Nov. 18, 1924. 1,516,258

J. WILKES

WATER SUPPLY APPARATUS FOR RAILWAYS

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Fig. 2.

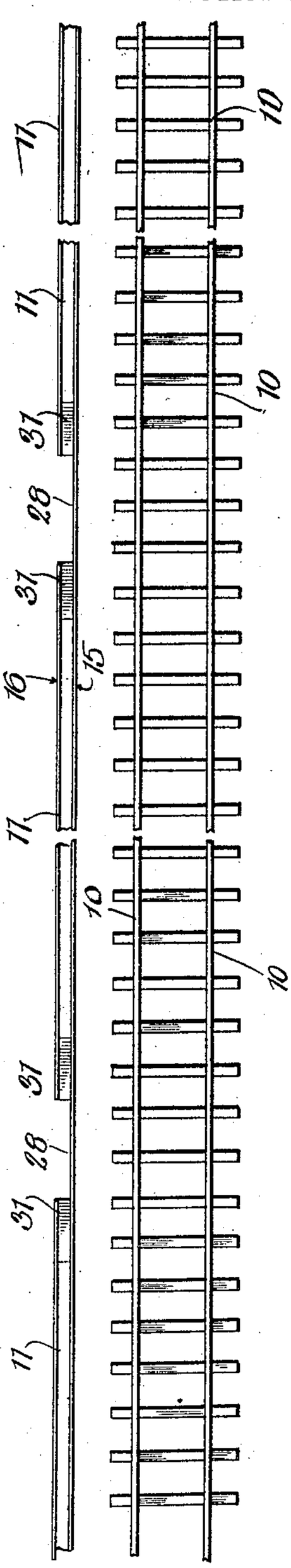


Fig. 1.

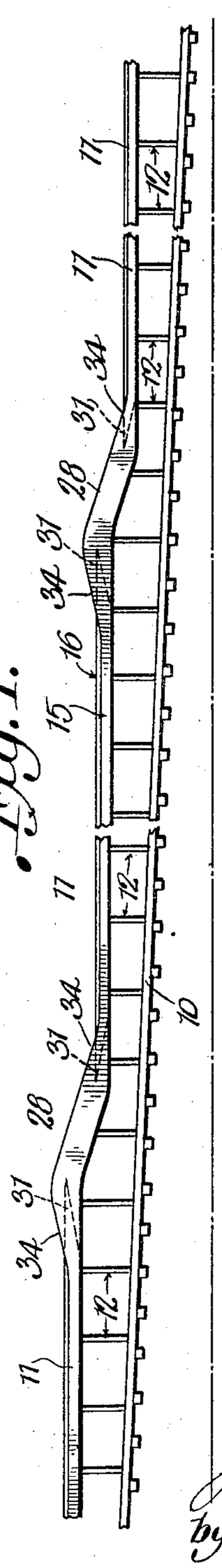
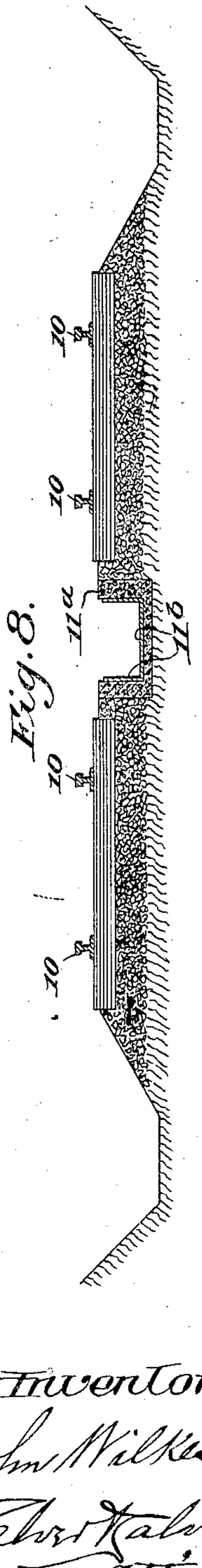


Fig. 8.



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Nov. 18, 1924. 1,516,258

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WATER SUPPLY APPARATUS FOR RAILWAYS

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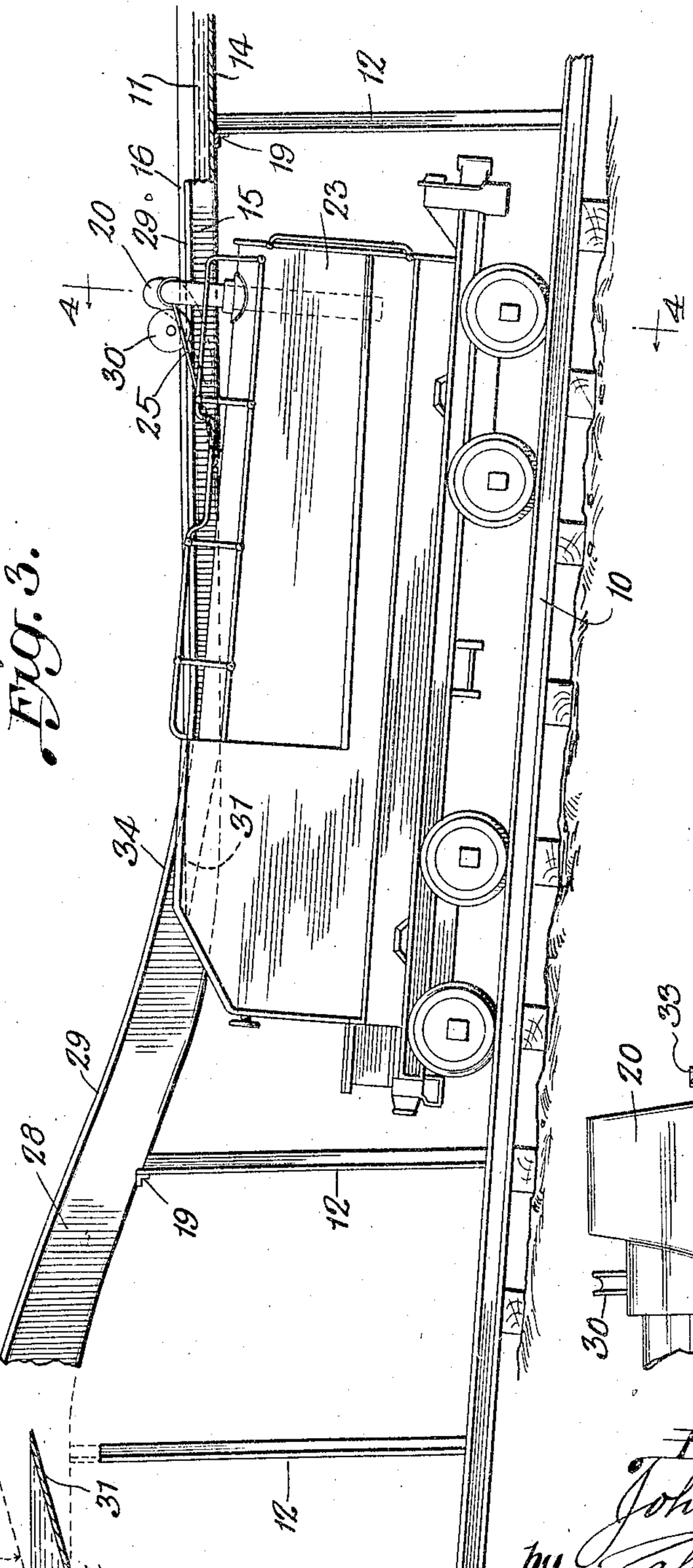

Fig. 3.

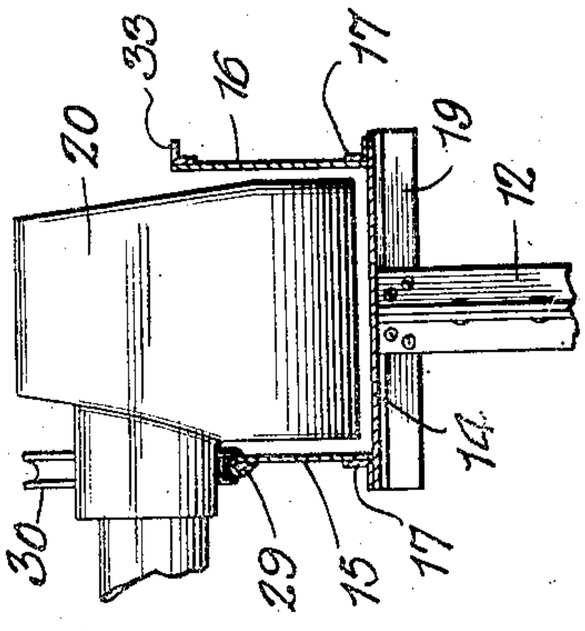

Fig. 5.

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WATER SUPPLY APPARATUS FOR RAILWAYS

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Fig. 4.

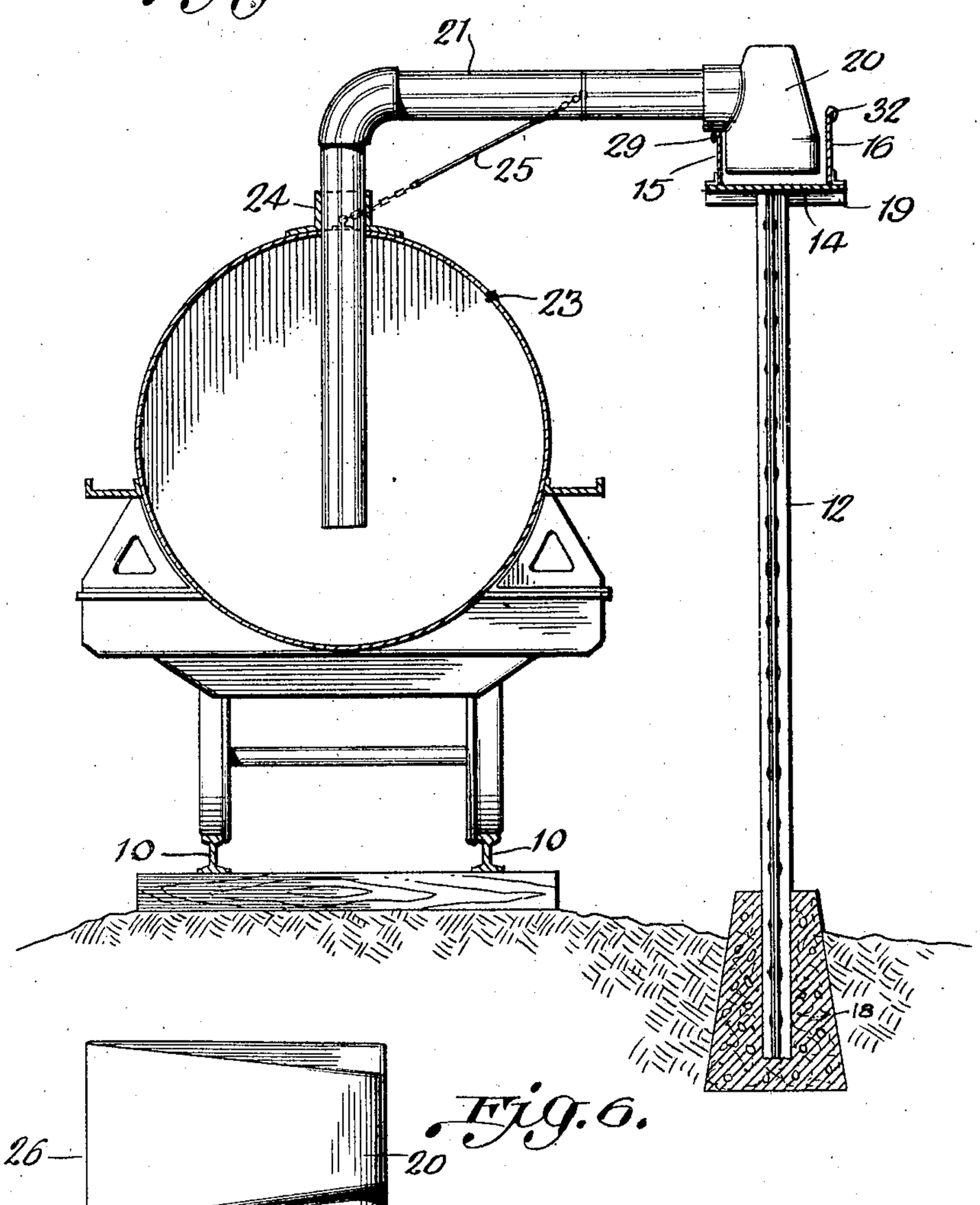
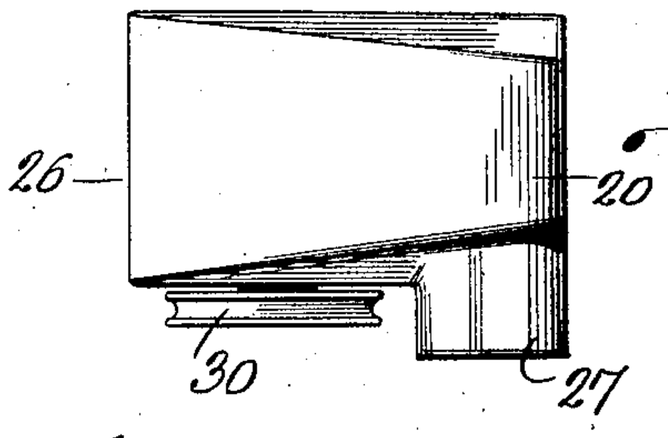


Fig. 6.



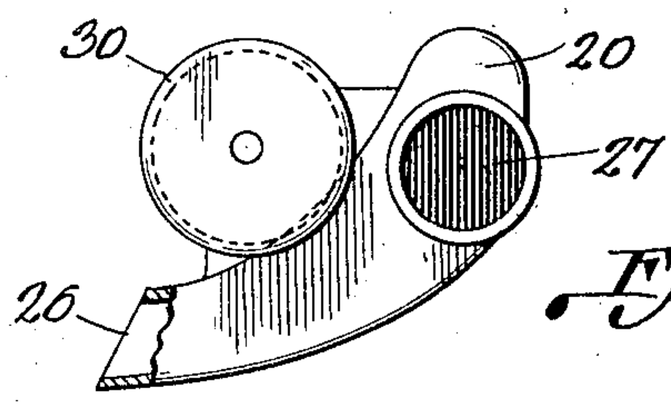


Fig. 7.

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Patented Nov. 18, 1924. 1,516,258

UNITED STATES PATENT OFFICE.

JOHN WILKES, OF NASHVILLE, TENNESSEE.

WATER-SUPPLY APPARATUS FOR RAILWAYS.

Application filed January 7, 1924. Serial No. 684,859.

To all whom it may concern:

Be it known that I, JOHN WILKES, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented or discovered certain new and useful Improvements in Water-Supply Apparatus for Railways, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to apparatus for supplying water to moving railway vehicles, as to the tanks of locomotives, and has for its general object the provision of improved apparatus of this character wherein the water-receiving means of the vehicle is enabled to receive its supply from a plurality of successively engaged troughs, more particularly from a series of troughs disposed at different elevations, although conceivably applicable in principle to other situations in which a plurality of differently arranged troughs are employed.

In accordance with a well known practice in railroad operation, means are provided for enabling a locomotive to replenish its supply of water without stopping for that purpose, such means comprising an elongated water trough arranged between the rails of the railway track, and parallel thereto, and a scoop or similar device carried by the locomotive and adapted to travel along the trough as the locomotive proceeds, said scoop gathering up the water supplied to the trough and delivering the same to the tank of the locomotive tender. In apparatus of this character it is obvious that, in order to retain the requisite amount of water without serious wastage, the trough must be approximately or quite level, so that the apparatus must be installed at a point in the line where a substantially level stretch of track of a length equal to the required length of the trough is available. It is found in practice that a length of trough ranging from 1300 to 2000 feet is necessary in order to fill a tank of average capacity by this method. On railroads in hilly or mountainous regions, however, the grade is frequently such as not to include a level stretch of this length at suitable points so that in lines passing through country of this character the system just described cannot well be employed.

The present invention has, therefore, for its primary object to provide an apparatus or installation whereby water in any desired amount, even for the very largest locomotives, may be supplied to a moving locomotive or other railway vehicle irrespective of the grade or inclination of the track over which the same is travelling. In carrying out this object of the invention, use is made of a series of troughs collectively making up the necessary length, each individual trough being horizontally disposed, and the several troughs of the series being arranged at different elevations, together with water-receiving means on the vehicle adapted to traverse the troughs successively and to be properly guided in its passage from trough to trough.

The foregoing and other objects of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of one or two embodiments thereof illustrated in the accompanying drawings. It will be understood, however, that the particular construction and arrangement described and shown has been chosen for illustrative purposes merely, and that the invention, as defined by the claims hereunto appended, may be otherwise practised without departing from the spirit and scope thereof. For instance, the troughs may be of concrete or wood instead of metal.

In the drawings Fig. 1 is a digrammatic side elevation of a section of railway track provided with water-supplying means arranged in accordance with one form of the invention, the vertical scale being slightly exaggerated. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is an enlarged side elevation of a portion of the track section shown in Fig. 1, showing a locomotive tender thereon. Fig. 4 is a section taken substantially on the line 4—4, Fig. 3. Fig. 5 is an enlarged transverse section of one of the troughs, showing the water-receiving scoop therein, Fig. 6 is a detail plan view and Fig. 7 is a detail elevation of the scoop. Fig. 8 illustrates a modified form of the invention.

As shown in Figs. 1 and 2, the track 10 has arranged beside the same and parallel thereto a series of alined troughs 11, preferably of metal, herein shown as supported by posts or uprights 12 at approximately the level of the top of the locomotive tender 13 (see Fig. 3). Each individual trough 11 is supported by its uprights 12 in hori-

zontal position, while the several troughs of the series are supported at different elevations in such a manner that the average height of said troughs above the track 10 is substantially constant.

Each of the troughs 11 is composed of a bottom member 14 (see particularly Fig. 5) and inner and outer side members 15 and 16, said members preferably comprising plates secured together in assembled relationship by means of angle bars 17. At the ends of each trough the bottom plate 14 is upwardly inclined to form an end which is tapered in elevation, as shown at 31 in Fig. 3. The adjacent side of contiguous troughs are spaced, horizontally, a slight distance, as hereinafter further explained. The uprights 12, as herein shown, are, if necessary, set in concrete bases 18 (see Fig. 4), and each is composed of a pair of angle bars, set back to back and riveted together, and carries at its top a transverse angle bar 19 which supports the corresponding trough 11.

Co-operating with the troughs 11 is a scoop 20 carried at the end of a lateral arm or extension 21 of an upright pipe 22 communicating with a water tank 23 of the tender 13 and mounted for vertical and angular movement in a sleeve 24 carried by the top of said tank. The arm 21 may be retained in the laterally extended position shown in Figs. 3 and 4, with the scoop 20 in operative relationship to the troughs 11, by means of a brace or tie 25 comprising a rod or chain connecting said arm with the tank 23. The scoop 20 as shown is closed at its top, bottom, sides, and rear and has an open forward end 26 adapted to admit water from the trough 11 to the hollow interior which communicates with the pipe extension 21 through a lateral opening 27.

Suitable means are provided for guiding the scoop 20 in its passage through the several troughs and from one trough to another. Such guiding means may assume a wide variety of forms, but as herein shown the inner side member 15 is employed for this purpose. To this end said side member is made continuous, or common to all of the troughs of the series, comprises guide sections 28 (Figs. 1, 2 and 3) connecting the adjacent ends of contiguous troughs, and is formed with a beaded upper edge 29 constituting a guide rail for the scoop 20. Said scoop may engage said guide rail directly or may be supported by a suitable carriage running on said rail, but as herein shown is provided with a grooved roller 30 (see Figs. 6 and 7) engaging the rail. Obviously the scoop may, if desired, be supported by both side members 15 and 16, or an additional guide member or members with wheels may be provided if found necessary or desirable. In Fig. 4 the side member 15 is shown as provided with a beaded edge 32 similar to the beaded edge 29 on the member 15. These beaded edges may, if desired, be replaced by angle bars, as shown at 33 in Fig. 5.

The adjacent ends of contiguous troughs 11 being at different elevations, the connecting sections 28 of the guide member are disposed at an inclination between said ends. The horizontal and vertical spacing of the trough ends is such as to provide between them a gentle rise in the guide members 28 such as can be easily and smoothly followed by the scoop 20, and this relationship having been determined in accordance with the requirements, and being substantially fixed, the lengths of the several troughs will, in turn, be determined by the grade.

The connecting portions 28 of the guiding means, besides being disposed at an inclination, as above described, are formed of greater height than the remaining portions of the guide, thereby providing cam or lifting portions 34 adjacent the tapered trough ends 31 and corresponding approximately in inclination to the trough bottoms at these points. The effect of the cam portions 34 is to lift the scoop 20 from a trough as it approaches the end thereof and afterwards to lower it into the next adjacent trough as it passes over the end of the latter, the movements of said scoop being such as to cause it to follow more or less closely the inclined bottoms of said ends.

The operation of the apparatus will be clear from the foregoing description but may be briefly reviewed as follows. Under normal conditions, and when the apparatus is not in use, the arm or extension 21 is swung into a longitudinal position substantially parallel to the tank 23, and the pipe 22 lowered in the sleeve 24 until said arm rests upon the top of said tank. As the section in which the water-supplying system is installed is approached, the pipe 22 is raised slightly and the arm 21 swung outwardly into the transverse position shown in Fig. 4, said arm being retained in said position by the brace 25, and when the initial end of the first trough 11 is reached, the roller 30 is engaged with the guide rail 29. Thereafter the scoop 20 will traverse the trough, and, as the opposite ends thereof is reached, the cam portion 34 lifts the scoop from the trough, and the inclined connecting portion 28 and opposite cam portion 34 guide it accurately into the forward end of the next succeeding trough. The scoop is therefore caused to pass from trough to trough and through the several troughs, taking up water from the latter and discharging it through the extension 21 and pipe 22 into the tank 23, said pipe 22 moving vertically in the sleeve 24 to compensate for

the variations in relative elevation of the tank and trough. When the whole series of troughs has been traversed, the arm 21 is returned to its original position on the top of said tank. The lifting of the scoop from one trough to the next may, if desired, be done by any suitable means, as by a compressed air attachment mounted on the locomotive and arranged to work automatically.

Instead of elevated troughs, as hereinbefore described, a plurality of horizontal troughs, arranged similarly to the elevated troughs, but located between the tracks 10 of a double track railway, or at one side of a single track railway, may be employed, as will be understood from Fig. 8. These low-down troughs 11^a may be of concrete or any other suitable material, with or without metal linings 11^b.

Having thus described my invention I claim and desire to secure by Letters Patent:

1. An apparatus for supplying water to locomotives or other railway vehicles comprising a plurality of troughs, water-receiving means carried by said vehicle and co-operating with said troughs, and means for guiding said water-receiving means from one of said troughs to another.

2. An apparatus for supplying water to a locomotive or other railway vehicle when travelling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, water-receiving means carried by said vehicle and co-operating with said troughs, and means for guiding said water receiving means from one of said troughs to another.

3. The combination with an inclined track and a vehicle thereon, of a plurality of horizontal water troughs arranged parallel to said track and disposed at different elevations, vertically movable water-receiving means carried by said vehicle and co-operating with said troughs, and means for guiding said water-receiving means from one of said troughs to another.

4. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of alined horizontal troughs disposed at different elevations, water-receiving means carried by said vehicle and co-operating with said troughs, and means for guiding said water-receiving means from one of said troughs to another.

5. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, water-receiving means carried by said vehicle and co-operating with said troughs, and inclined guides connecting adjacent troughs and co-operating with said water-receiving means to cause vertical movement of the latter while traveling from one trough to the next.

6. An apparatus for supplying water to locomotives or other railway vehicles comprising a plurality of troughs having a common side member connecting adjacent troughs, and water-receiving means carried by said vehicle, co-operating with said troughs, and guided by said side member.

7. An apparatus for supplying water to locomotives or other railway vehicles comprising a plurality of troughs, water-receiving means carried by said vehicle and co-operating with said troughs, and means for lifting said water-receiving means from each trough at the end thereof and guiding the same into the next adjacent trough.

8. An apparatus for supplying water to locomotives or other railway vehicles comprising a plurality of troughs having a common side member formed with portions of increased height connecting adjacent troughs, and water-receiving means, carried by said vehicle, co-operating with said troughs and guided by said side member.

9. An apparatus for supplying water to locomotives or other railway vehicles comprising a plurality of troughs having inclined ends and having also a common side member formed with portions of increased height connecting adjacent troughs, said portions adjacent the ends of said troughs being disposed at inclinations corresponding to the inclinations of said ends, and water-receiving means, carried by said vehicle, co-operating with said troughs and guided by said side member.

10. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, said troughs having a common side member connecting adjacent troughs, and water-receiving means, carried by said vehicle, co-operating with said troughs and guided by said side member.

11. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, said troughs having a common side member formed with inclined portions connecting adjacent troughs, and water-receiving means, carried by said vehicle, co-operating with said troughs and guided by said side member.

12. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, water-receiving means carried by said vehicle and co-operating with said troughs, and means for lifting said water-receiving means from each

trough at the end thereof and guiding the same into the next adjacent trough.

13. An apparatus for supplying water to a locomotive or other railway vehicle when traveling on an inclined track, comprising a plurality of horizontal troughs disposed at different elevations, said troughs having a common side member formed with inclined portions of increased height connecting adjacent troughs, and water-receiving means, carried by said vehicle, co-operating with said troughs and guided by said side member.

14. The combination with an inclined track and a vehicle thereon provided with a water tank, of a plurality of horizontal troughs arranged parallel to said track and disposed at different elevations, a rotatable and vertically movable pipe communicating with said tank, said pipe having a lateral extension terminating in a scoop adapted, when said pipe is in one angular position, to co-operate with said troughs, and means co-operating with said scoop for vertically guiding the same from one of said troughs to another.

15. The combination with an inclined track and a vehicle thereon provided with a water tank, of a plurality of horizontal water troughs arranged parallel to said track and disposed at different elevations, a rotatable and vertically movable pipe communicating with said tank, said pipe having a lateral extension terminating in a scoop adapted, when said pipe is in one angular position, to co-operate with said troughs, a brace adapted to connect said extension with said tank to hold said pipe in said angular position, and means co-operating with said scoop for vertically guiding the same from one of said troughs to another.

16. The combination with an inclined track and a vehicle thereon provided with a water tank, of a plurality of horizontal troughs arranged parallel to said track and disposed at different elevations, said troughs having a common side member formed with inclined portions of increased height connecting adjacent troughs, and a rotatable and vertically movable pipe communicating with said tank, said pipe having a lateral extension terminating in a scoop adapted, when said pipe is in one position, to co-operate with said troughs and to be guided by said side member.

In testimony whereof I affix my signature.

JOHN WILKES.