

(No Model.)

2 Sheets—Sheet 1.

C. N. DEVINNEY & S. HAFNER.

MECHANISM FOR OPERATING AUTOMATICALLY ENGINE TENDER SCOOPS.

No. 463,109.

Patented Nov. 10, 1891.

Fig. 1.

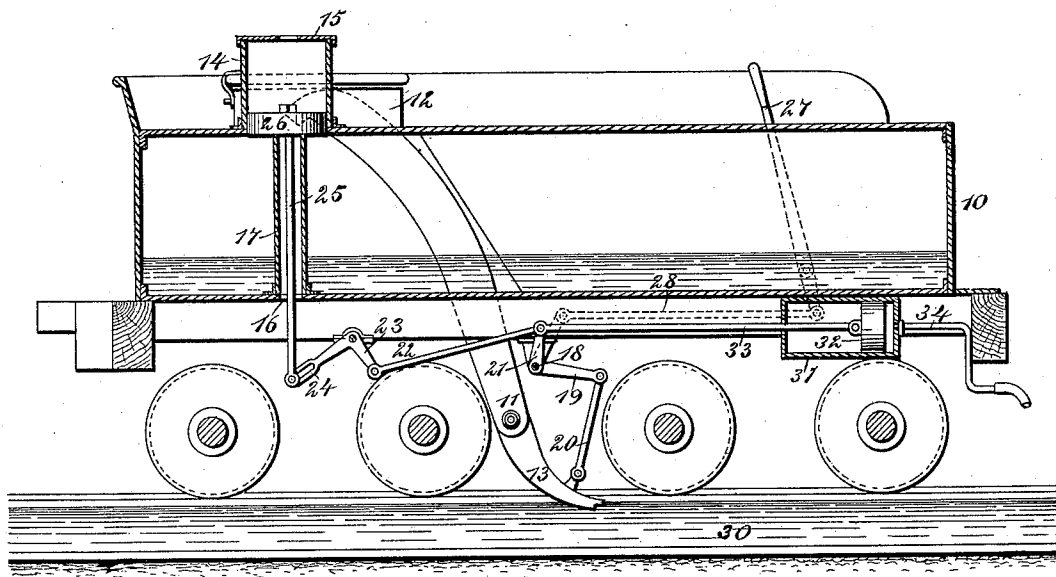
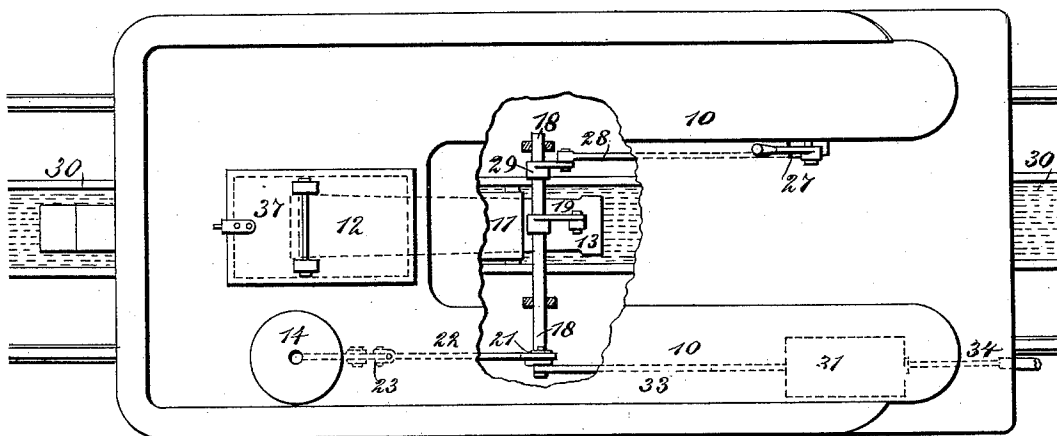


Fig. 2.



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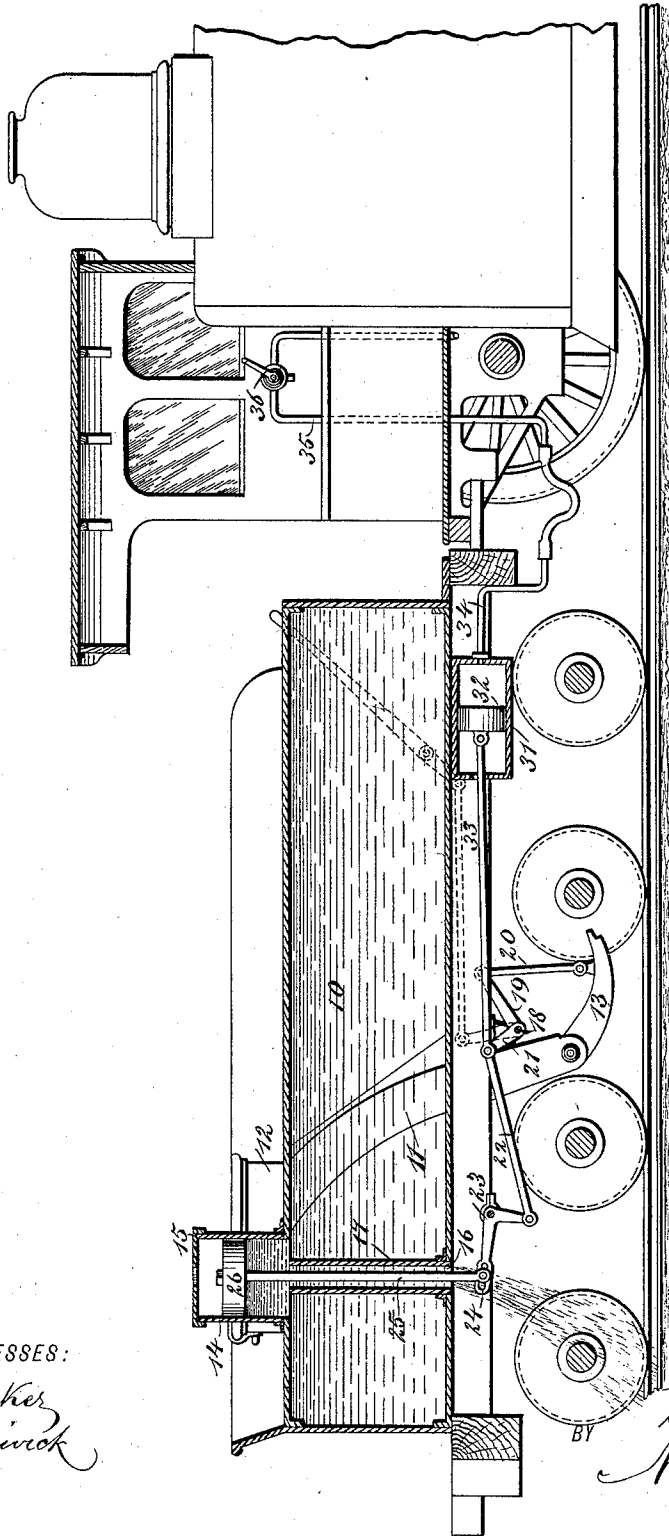
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Fig. 3.



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UNITED STATES PATENT OFFICE.

CALEB N. DEVINNEY AND SIMON HAFNER, OF PHILADELPHIA, PENNSYLVANIA.

MECHANISM FOR OPERATING AUTOMATICALLY ENGINE-TENDER SCOOPS.

SPECIFICATION forming part of Letters Patent No. 463,109, dated November 10, 1891.

Application filed June 13, 1891. Serial No. 396,101. (No model.)

To all whom it may concern:

Be it known that we, CALEB N. DEVINNEY and SIMON HAFNER, both of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Mechanism for Automatically Operating Engine-Tender Scoops, of which the following is a full, clear, and exact description.

Our invention relates to a device for automatically raising the scoops of engine-tenders when the tender-tanks are filled; and the object of the invention is to provide a mechanism readily, expeditiously, and economically applied to any tender and connected with an ordinary scoop, and which will act, when the tank is filled, to automatically raise the scoop from the water-trough.

A further object of the invention is to provide a mechanism whereby in the event the tender should pass the full length of the water-trough without its tank being filled the engineer or fireman may, through the medium of compressed air, quickly elevate the scoop, and whereby, also, through the same means, the scoop may be lowered to take water from the trough.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal vertical section through a tender, illustrating the application of the device to its water-scoop, the scoop being illustrated in a position to take water from the water-trough. Fig. 2 is a plan view of the tender broken away at the center to disclose the scoop; and Fig. 3 is a longitudinal vertical section through a tender and through the cab of an engine, illustrating the application of the device to the tender and the water-scoop as in an elevated position.

The tank 10 of the tender is of the usual construction, likewise the water-chute 11, which leads up into the hood 12 and the scoop 13, pivoted at the lower end of the chute. The tank, however, near its rear end at one side is provided with a dome 14, which dome

may, if found desirable, be closed by a cap 15. In the bottom of the tank 10, beneath the dome 14, an opening 16 is produced, which is surrounded by the lower end of a vertical tube 17, which tube extends upward beneath the central portion of the dome 14 and terminates at the water-line of the tank when the latter is filled, as shown in Figs. 1 and 3.

In front of the lower end of the chute 11 a shaft 18 is transversely journaled beneath the tender, which shaft is provided with a crank-arm 19, the said crank-arm being pivotally connected by a link 20 with the forward portion of the scoop 13. At one end of the shaft 18 a second crank-arm 21 is secured, extending rearwardly and upwardly, as shown in Fig. 3, which crank-arm, through the medium of a link 22, is pivotally connected with a bell-crank lever or angle-lever 23, fulcrumed beneath the tender. The vertical member of the angle-lever is pivoted to the link 22, and its horizontal member is provided, preferably at its outer end, with a slot 24, in which slot the lower end of a rod 25 is loosely attached, which rod 25 extends upward through the opening 16 in the bottom of the tank and through the tube 17 into the dome 14, having secured to its upper end a float-piston 26, the said piston being adapted to snugly fit in the dome 14, yet said piston is capable of vertical movement in the dome.

The scoop may be raised and lowered in the usual manner—namely, through the medium of a lever 27, pivoted at one side of the tank and connected by a link 28 with a crank-arm 29, attached to the rock-shaft 18; but the said lever 27 need only be employed to lower the scoop into the water-trough 30.

We have provided an auxiliary device for lowering the scoop into the water-trough and also for elevating the scoop in the event that the tender should travel the entire length of the water-trough and its tank yet remain unfilled. In this event if the lever 27 is employed it may be utilized to carry upward the scoop; but the adjunctive device is to be operated by air and from the engine. This device consists of an air-cylinder 31, located beneath the tender, provided with a suitable piston 32 and a piston-rod 33, which piston-rod is connected with the crank-arm of the

rock-shaft 18. In the drawings the piston-rod is illustrated as pivotally attached to the crank-arm 21.

Air is admitted into the cylinder 31 through tubes 34, which tubes are coupled with air-pipes 35, located in the cab of the engine and emanating from the air-storage reservoirs of the engine. The air is admitted to the cylinder 31 to carry the piston 32 backward and forward, according as it is required to raise or lower the scoop, through the medium of a valve 36. (Best shown in Fig. 3.)

The hood 12 usually employed upon the tenders of engines, and in which the water-chute 11 terminates, is provided with the usual hinged cover 37, which cover, however, is normally kept closed through the medium of any suitable form of latch.

Heretofore the only notification that the engineer and fireman had that the tank of the engine was filled with water was by the water flowing through the door 37 of the hood 12, which was permitted to remain open. The water flowing out through the door of the hood washed over the back of the tender, and if a passenger-coach immediately followed the engine the water spilled from the tank often found its way into said coach. This difficulty is avoided by the use of the present invention, and the moment the tank is filled with water the scoop is instantly elevated from the trough. Thus when the tender is over the water-trough by means of the lever 27 or through the medium of the cylinder 31, whichever may be employed, the scoop is lowered into the chute. The water entering the tank forces the air down through the tube 17 and the opening 16 in the bottom of the tank, and the moment that the water rises above the level of the top of the tank the float-piston 26 is carried upward by the water some distance in the dome 14. Thus the slotted end of the elbow-lever 23 is elevated, as shown in Fig. 3, and the crank-arm 21 is carried rearward and the rock-shaft turned in a direction to cause the scoop 13 to be raised through the medium of the crank-arm 19 and the link 20 or the equivalents thereof. The surplus water in the dome will find an exit down through the tube 17 and opening 16 and will fall upon the ground. Thus the said tube 17 and opening 16 combinedly constitute an exit for the air and an overflow for surplus water.

It is evident that the operation of the device is accurate and positive and that not a drop of water need be spilled over the top of the tender, and the only time that the scoop 13 need be elevated by the fireman or by the engineer is when the tender has passed nearly to the end of the water-trough without taking in sufficient water to fill it and operate the automatic elevating device, at this time,

as heretofore stated, the scoop may be raised either through the medium of the lever 27 or through the medium of the engineer's connection with the air-cylinder 31, whichever form of device is employed.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. An engine-tender the water-tank of which contains an overflow or waste pipe extending from the bottom of the tank, at which point the overflow or waste pipe has an outlet, the upper end of the pipe being near the top of the tank and within the same, substantially as described.

2. In an engine-tender, the combination, with the elevating device of a water-scoop, of a float located within the tank of the tender and connected with the said lifting device, whereby when the tender-tank is filled the scoop is automatically elevated, as and for the purpose specified.

3. The combination, with the water-scoop of an engine-tender and its lifting device, of a dome erected upon the tender-tank, extending above the level of its top, a float-piston located within the said dome, and a connection between the said float-piston and the lifting device of the scoop, substantially as described.

4. The combination, with the tank of an engine-tender, the water-scoop of the tank, and the lifting device of said scoop, of a dome constructed upon the tank and extending above the upper face thereof, an opening in the bottom of the tank below the dome, a vertical casing surrounding said opening and extending upward within the tank, a float-piston located within the dome, and a rod-and-lever connection between the float-piston and the lifting device of the water-scoop, as and for the purpose set forth.

5. The combination, with the water-scoop of an engine-tank and its lifting mechanism, of a float located within the tank over an overflow-tube erected in the tank and a connection between the lifting mechanism of the scoop and the float, as and for the purpose specified.

6. The combination, with the water-scoop of an engine-tender and its lifting mechanism, of an air-cylinder provided with a piston having connection with the lifting mechanism of the scoop, an air-reservoir, and valved connections between the air-reservoir and the air-cylinder, substantially as described, whereby the scoop may be raised and lowered through the medium of said air-cylinder, as set forth.

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