Feb. 14, 1933. E. A. TURNER ET AL. 1,897,513

LOCOMOTIVE TENDER CONSTRUCTION

Original Filed Dec. 4, 1930 3 Sheets-Sheet 1

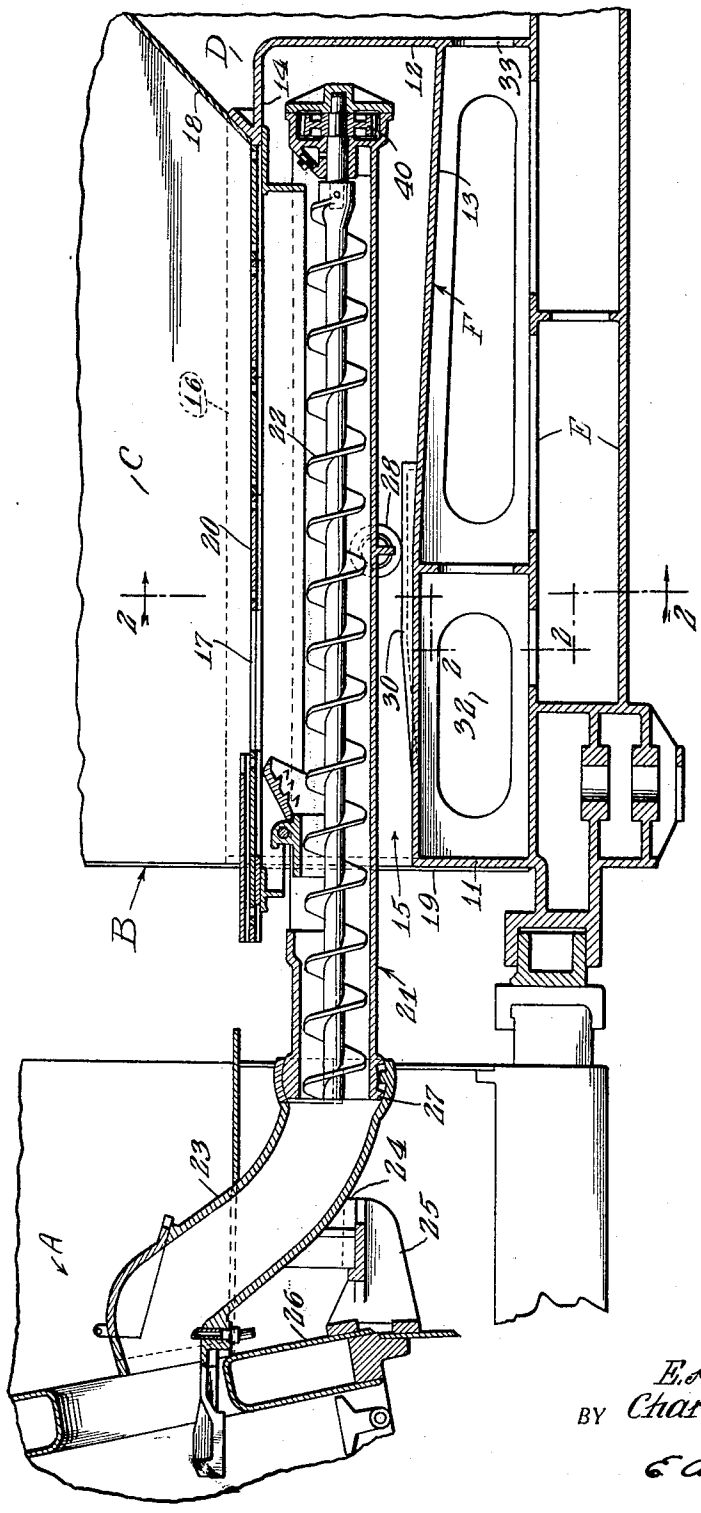

Fig. 1

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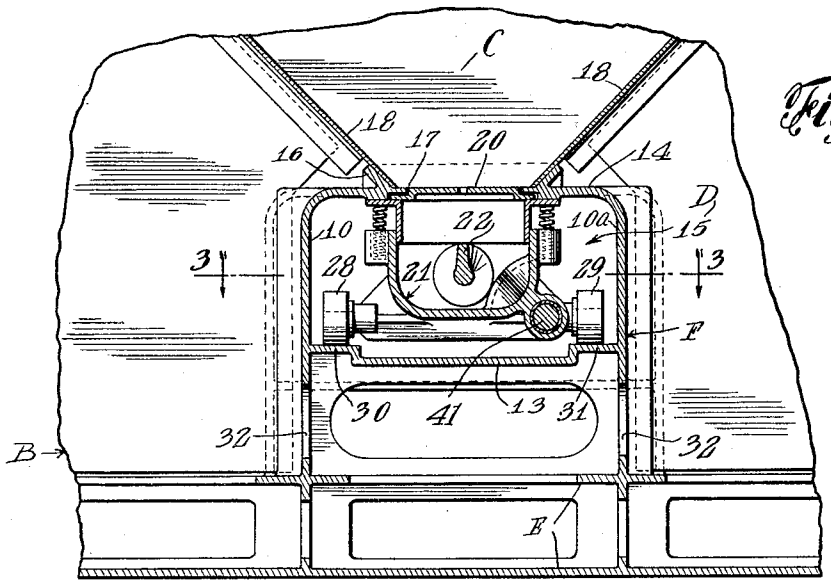

Fig. 2

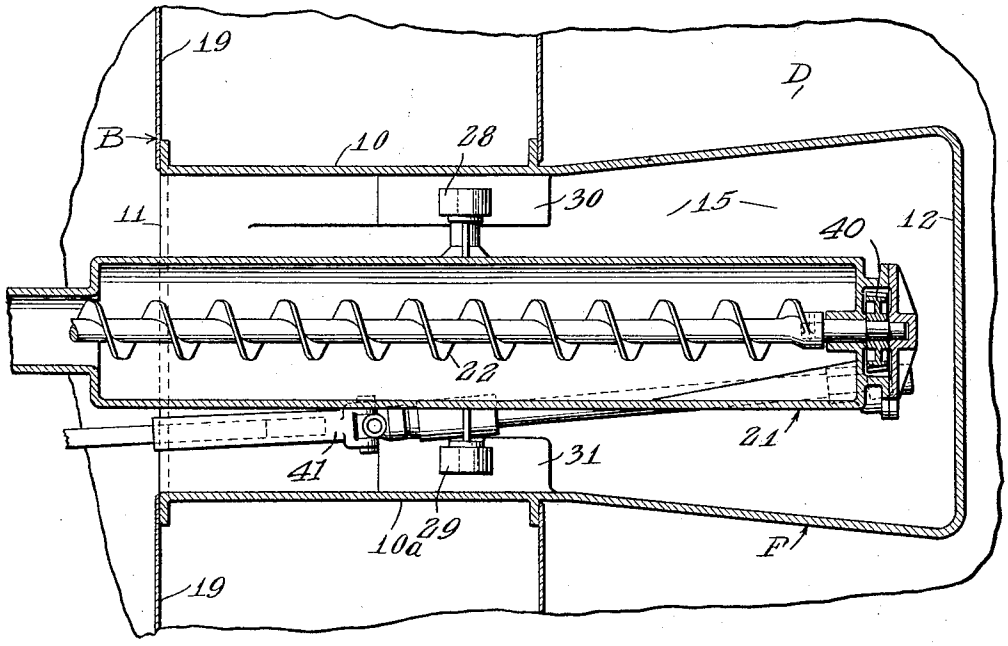

Fig. 3

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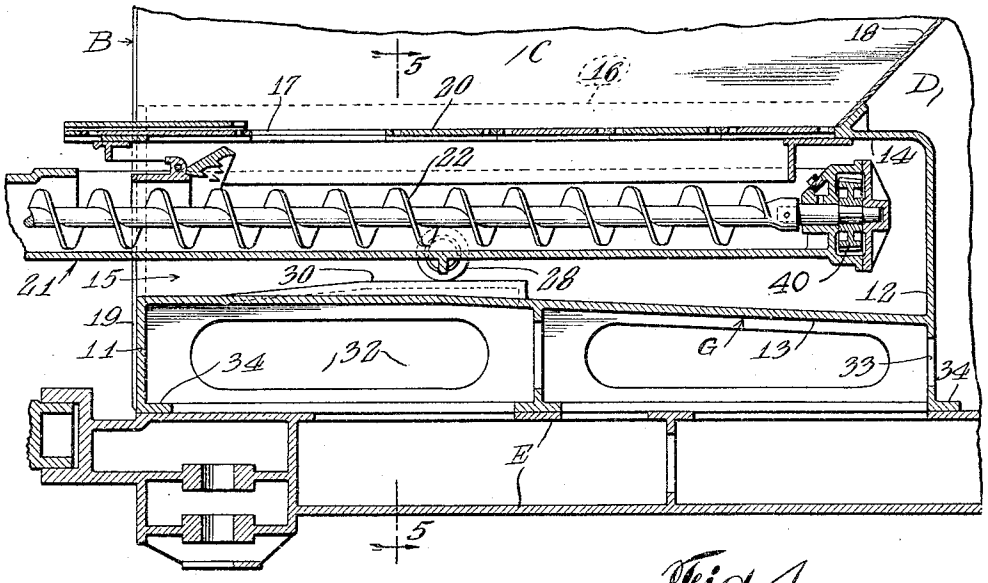

Fig. 4

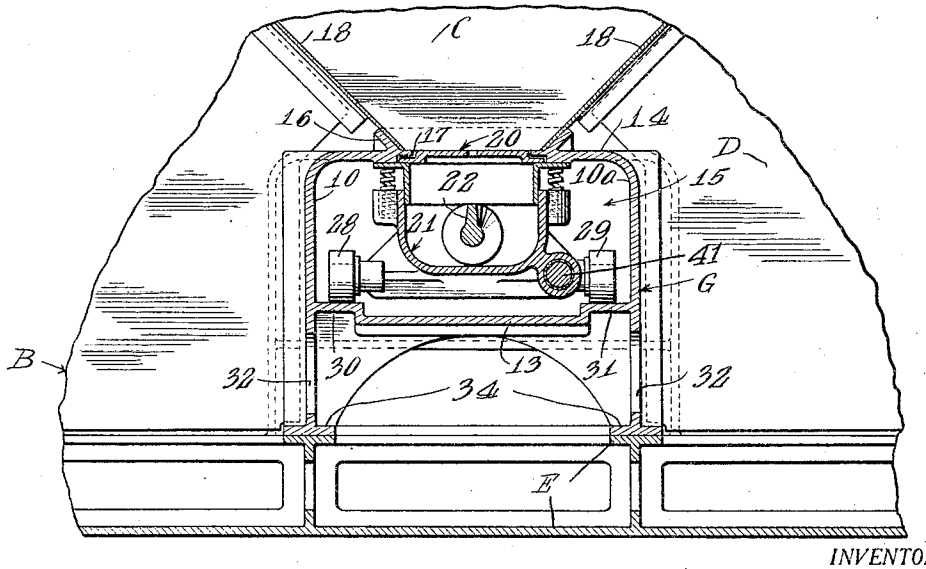

Fig. 5

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UNITED STATES PATENT OFFICE

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LOCOMOTIVE TENDER CONSTRUCTION

Application filed December 4, 1930, Serial No. 499,894. Renewed March 10, 1932.

Our present invention is directed to improvements in locomotive tender construction and particularly appertains to locomotive tenders arranged to carry a movably or swivelly mounted stoker trough. This type of locomotive tender heretofore has embodied a centrally and longitudinally disposed rectangular shaped stoker trough compartment formed by fabricated plates, which compartment in height extended from the top surface of the tender frame to the floor of the fuel section and was of sufficient width to allow for maximum lateral movement of the swinging trough. Such swinging type of trough is usually mounted in the compartment to move laterally and vertically about a fulcrum point formed by rollers or equivalent devices. Ordinarily a compartment 36″ to 44″ wide is sufficient to receive the trough and allow lateral movement such that occurs when the locomotive and tender are on a substantially straight track, but when the locomotive is rounding a sharp curve one end portion of the trough, generally the rearward end portion, swings laterally to the extent that in many instances a tender trough compartment 55″ wide is necessary. In order to provide for this maximum lateral movement of the trough, in past practice, the compartment sidewalls have been arranged in parallelism and spaced apart the maximum width necessary. The height of the compartment depends upon the location of the locomotive and tender decks and in most instances is more than ample to allow vertical movement of the stoker trough such as occurs when the locomotive and tender passes over switches, frogs, or turntables.

In carrying out the invention the trough compartment is formed in what for convenience of description is called a compartment member which is a unitary part, preferably a casting, either formed integrally with the tender base frame or separate therefrom if desired. The novel form of the compartment member and its advantages will appear from the following description and the accompanying drawings, in which

Fig. 1 is a central longitudinal section through the rearward portion of a stoker equipped locomotive and the improved tender, therefor;

Fig. 2 is a sectional view taken on the broken line 2—2 of Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 2;

Fig. 4 is a partial view similar to Fig. 1 showing a modification of the invention; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

The locomotive is indicated generally at A; the improved tender at B having the fuel section C, the water section D, the base frame E, and a novel stoker trough compartment member F formed centrally of and longitudinally within the water section above the frame at the front end portion of the tender beneath the fuel section.

In the embodiment of our invention shown in Figs. 1 to 3, the compartment member F is formed integrally with the frame E. The member F comprises the longitudinally extending upright sidewalls 10, 10*a*, the transverse upstanding front and rear walls 11 and 12 respectively, an imperforate bottom wall 13, and a centrally apertured top wall 14 all of which are integrally constructed and are arranged to form the water tight stoker trough compartment 15. A flange 16 bounding the opening 17 is carried by the top wall 14 to which the fuel and water section partition plates 18 are attached in a manner to provide a closure with the compartment member between the two sections. The front wall 11 is fixed with the front plate 19 of the tender to form a closure for the water section at the front end of the tender.

Shiftable plates 20 are arranged in the opening 17 of the top wall of the compartment member to control the feed of fuel from the fuel section to the stoker trough 21 movably mounted within the compartment 15. Inasmuch as the trough per se forms no part of our invention it will not be described in detail. It is of a well known form in this art and carries a suitable conveyor screw 22 for advancing the fuel from the tender to a conduit member such as the riser tube 23 rigidly attached on the locomotive A by the brackets 24 and 25 to the firebox backwall 26 through

which the fuel is fed to the fire. The screw 22 is driven from any suitable source of power, not shown, through drive mechanism comprising, in the construction shown, the gearing 40 and the shaft 41.

The trough 21 at its forward end is flexibly and fixedly attached to the riser tube 23 and forms therewith a universal connection as at 27. The rearward end of the trough is movably supported within the compartment 15 from the compartment member F, and, in the instance shown, swivelly mounted by means of a pair of rollers 28, 29, running upon tracks 30, 31, which tracks as shown are formed in the floor 13, closely adjacent the sidewalls of the compartment member. The rollers 28, 29, are disposed opposite each other and constitute a fulcrum point about which the trough swings laterally when the locomotive is rounding a curve or revolves vertically when passing over a turntable or rough track.

With the position of the rollers 28 and 29 as shown on the drawings, that portion of the trough rearward of the rollers 28, 29 moves a greater lateral distance within the compartment 15 than that part of the trough forward of the rollers. In order to minimize the space occupied by the compartment member F within the water section the sidewalls 10 and 10*a* at their forward end portions are spaced apart a distance just slightly greater than the lateral movement of that portion of the trough forward of the rollers and the rearward portion of the sidewalls 10 and 10*a* flare laterally outwardly from their forward portion to allow for the greater lateral movement of that portion of the trough rearward of the rollers.

While in most stoker installations of the class described, the rearward portion of the trough has the greater lateral movement, positions of the rollers 28, 29, other than that shown may make it desirable to flare the forward portion of the sidewalls 10 and 10*a* laterally outwardly from their rear portion, or the invention contemplates laterally outwardly flaring both the rear and forward portions of the aforesaid sidewalls from a point opposite the rollers in such installations where the lateral movement of trough is substantially the same either side of its fulcrum point.

In like respects to the flaring of the compartment member sidewalls and for the same purpose, the rearward portion of the floor 13 thereof extends downwardly from its forward portion to allow for the greater vertical movement of that portion of the trough rearward of the roller 28, 29. The forward end portion of the floor 13 at the front end of the tender is spaced closely adjacent the bottom of the trough 21 and the distance between the two is just sufficient to permit free vertical movement of the trough. In the broader aspects of the invention it contemplates extending downwardly that portion of the floor of the compartment member beneath that portion of the trough having the greater vertical movement. In effect the aforesaid wall formation provides a compartment one end portion having a greater vertical and horizontal dimension than its other end portion.

By forming the floor 13 closely adjacent the trough 21, the space between the floor and the frame member E is utilized for water and the sidewalls 10, 10*a* and the rear wall 12 are apertured as at 32 and 33 respectively below the floor 13 thereby providing a passage for water between the opposite sides of the water section D beneath the trough compartment 15.

Figures 4 and 5 illustrate a modified form of the invention wherein a compartment member G is constructed as a unitary member, preferably a casting, separate from the frame E, and which member is securely held to the frame by welding or suitable attachment means through the laterally extending foot or pad 34. Otherwise the compartment member G is the same as the member F heretofore described.

While the foregoing more particularly describes our novel tender construction as with a swinging type of stoker trough it is to be understood the invention in its broader aspects is capable of use with other types of stoker troughs with which the inventive idea of minimizing the space occupied by the trough and its water tight compartment member can be employed as defined by the appended claims.

We claim:

1. The combination in a locomotive tender having a base frame and a fuel section and a water section, of a compartment member formed in said water section centrally and longitudinally of and above said frame, said member forming a water tight compartment arranged to receive a movable stoker trough and said compartment having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section, and imperforate rear end, bottom and sidewalls, said bottom wall being spaced above said frame to provide water space beneath said compartment and above said frame, said sidewalls at one end portion flaring laterally from the other end portion thereof, and said bottom wall at one end portion thereof extending downwardly from its other portion.

2. The combination in a locomotive tender having a base frame and a fuel section and a water section, of a compartment member formed in said water section centrally and longitudinally of and above said frame, said member forming a water tight compartment arranged to receive a movable stoker trough and said compartment having an open forward end, an apertured top wall permitting communication between said compartment

and said fuel section, and imperforate rear end, bottom and sidewalls, said sidewalls at one end portion flaring laterally from the other end portion thereof, and said bottom wall at one end portion thereof extending downwardly from its other end portion.

3. The combination in a locomotive tender having a base frame and a fuel section and a water section, of a compartment member formed in said water section centrally and longitudinally of and above said frame, said member forming a water tight compartment arranged to receive a movable stoker trough and said compartment having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section, and imperforate rear end, bottom and sidewalls, said bottom wall at its one end portion extending downwardly from its other end portion thereby increasing the height of one end portion of said compartment.

4. The combination in a locomotive tender having a base frame and a fuel section and a water section, of a compartment member formed in said water section centrally and longitudinally of and above said frame, said member forming a water tight compartment arranged to receive a movable stoker trough and said compartment having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section, and imperforate rear end, bottom and sidewalls, said sidewalls at one end portion flaring laterally from the other end portion thereof thereby increasing the width of the compartment at one end portion thereof.

5. In a locomotive tender having a base frame and a fuel section and a water section, a compartment member formed in said water section centrally and longitudinally of and above said frame arranged to receive a stoker trough and having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section, and imperforate rear end, bottom and side walls, said compartment at one end portion having a greater cross sectional area than at its other end portion.

6. In a locomotive tender having a base frame and a fuel section and a water section, a compartment member formed in said water section centrally and longitudinally of and above said frame arranged to receive a stoker trough and having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section, and imperforate rear end, bottom and side walls, said compartment at one end portion being greater in its vertical dimension than at its other end portion.

7. In a locomotive tender having a base frame and a fuel section and a water section, a compartment formed in said water section centrally and longitudinally of and above said frame arranged to receive a stoker trough, said compartment being water tight and having an open forward end and an apertured top wall permitting communication between said compartment and said fuel section, and at one end portion being greater in its horizontal dimension than at its other end portion.

8. The combination in a locomotive tender, of a fuel section, a water section, a stoker trough carrying drive mechanism, and a water tight compartment for housing said trough and drive mechanism, said trough and drive mechanism being separable from said compartment, said compartment being formed in said water section and having an open forward end and arranged to provide communication between said trough and said fuel section and having a greater cross sectional area adjacent that end portion of the trough carrying said drive mechanism than at its other end portion.

9. The combination in a locomotive tender having a base frame and a fuel section and a water section, of a centrally disposed substantially rectangular shaped water tight compartment formed in said water section for housing a movable stoker trough and having an open forward end, an apertured top wall permitting communication with said fuel section, an imperforate rear end wall, a horizontally disposed substantially flat imperforate bottom wall, and vertical imperforate side walls joined at right angles with said bottom wall, said bottom wall being spaced above said frame to provide communicating water space forming a passage from one side of the tender to the other between said frame and compartment.

10. In a locomotive tender, a base frame comprising an imperforate horizontal bottom plate and a perforated top plate, a fuel section and a water section, a compartment member formed in said section above said top plate and being supported therefrom, said member forming a water tight compartment for housing a movable stoker trough and having an open forward end for receiving said trough, an apertured top wall permitting communication with said fuel section, an imperforate rear end, bottom and side walls, said bottom wall being spaced above the top plate of said frame to provide communicating water space forming a passage from one side of the tender to the other between said frame and compartment.

11. In a locomotive tender having a frame, a fuel section and a water section, a compartment member formed in said water section above said frame and being separate therefrom, said member forming a water tight compartment for housing a movable stoker trough and said compartment having an open forward end for receiving said trough, an

apertured top wall permitting communication between said compartment and said fuel section, an imperforate rear end, bottom and side walls, said bottom wall being spaced above said frame to provide communicating water space forming a passage from one side of the tender to the other beneath said compartment and above said frame.

12. As a new article of manufacture, a unitary compartment member adapted to be mounted in a tender separate from the frame thereof for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls, and an imperforate end wall.

13. As a new article of manufacture, a unitary compartment member to be mounted in a tender for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls and an imperforate end wall, one end portion of said compartment member having a greater cross sectional area than the other end portion thereof.

14. As a new article of manufacture, a unitary compartment member to be mounted in a tender for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls and an imperforate end wall, one end portion of said compartment member being greater in its vertical dimension than the other end portion thereof.

15. As a new article of manufacture, a unitary compartment member to be mounted in a tender for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls and an imperforate end wall, one end portion of said compartment member being greater in its horizontal dimension than the other end portion thereof.

16. As a new article of manufacture, a unitary compartment member to be mounted in a tender for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls, and an imperforate end wall, and apertured support members depending from and formed with said compartment member.

17. As a new article of manufacture, a unitary compartment member to be mounted in a tender for housing a stoker trough, said member being open at its forward end for receiving said trough and comprising an apertured top wall, imperforate bottom and side walls, and an imperforate end wall diametrically opposite the open forward end of said compartment member, the end portion of said compartment adjacent said imperforate end wall having a cross sectional area greater than the end portion adjacent said open forward end.

18. In a locomotive tender having a base frame and a fuel section and a water section, a compartment formed as a separate unit and disposed in said water section upon said base frame, a stoker conveyor mounted as a separate unit in said compartment, the conveyor forming no part of the compartment, and said compartment comprising an integral structure having an open forward end, an apertured top wall permitting communication between said compartment and said fuel section and an imperforate rear end wall.

19. The combination in a locomotive tender, of a fuel section, a water section, a stoker trough carrying drive mechanism, and a compartment for housing said trough and drive mechanism, said trough and drive mechanism being separable from said compartment and forming no part of the same, said compartment being formed as a separate unit in said water section and having an open forward end, an apertured top wall arranged to provide communication between said trough and said fuel section and imperforate rear end and side walls.

20. As a new article of manufacture, a unitary compartment member adapted to be mounted in a tender separate from the frame thereof for housing a stoker trough, said member being open at one end for receiving said trough and comprising an apertured top wall, a bottom wall, and imperforate rear end and side walls.

In testimony whereof we affixed our signatures.

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