Aug. 23, 1927. 1,640,037

G. A. JOHNSON

SURPLUS WATER DISCHARGE SYSTEM FOR LOCOMOTIVE TENDERS

Filed May 8, 1922 2 Sheets-Sheet 1

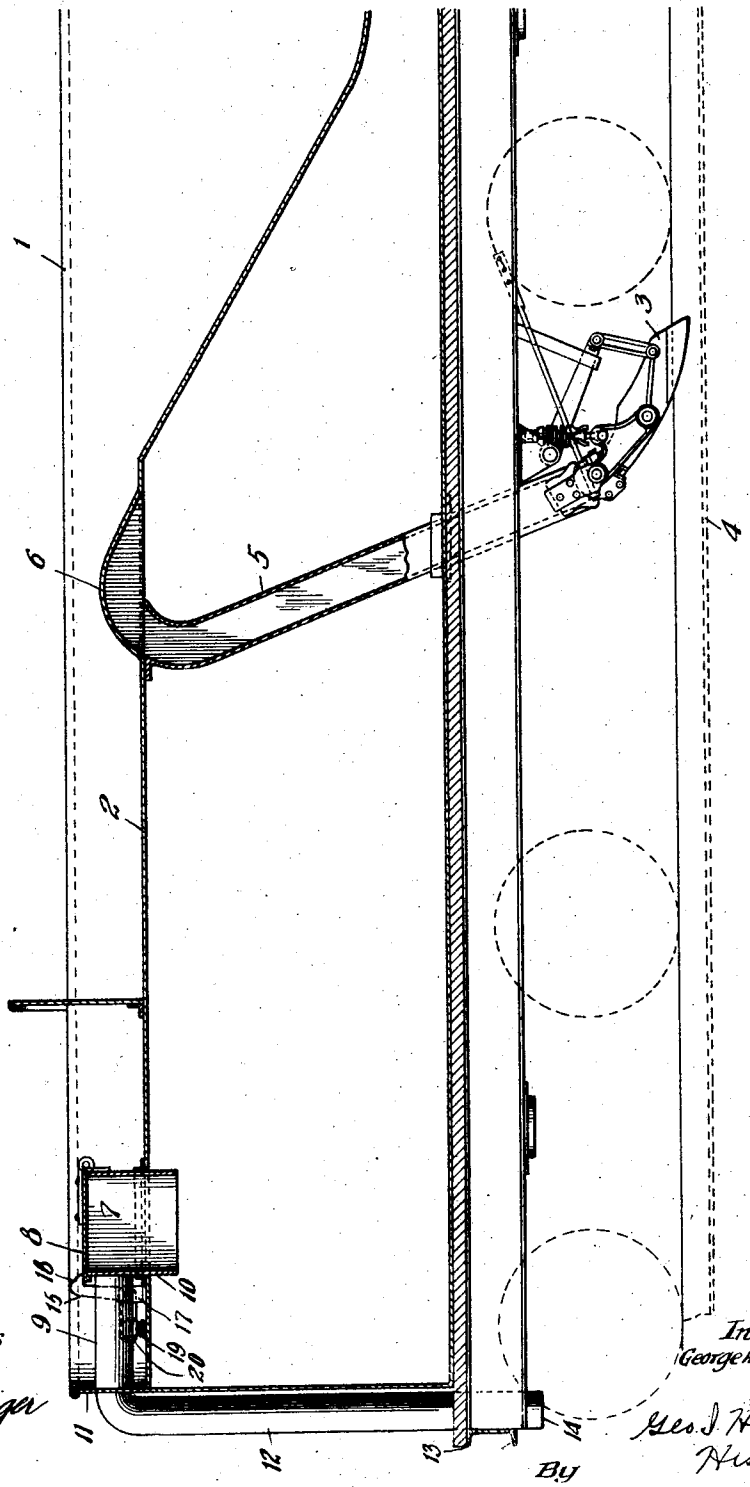


Fig. 1

Witnesses
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By

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Fig. 2

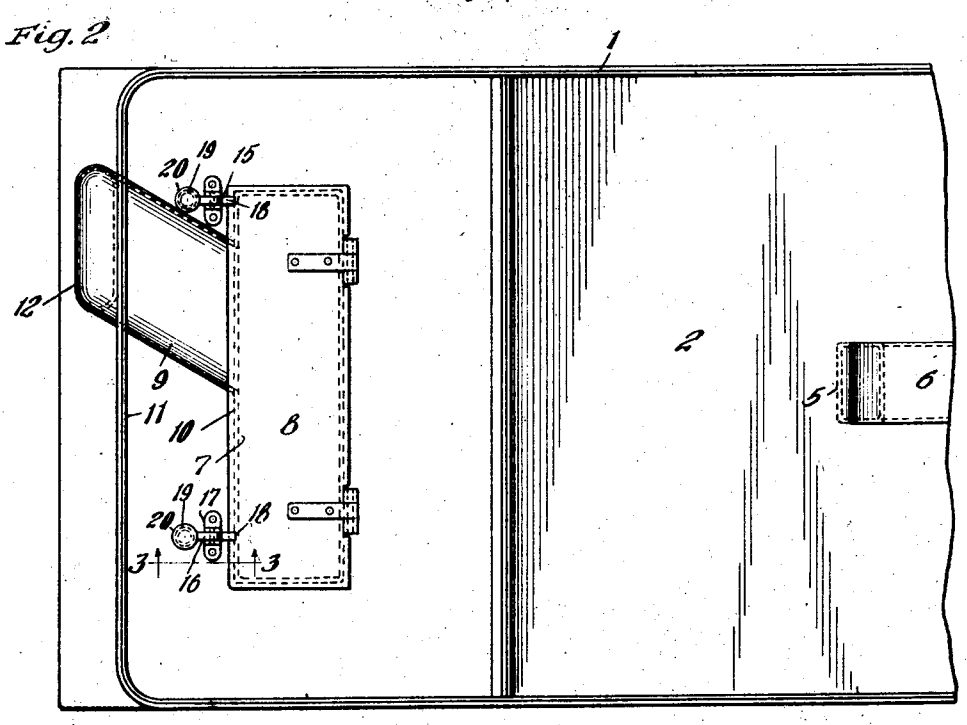
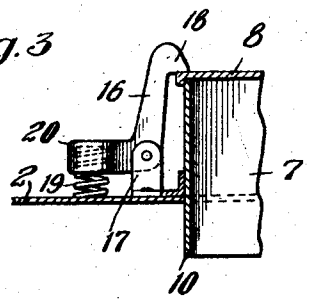


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE A. JOHNSON, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO W. H. MINER, INC., A CORPORATION OF DELAWARE.

SURPLUS-WATER DISCHARGE SYSTEM FOR LOCOMOTIVE TENDERS.

Application filed May 8, 1922. Serial No. 559,169.

The invention relates to surplus water discharge systems for locomotive tenders and has particular reference to the modern method in railway operation of replenishing the water supply in the tender while the train is in motion and without decreasing speed, the water being scooped from supply troughs located between the rails at different points along the line.

Chiefly among the objectionable features incident to the above described method of replenishing the water in the tender tank is the frequent filling of the tank to a point of overflow which escapes from the usual water supply opening located at the top and at the rear of the tender. This surplus of water, especially when the train is travelling at high speed, is directed against the door of the mail car or baggage car immediately in the rear of the tender and a certain amount of the water penetrates into the car with resulting damage to the contents thereof. It has not been found practicable to so construct the doors of the mail or baggage cars as to render them water tight, nor has it been possible to ascertain when the tender tank is full and elevate the scoop from the trough before the point of overflow is reached. Various factors, such as the speed at which the train is travelling and the amount of water previously in the tank, render it frequently impossible to anticipate the overflow and elevate the scoop before such point is reached.

An attempt to remedy this defect has been made by placing a baffle plate at the rear of the tender to intercept the flow of surplus water before it reaches the adjoining car, but this method has failed to prove satisfactory, largely for the reason that the water so intercepted is deflected laterally with a force proportionate to the speed of the train, and should a train happen to be passing on the adjoining track, the passengers thereof are subjected to considerable annoyance and inconvenience by the water striking the cars.

The present invention is designed to overcome the disadvantages above described and provides a convenient and efficient means of taking care of the surplus water from the tender tank when the same has been filled, and conveying it to a suitable point of discharge.

A further object of the invention is to provide a surplus water discharge system composed of few parts and which is economical in the manufacture thereof and which may be installed on the locomotive tenders now in operation with a minimum of expense and labor.

A further object of the invention is to provide a device of the character described which may be built into the tank of the locomotive tender if desired.

A further and important object of the invention is to provide a surplus water discharge device, which due to its construction, cannot fail in operation and which will positively prevent any overflow or splash at the tank outlet regardless of the speed at which the train is travelling, or how long the scoop is allowed to remain in the supply trough after the tank has been filled.

With such objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists in the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportions and arrangement without departing from the nature and scope of the invention.

In order to make the invention more clearly understood there are shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements, in their useful applications, to the particular constructions which, for the purpose of explanation, have been made the subject of illustration.

In said drawings:—

Fig. 1 is a central longitudinal sectional view, partially diagrammatic in character, of a portion of a locomotive tender having installed thereon an embodiment of my invention in its preferred form.

Fig. 2 is a plan view of the same.

Fig. 3 is an enlarged fragmentary sectional view on line III—III of Fig. 2.

Referring to the drawings, 1 indicates as an entirety a locomotive tender having the usual water tank 2 at the rear end thereof. 3 represents a scoop which is carried beneath and substantially centrally of the tender, and which is adapted to be lowered to scoop water from a trough indicated at 4. The scoop 3 is of any preferred or usual construction, as is the manner of its mounting and operation, and need not be further de-

scribed in detail. 5 is a centrally disposed and upwardly extending water supply conduit or intake mounted in the tender tank and communicating at its lower end with the scoop 3. At its upper end the conduit 5 is of curved construction at 6 to communicate with the interior of the water tank 2. The usual auxiliary water supply opening 7 is located at the top of the tank and near the rear portion thereof, and as illustrated is preferably rectangular in configuration and provided with a hinged cover 8. The opening 7 serves the double purpose on tenders now in use, of a supply opening when the tender is replenished from a supply tank located at the side of the track, and as a point of discharge of surplus water when the tank is filled through the conduit 5 from the trough 4.

A discharge pipe or conduit 9 is mounted on the rear of the tank and communicates at one end with the opening 7 through the rear vertical wall 10 of the latter. The conduit 9 passes through the rear wall 11 of the tender and thence is projected downwardly as at 12 through the end sill 13 and has its discharge opening 14 positioned below the end sill and between the wheels of the tender. The horizontal portion of the conduit 9 is deflected laterally as best seen in Fig. 2 so that the conduit may be installed without interfering with the draft rigging of the tender or obstructing access to the ladder which is usually located centrally of its rear wall. It will be observed that the construction described affords a firm and rigid mounting for the discharge conduit 9 which renders it difficult of displacement and yet provides a convenient location which does not interfere with the operation of the tender nor of the supply opening 7. The discharge conduit 9 is constructed of larger area than the supply conduit or intake 5 to absolutely prevent any possibility of blowing any parts off due to immense pressure created during scooping. It will be seen that no matter how long the scoop 3 is allowed to remain in the trough 4, a larger quantity of water is permitted to escape from the tank through the conduit 9 than may be permitted to enter through the intake 5, due to the difference in size of the respective conduits. Due to the immense pressure which is created when the water is being scooped into the tank, it is impossible to form a seal for the tank because the cover or closure of the tank proper would probably be blown off or burst and by constructing the discharge conduit 9 of larger area than the intake 5 I provide a positive means to prevent such an occurrence.

It is essential that the cover 8 of the opening 7 be normally held in closed position to prevent same from being opened by the pressure of a surplus of water at the mouth of the discharge conduit 9, with the resulting splash of water and attendant disadvantages which my invention obviates. To this end I have provided a pair of locking levers 15 and 16 pivotally mounted in bearings 17 on the top of the tank. The locking ends 18 of the levers are normally held in engagement with the edge of the hinged cover 8 by coil springs 19 which are contained within recessed bosses 20 in the outer ends of the levers. The cover 8 may be opened when desired by pressing downwardly or applying the foot to the bosses 20 to swing the levers out of engagement with the cover as will be readily understood.

The operation of the invention will be apparent. Should the scoop 3 be allowed to remain in the trough 4 after the tank is filled, the surplus water enters the conduit 9 and is conveyed to the point of discharge 14 adjacent the track and attendant disadvantages heretofore resulting from such overflow are thereby eliminated.

My invention is hereinabove set forth as embodied in one particular form of construction, but I do not limit it thereto or to less than all the possible forms in which the said invention as hereinafter claimed may be embodied and distinguished from prior devices.

What I claim is:—

1. A surplus water discharge system for locomotive tenders, comprising in combination: a water tank, a scoop, a supply conduit communicating at one end with said scoop and at its other end with said tank, said tank being provided with an auxiliary opening in its top defined by walls extending above the top surface of the tank; and a discharge conduit disposed exteriorly of the tank and communicating through one of said walls extending above the surface of said tank, said conduit being adapted to receive and convey to a point of discharge, the surplus water from said tank, said conduit being directed downwardly at its discharge end.

2. A surplus water discharge system for locomotive tenders, comprising in combination: a water tank, a scoop, a water supply conduit communicating at one end with said scoop and at its other end with said tank, and a water discharge conduit communicating at one end with tank rearwardly of said supply conduit to receive the surplus water therefrom, said water discharge conduit being of larger area than said water supply conduit.

3. A surplus water discharge system for locomotive tenders, comprising in combination: a water tank, a scoop, a water supply conduit communicating at one end with said scoop and at its other end with said tank, said tank having an auxiliary opening in the top wall thereof; and a water discharge con-

duit communicating with said opening without obstructing the same, said discharge conduit being directed downwardly to a point adjacent the track, said water discharge conduit being of a greater capacity than said water supply conduit.

4. In a surplus water discharge system for locomotive tenders, in combination: a water tank adapted to have water forced thereinto while the tender is in motion, a water supply opening on said tank, a water discharge conduit mounted on said tank and communicating at one end with said water supply opening and having its other end directed downward to one side of the rear of said tank, a cover for said water supply opening, and means for normally locking said cover in a closed position to prevent the discharge of surplus water from said tank except through said discharge conduit.

5. In a surplus water discharge system for locomotive tenders, in combination: a water tank, a water supply opening on said tank, a cover for said water supply opening, means for normally locking said cover in closed position, and a water discharge conduit mounted on said tank and communicating at its upper end with said water supply opening and directed downward at its discharge end to carry away the surplus water from said tank.

6. A surplus water discharge system for locomotive tenders, comprising in combination: a water tank, a scoop, a water supply conduit communicating at one end with said scoop and at its other end with said tank, an auxiliary water supply opening on said tank, and a water discharge conduit communicating at one end with said auxiliary water supply opening and having its discharge end directed downward to one side of the rear of said tank, said water discharge conduit being of larger area than said water supply conduit, a cover for said auxiliary water supply opening, and locking means for normally maintaining said cover in a closed position to insure the discharge of surplus water from said tank only through said discharge conduit.

In witness that I claim the foregoing I have hereunto subscribed my name this 2nd day of May, 1922.

GEORGE A. JOHNSON.