D. L. KNOWLES, J. MARVEL & C. HESELDEN.

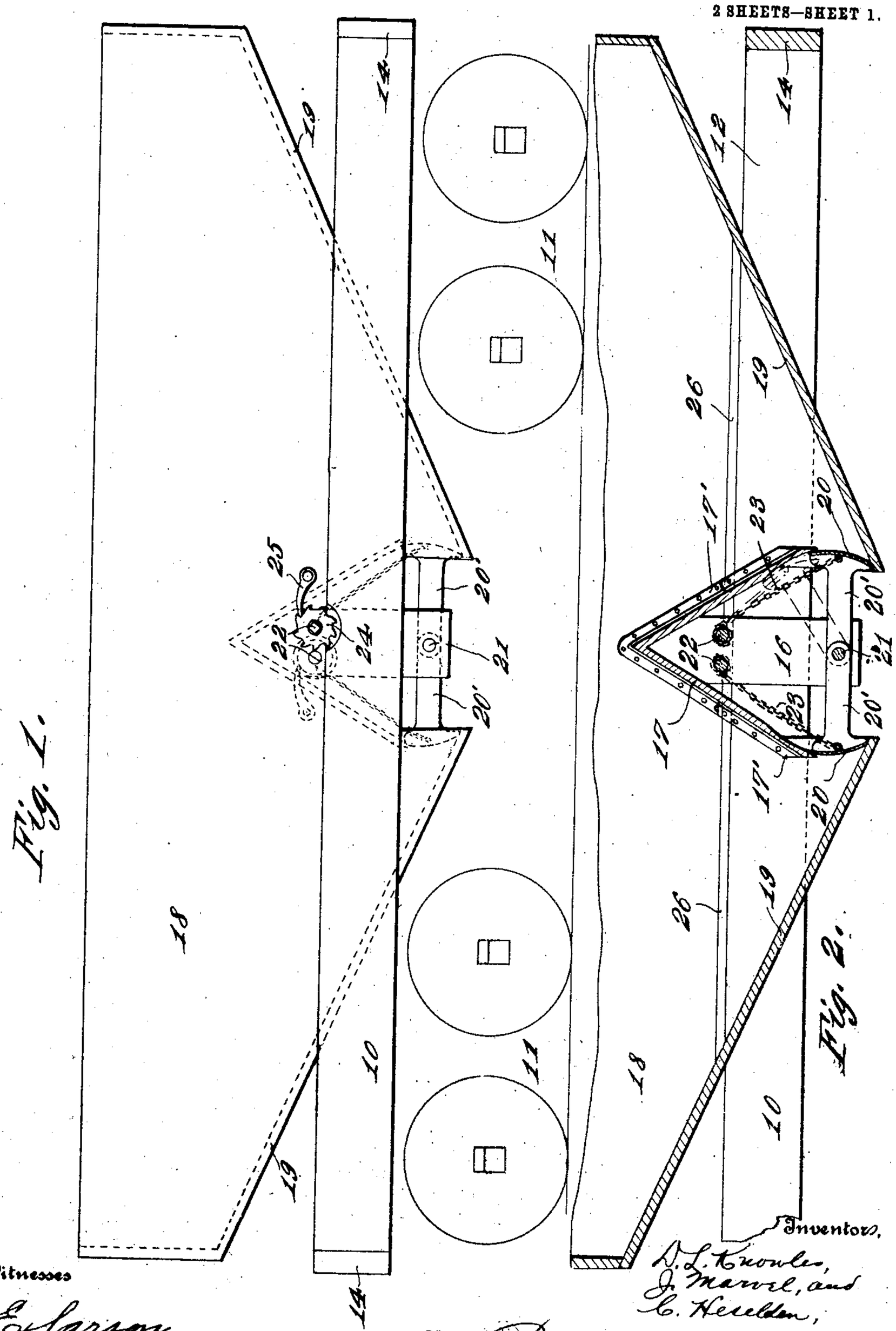
SELF CLEARING BOTTOM COAL CAR.

APPLICATION FILED JUNE 3, 1909.

947,682.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.




Witnesses

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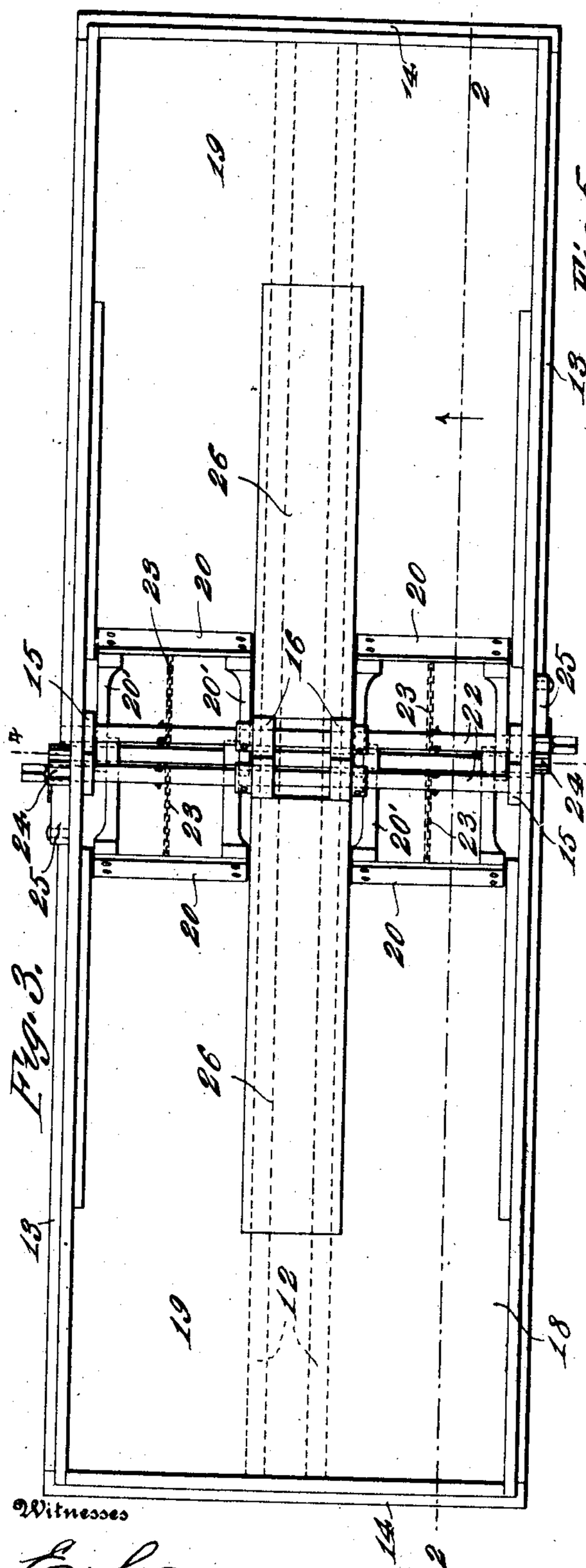


Fig. 3.

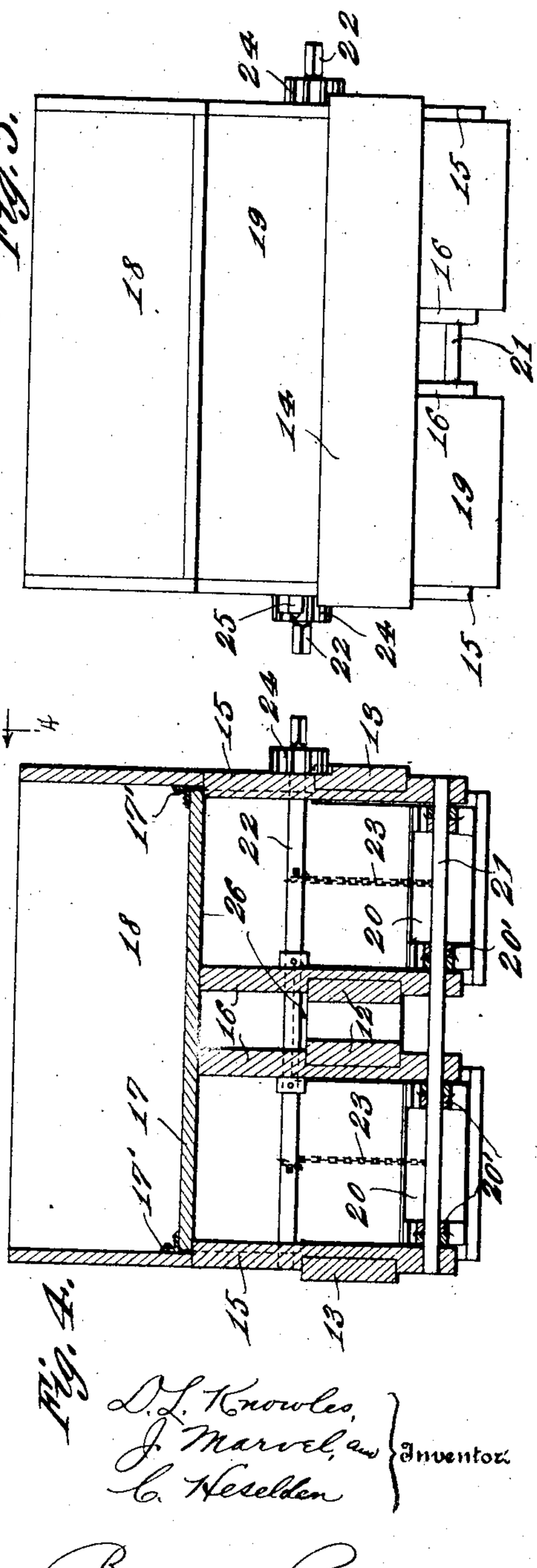


Fig. 4.

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# UNITED STATES PATENT OFFICE.

DAVID L. KNOWLES, JOHN MARVEL, AND CHARLES HESELDEN, OF DANVILLE, ILLINOIS.

## SELF-CLEARING-BOTTOM COAL-CAR.

947,682. Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed June 3, 1909. Serial No. 499,976.

*To all whom it may concern:*

Be it known that we, DAVID L. KNOWLES, JOHN MARVEL, and CHARLES HESELDEN, citizens of the United States, residing at Danville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Self-Clearing-Bottom Coal-Cars, of which the following is a specification.

This invention relates to railway rolling stock, and has special reference to that type of freight cars used for the transportation and discharge of various commodities such as coal.

For a full understanding of the invention, reference is to be had to the following detail description and the accompanying drawings, in which—

Figure 1 is a side elevation of the device, somewhat diagrammatically shown; Fig. 2 is a longitudinal section substantially on the line 2—2 of Fig. 3; Fig. 3 is a plan view of the car, the housing hereinafter described being omitted for the sake of clearness; Fig. 4 is a transverse section substantially on the line 4—4 of Fig. 3, and Fig. 5 is an end elevation.

Throughout the following detail description and on the several figures of the drawings similar parts are referred to by like reference characters.

A freight car built in accordance with this invention comprises a main supporting frame 10 adapted to be mounted upon trucks 11 in a conventional manner. The frame 10 includes a pair of central longitudinal stringers 12, lateral longitudinal stringers 13, and end pieces 14. Centrally of the car are arranged a series of vertical struts or posts 15 and 16, the latter located near the longitudinal center of the car and secured to the stringers 12. The posts 15 are connected to the stringers 13, all of the posts extending above and below the stringers to about the same distance. Said posts constitute an effective support for the operating devices hereinafter described and also a foundation for a housing 17.

The body of the car 18 is of the inclined or hopper bottom type and is supported upon the frame 10, said body 18 having the inclined bottom sections 19 inclined toward each other toward the center of the car, the planes of said inclined bottoms intersecting the general plane of the frame 10 substantially midway between the ends of the body 18 and its transverse center. The lower extremities of the bottoms 19 are spaced apart in a well known manner and the material carried by the body and to be supported therefrom is intended to be discharged from the inclined bottoms through said space.

The housing 17 above referred to is of substantially an inverted V-shape and is rigidly supported upon the upper ends of the posts 15 and 16 above referred to, the said upper ends being shaped to conform to the said shape of the housing into the inner or lower side of which the posts extend as indicated in Figs. 2 and 4. The lower edges of the housing extend over the lower ends of the bottoms 19 and are spaced therefrom so as to provide discharge chutes, two of said chutes being on each side of the central stringers 12 and likewise two being on each side of the transverse center of the car. In other words there are four of said chutes provided as indicated, although it is to be understood that the invention is not limited in this respect. The four several discharge chutes are normally closed by upwardly movable gates or valves 20. The valves 20 normally rest when in closed position upon the bottoms 19 and are adapted to swing upwardly in arcs of circles just below the lower edges of the housing 17. As a preferred means for mounting said gates or valves a shaft 21 is mounted transversely of the car at the lower ends of the posts 15 and 16, and the valves are provided with arms 20′ having eyes or hubs through which said shaft 21 extends. The valves 20 when unsupported in an upper position are free to gravitate downwardly closing the chutes.

As a convenient means for elevating or opening the valves there are shown a pair of rock shafts 22 mounted in the posts 15 and 16 near the upper edge thereof. The shafts 22 are shown as being in a substantially horizontal plane and in parallelism, although the exact location thereof may be varied if desired. Connected to the rock shafts 22 are pairs of flexible connections 23 indicated as chains, the upper ends of the chains are connected to the respective shafts 22 by any convenient means such as eyebolts, and the lower ends thereof being connected to the several valves 20, preferably at the outer or upper edges so as not to interfere with the flow of material through

the chutes nor the operation of the chutes on their pivots. Each rock shaft 22 is adapted to be operated by a wrench or crank in a well known manner to be applied on an outwardly extended polygonal end thereof. A ratchet wheel 24 mounted thereon is adapted by coöperation with a pawl 25 to retain the shaft in any desired adjusted position so as to maintain the valves 20 shown, if desired.

By the construction described it is possible for the car to be discharged or emptied of as much or as little of its load as desired and for the flow to be stopped by simply releasing the pawl from its ratchet permitting the valves or catches 20 to gravitate to the bottoms 19 automatically cutting off the flow. Again, another advantage of this construction is that there are no doors or gates to swing below the car bottom, an objection frequently met with in devices of this character. The gates being swung outwardly on arcs of circles are easily operated to open, and yet there is no possibility for the weight of the material to cause them to open when not desired. The gates may all be opened or only part of them as may be desired at any one time.

That portion of the car body between the stringers 12 is bridged by strips 26. The margins of the housing 17 are preferably provided with flanges 17′, whereby it is impossible for material to sift through between the edges of the housing and the walls of the car body and to be lost. Said flanges may be integral with the housing or may be made separately and secured to the several parts by riveting or in any other suitable manner. The flanges also serve to strengthen the structure, the same being subjected to rough usage in ordinary practice.

While there has been described herein a preferred embodiment of car body to which the operating devices are attached, it is to be understood that the operating devices may be applied to many coal cars already in use without departing materially from the spirit of the invention embraced thereby.

Having thus described the invention, what is claimed as new is:

1. The hereindescribed dumping car comprising a car body having bottom sections inclined toward each other and spaced apart, a housing extending transversely of the car body and covering the said space, the lower edges of the housing being spaced from the said bottoms and forming discharge chutes, a series of valves below the housing and resting normally upon the said inclined bottoms of the car body, and means operative within the housing to cause the elevation and opening of the valves upwardly from said normal position.

2. The hereindescribed self dumping coal car comprising a car body having an inclined bottom, a housing extending transversely of the car and projecting over the lower edge of the said bottom, the lower edge of the housing being spaced from the bottom forming a discharge chute, an arc-shaped valve pivotally mounted below the housing and resting normally upon said bottom closing said chute, a transverse shaft extending within the housing, and a flexible connection between the valve and the shaft, whereby on rotation of the shaft and valve will be lifted to open the discharge chute.

3. The hereindescribed coal car comprising a body having inclined bottom sections spaced from each other, a transverse housing covering said space within the car, the lower edges of the housing being spaced from said bottoms forming discharge chutes, a pivot shaft extending transversely of the structure, a series of valves pivoted on said shaft and resting normally upon said bottom sections and movable upwardly in proximity to the lower edges of the housing, a pair of rock shafts journaled above said pivot shaft and transversely of the car, connections between the rock shafts and the valves, and means to control the operation of the rock shaft, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

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Witnesses:
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