

May 6, 1952

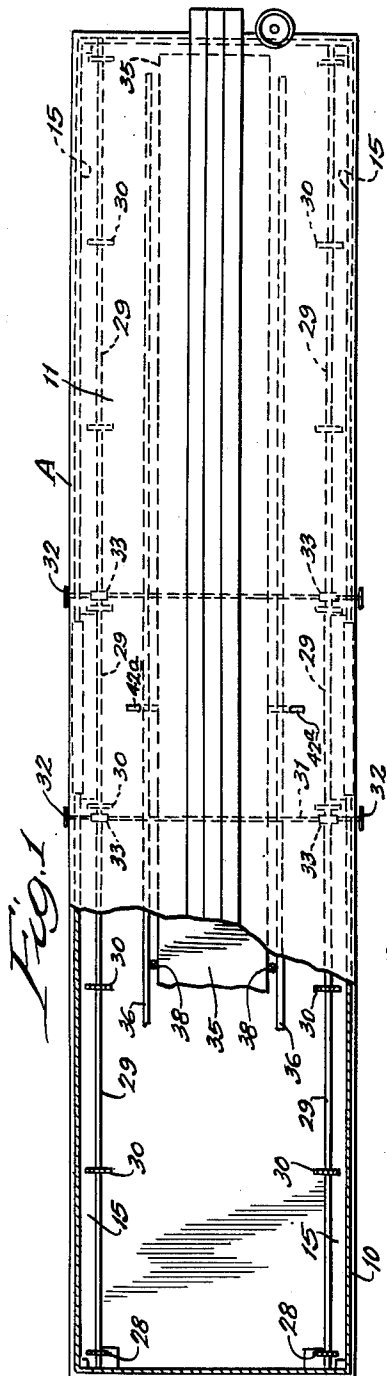
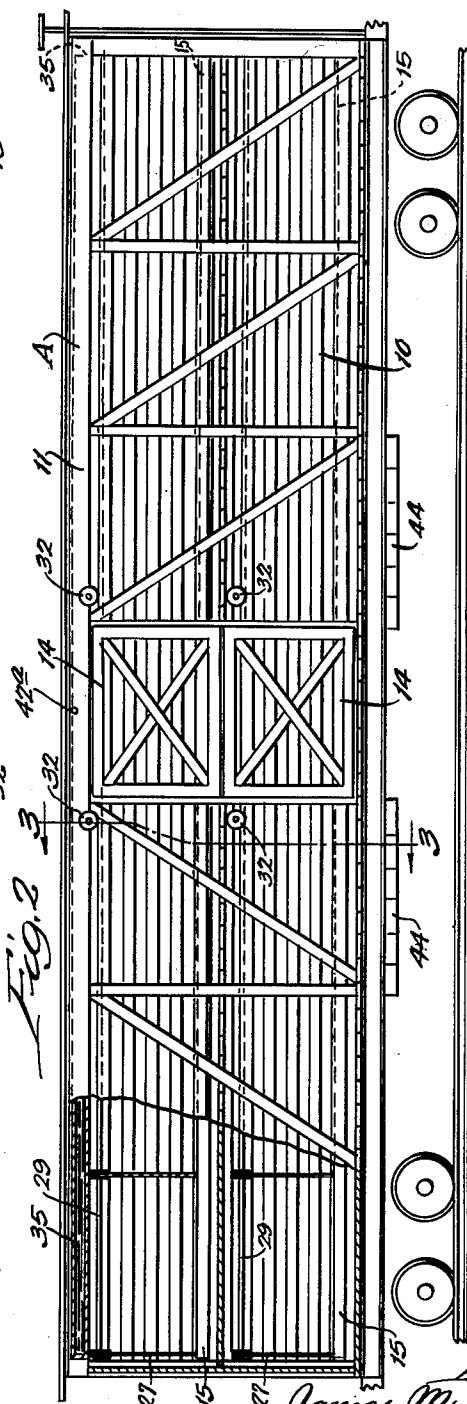
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WATERING AND FEEDING DEVICE FOR STOCK CARS

Filed June 9, 1948

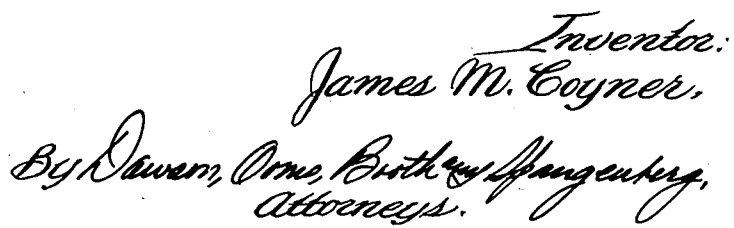
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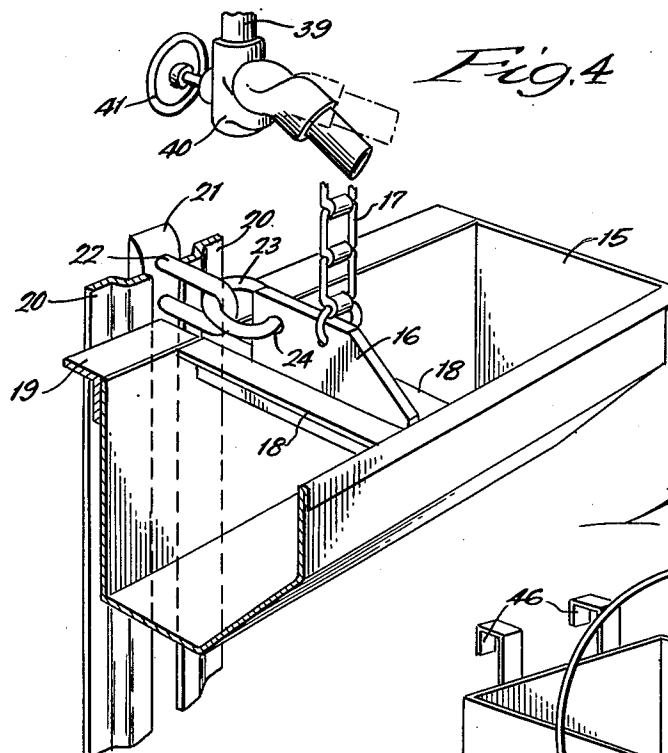


Fig. 4

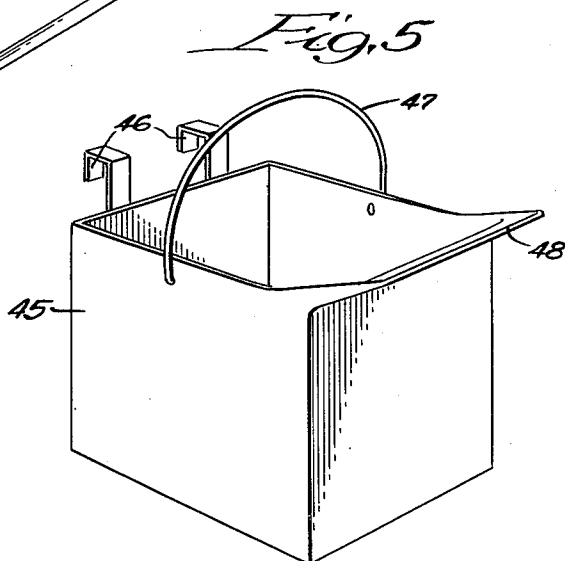


Fig. 5

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UNITED STATES PATENT OFFICE

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WATERING AND FEEDING DEVICE FOR STOCK CARS

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4 Claims. (Cl. 119—10)

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This invention relates to a watering and feeding device for stock cars. The invention is particularly useful in the watering and feeding of hogs, calves, sheep and cattle in railway stock cars, etc. To simplify the description, the invention will be described mainly in connection with the feeding of hogs but it will be understood that such description is also applicable to other livestock.

Livestock must be watered and fed in transit, if the haul is more than 36 hours between loading and unloading time, provided the shipper signs a release. If no release is signed, the livestock cars must be stopped every 28 hours so that the livestock may be fed and watered.

Until recent years, it was required that all livestock be unloaded for feed and water. Recently, methods have been developed for feeding and watering hogs in the cars, the procedure being as follows.

The cars are switched to a special feeding track equipped with docks on either side. Water hydrants equipped with hose extensions are placed at regular spacing on the docks and a store of grain is provided near the dock. A car door is opened on one side and three 6-foot troughs are placed on the floor in the car. These are filled with water from a hose and the hogs drink from the troughs. Corn or other grain is shoveled into the car between the slats. This practice results in a saving of time and labor. It eliminates the necessity for stockyard pens. There is less bruising from driving. Further, in severely cold weather, the car is usually warmer than the stockyard pens.

There are distinct disadvantages from the above procedure in car feeding. The hogs do not have sufficient trough space for drinking and they sometimes injure themselves in fighting to get to the troughs. Considerable water is spilled over the bedding of the car. The hogs waste a good deal of the grain. Further, the hogs eat considerable litter and filth, which is toxic to them.

To overcome the above disadvantages, car builders have constructed troughs in the cars. The troughs are attached to the floors along the side of the car. Here they quickly become full of dirt and filth and do not have drainage. The troughs take up floor space and further, bruise the livestock during travel. In the feeding operation, considerable labor is involved in attempting to fill the troughs, which have to be filled separately.

An object of the present invention is to provide a structure overcoming the above disadvantages in that the troughs are suspended during transit, giving the hogs or other livestock the full advantage of the floor space of the car while at the same time keeping the troughs clean.

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Yet another object is to provide a stock car structure equipped with means for readily filling the troughs when they are lowered into position adjacent the floor while also providing a reserve supply of water in the car for car emergency. Yet another object is to provide a structure which avoids the wetting of floors from spillage from the troughs while at the same time permitting the troughs to be filled simultaneously by the operation of one valve or control. A still further object is to provide in a stock car troughs which will be clean and can be drained while at the same time providing means for lifting counterbalanced troughs easily to raised positions, such means maintaining the troughs automatically in such raised positions. Yet another object is to provide trough raising and lowering mechanism of simple and sturdy structure which supports the troughs against side sway or side movement while at the same time permitting ready movement upwardly and downwardly through the use of a control member accessible from either side of the car. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a single embodiment, by the accompanying drawings, in which—

Fig. 1 is a broken top plan view of a stock car equipped with apparatus embodying my invention; Fig. 2, a side view in elevation and having a portion thereof broken away; Fig. 3, an enlarged transverse sectional view, the section being taken as indicated at line 3 of Fig. 2; Fig. 4, a broken perspective and sectional view on an enlarged scale showing the trough, the guide means employed therewith and the means for supplying water to the trough; and Fig. 5, a perspective view of a feed bucket which may conveniently be used with the apparatus described.

In the illustration given, A designates a stock car which may be of the usual structure or of any suitable structure. Since the car is of well known construction, a detailed description is herein believed unnecessary. In the illustration given, the stock car is provided with side walls equipped with slats 10 and with a top wall 11. The car is also provided with the usual bottom floor 12 and upper floor 13. It will be understood that for the hauling of cattle and larger livestock, the upper floor 13 will be omitted. The car is also provided at its middle portion on either side with the usual doors 14.

Extending along each side of the car and between the door and the car is a trough 15 which is mounted for movement in a vertical plane. In the illustration given best in Figs. 3 and 4, the trough 15 is formed of metal and is equipped with a plurality of anchor plates 16 to which

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are secured flexible lifting elements 17. The elements 17 may consist of link chains, chains, cables, or any other suitable device. As illustrated more clearly in Fig. 4, the anchor plate 16 is welded to the cross-strips 18 which in turn are welded at their ends to the trough body 15. The trough 15 is provided with a reinforcing angleiron border 19 which extends rearwardly and abuts the vertical guide members 20. The vertical guide members may be of any suitable type or shape. In the illustration given, they consist of Z bars having their inner flanges secured to the side walls of the car and having their outer flanges extending in spaced apart relation so as to provide a channel snugly receiving the slide members 21. The slide block or member 21 is provided with a link member 22 interlockingly engaging the ring 23 which extends through an opening 24 in the anchor plate 16. With this structure, the troughs are held against side sway and will not bind in the raising and lowering operations. For each of the troughs, a plurality of guide members 20 are provided so that the trough is firmly held against the side wall of the car at all times.

To facilitate the raising and lowering of the trough 15, I provide counterweights 25 which are guided and confined within a housing 26 at each end of the car. A sprocket chain 27 is fixed to the counterweight 25 and extends over a sprocket wheel 28 and thence downwardly for engagement with an anchor plate 16 carried by the trough. The sprocket wheel 28 is fixed upon a shaft 29 which is supported within bearings at the end of the car and also at a point near the center of the car. The shaft is equipped not only with the sprocket wheel 28 but also with the sheaves 30. Link chains 17, as illustrated in Fig. 4, are attached to the sheaves so that as the shaft 29 is rotated in one direction, the troughs are lifted while when the shaft 29 is rotated in the opposite direction, the troughs are lowered.

Each of the shafts 29 may be provided with means for rotating it. In the illustration given, I provide means for rotating two of the rods 29 on opposite sides of the car and above a single floor, simultaneously. A cross-rod 31 extends through the car in juxtaposition to the opposed rods 29, as shown more clearly in Fig. 1. An operating wheel 32 is preferably fixed to each end of the transverse rod 31. The rod 31, as shown best in Fig. 3, is equipped near its opposite ends with the worms 33 meshing with worms 34 on the shafts 29. Thus, rotation of the cross-shaft 31 by either of the wheels 32 produces a rotation of the shafts 29. Thus, the troughs on opposite sides of the car above a particular floor may be raised or lowered simultaneously by an operator standing at either side of the car and operating one of the wheels 32. If desired, the rods 29 may extend the full length of the car, as shown, so that the operation of one rod brings about the operation, through the use of the cross-rods, of all of the troughs above one floor.

At some stops, water may not be immediately available and an emergency supply may be required either as drinking water or for drenching the hogs, etc. in extremely hot weather. In the specific illustration given, I provide an elongated tank 35 which extends under the pitched roof 11, as shown more clearly in Figs. 1 and 3. The tank is provided with outlet pipes 36 which extend along the top of each compartment and

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are provided at spaced distances with spray openings. These pipes may be controlled by valves 38 so that when desired, a spray may be directed upon the livestock.

Also communicating with the tank 35 are the conduits 39 which extend downwardly into discharge nozzles 40 controlled by the valve 41. The discharge members 40 are preferably short enough so as not to interfere with the raising and lowering of the troughs 15. At the same time, the force of the water carries the water stream well forward and into the trough when the valve 41 is opened. Communicating with all of the conduits 39 near the lower end thereof is an inlet pipe 42 equipped with a master valve 43. The pipe 42 is adapted to be connected with the hydrant hose for supplying the water to the tank 35 and to the various discharge nozzles 40. If desired, all of the valves 41 may be left open and the master valve 43 may be employed, after the connection is made with the hydrant hose, for filling the troughs simultaneously.

The hydrant hose may be attached directly to this pipe for filling the tank. Water may be introduced directly into the tank 35, and allowed to flow into each of the troughs to fill them. By feeding the water directly into the reserve tank 35, the water will be accurately proportioned among the several troughs so that all of the troughs will be filled at practically the same time.

I prefer to equip the sides of the car below the bottom floor with a series of compartments 44, as shown more clearly in Fig. 2, and in these compartments may be placed square buckets or containers 45, as illustrated more clearly in Fig. 5. The container 45 may be equipped with supporting straps or hooks 46 extending rearwardly therefrom so that the bucket may, when desired, be supported upon the slats of the car at any desired elevation. The bucket is equipped with a bail 47 and at one side with a flat discharge spout 48 or ledge by which feed can be conveniently introduced through the slats into the troughs.

Each of the troughs 15 is provided with an overflow pipe or stand pipe 49 which ordinarily prevents the escape of liquid from the trough. The stand pipe, however, is removable and thus permits the liquid to drain through the aperture in the bottom of the trough. Since such stand pipes are well known in the art, a detailed description is believed unnecessary. The floors of the car are also preferably provided with drain pipes 50, the drain pipes from the upper floor, when there are two floors, being extended downwardly so as to discharge into the drain pipes 50 in the lower floor.

Operation

In the operation of the apparatus, the troughs are ordinarily maintained in elevated position so as to give the hogs or other livestock the full use of the floor space below while at the same time preventing injury to the livestock as might otherwise occur from contact with the troughs. When it is desired to water or feed the livestock, the operator stands on either side of the car and rotates the wheel 32 for lowering the oppositely disposed troughs 15 to a convenient point above the floor therebelow. Since the 4 wheels 32 are conveniently arranged about the door 14, the operator, standing in almost one place upon the dock, can readily lower the troughs on each side of the car by manipulating the wheels 32.

as shown more clearly in Fig. 2. When the troughs are lowered, the operator can turn the individual valves 41 to allow water to flow from the reservoir tank 35 into the several troughs. If the reservoir tank is empty and if it is desired to fill the troughs simultaneously by the use of the master valve 43, all of the valves 41 may be left open and the hydrant hose connected to the pipe 42. By opening valve 43, water will flow through the pipes to fill each of the troughs 15. The inlet pipe 42 may be connected to the pipe system at any point so that a fairly even distribution of the water to the troughs can be obtained when the master valve alone is used. Alternatively, the tank 35 may first be filled by connection with the inlet pipe 42 and the troughs 15 may be separately filled by manipulation of the valves 41.

Corn or other grain may be conveniently introduced into the troughs by means of the bucket 45 or by use of a scoop.

After feeding and watering, the troughs may be quickly moved to raised position by rotating the wheels 32 on one side of the car. In this operation, it will be noted that the worm gear structure automatically maintains the trough at any raised point by reason of the friction between the worm gear parts. Further, in feeding certain animals, the trough 15 will be lowered to a point much closer to the floor than when larger animals, such as cattle, are being fed. By the means described, the trough remains at any selected point to which it is moved without any further effort on the part of the operator. The counterweight 25 renders the lifting operation easy. Further, the guide members 20 which secure the trough to the side wall of the car, maintain the trough always in a firm position preventing side sway and spillage while also preventing tipping or binding of the trough and its supporting parts. If desired, ratchets and pawls may be used instead of the worm gears.

It will be understood that the tank 35 may be omitted or, if used, may be suitably by-passed so that the incoming water from the hydrant hose will pass directly to the troughs and will not pass through the tank.

If it should be necessary to cool the hogs or other livestock, the valves 38 may be opened and water passed through the perforated pipes 36 to form a cooling spray over the livestock.

While, in the foregoing specification, I have set forth specific structure in considerable detail for the purpose of illustrating one embodiment in which the invention may be used, it will be understood that such details of structure may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In a vehicle for the transportation of livestock, a trough at one side of the vehicle, spaced bars extending vertically of the vehicle side wall and providing retainer flanges and a guide channel therebetween, a slide member engaging the outer sides of said retainer flanges, a link member secured to said slide member and providing therewith a closed loop with the legs thereof vertically aligned, a horizontal loop link interlocked with said first-mentioned link, a vertically-extending flange carried by said trough and provided with an aperture receiving said horizontal link, a flexible hoisting member secured to said vertical member on the trough,

and a pulley support for said flexible member carried by said vehicle above said trough for supporting said trough generally in line with said guide bars and in contact with said guide bars, whereby upon sudden stopping and starting of said vehicle, said trough may bear frictionally against said side bars as the horizontal link moves relatively to said vertical link.

2. In a vehicle for the transportation of livestock, guide bars extending vertically along one side of the vehicle providing retainer flanges spaced inwardly from the side wall of the vehicle, said flanges being spaced apart to provide a guide channel therebetween, a slide member held by said retainer flanges for sliding movement upwardly and downwardly along the vertical wall of the car, a vertical link member secured to said slide member and providing a closed loop extending inwardly through said channel, a horizontal link interlocking with said vertical link, a trough equipped at its top with a vertically-extending flange apertured to receive said horizontal link, a flexible member secured to said vertical flange, a pulley supported upon a top wall of the vehicle and receiving said flexible member, and means for exerting tension upon the flexible member passing over said pulley to raise and lower said trough generally in alignment with the side wall of the vehicle and in abutting relation with said vertical bars.

3. The structure of claim 2, in which the vertical flange of the trough is provided with a second aperture at the rear of the first-mentioned aperture for receiving the flexible hoisting member.

4. In a vehicle for the transportation of livestock, a trough at one side of the vehicle, vertical bars along the side wall of the vehicle providing a guide channel, slide means engaging said guide channel, said slide means being provided with a loop extending in a vertical plane through said channel, a horizontal link member secured to said trough and engaging said vertical link to allow lateral movement of said trough relative to said vertical link, flexible means for raising and lowering said trough, and pulley means upon the top wall of the vehicle for supporting said flexible member to raise and lower said trough substantially in alignment with the side wall of the vehicle.

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