-rods 10 10 by means of bolts or rivets 21, and the outer projecting portions of said arms are loosely pivoted to operating-bars 22 22 by means of bolts 23. Said bars 22 22 are provided with downwardly-inclined lips 24, the recesses of which are adapted to fit over catches 26, which catches are secured to the upper surface of the bottom of the cab by means of bolts 25. Said operating-bars are also provided at their upper extremities with hand-grips 28, which are convenient to the operator in manipulating said bars. Said operating-bars pass downwardly through elongated openings 27, made in the bottom of the cab, and are connected to the outer projecting portions of arms 13, as hereinbefore described.

When it is desired to operate the pan, the operator should grasp the hand-grips 28, lift the operating-bar off of lips 24, and press downward on said operating-bar. The downward motion of said bars throws the inner projecting portions of arms 13 forward, and consequently the connecting-rods 10 10. The forward movement of said rod elevates plate 4, whereby the ashes and cinders are permitted to fall through between said plates.

30 represents an automatic washing device

for cleaning the plates, which device consists of a steam or water pipe 31, connected to either the steam or water space of the boiler. Said pipe passes downward to a point below the grate-bars and then passes across the ash-pan and parallel thereto, and terminates in a closed end. The horizontal portion of said pipe is provided with a series of perforations 32, through which the water passes and falls on the plates 4. The hydraulic pressure of the water throws it out of the perforations in the steam-pipe in the form of jets, which strike the plates with sufficient force to clean them from the accumulation of ashes and cinders. The vertical portion of said pipe has a valve 33 located in it at a suitable point below the grate-bars. Said valve has an arm 34 secured to it, and said arm is pivotally connected to back plate 4 by means of a bolt or rivet 35. When the plates are elevated in the operation of dumping, the lower end of arm 34 is moved backward, by which movement the valve 33 is opened and the water and steam collected in said pipes are permitted to pass downward. When the plates assume their normal position, the valve is closed and the supply of water and steam is shut off.

Having fully described my invention, what I claim is—

1. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars secured to the said plates near one edge thereof and having their ends contained in bearings in the said ash-box, a rod connected to the said plates near the said bar, a transverse shaft having an arm thereon, pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having a downwardly-extending lip upon one of its sides, and a catch upon which the said lip is adapted to rest, as described.

2. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars contained within each of the said plates near one edge thereof and having their ends contained in bearings in the ash-pan, each of the said plates consisting of a single piece of sheet metal

bent around and under the said bar and bent backward upon and over the said bar, the end of the upper layer being bent down and under the end of the lower layer, a rod connected to the said plates near the edge thereof opposite the said bar, a transverse shaft having an arm thereon pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having downwardly-extending lips upon one of its sides, and a catch upon which one of the said lips is adapted to rest, as described.

3. In a locomotive ash-pan having a series of hinged plates below the grate-bars of the fire-box, a perforated pipe connected with the boiler, a valve in the said pipe, a projection upon one of the said hinged plates, an arm having its one end rigidly connected with the said valve and its opposite end slotted, the slot therein sliding upon the projection upon the plate, and means for moving the said plates, as described.

4. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars secured to the said plates near one edge thereof and having their ends contained in bearings in the said ash-box, a perforated pipe connected with the boiler, a valve in the said pipe, a projection upon one of the said hinged plates, an arm having its one end rigidly connecting with the said valve and its opposite end slotted, the slot therein sliding upon the projection upon the plate, means for moving the said plates, as rods connected to the said plates near the edge thereof opposite the said bar, a transverse shaft having an arm thereon pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having downwardly-extending lips upon one of its sides, and a catch upon which the said lips are adapted to rest, as described.

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

EDMUND M. FITZGERALD.

Witnesses:

C. F. A. MUELLER,
E. E. LONGAN.