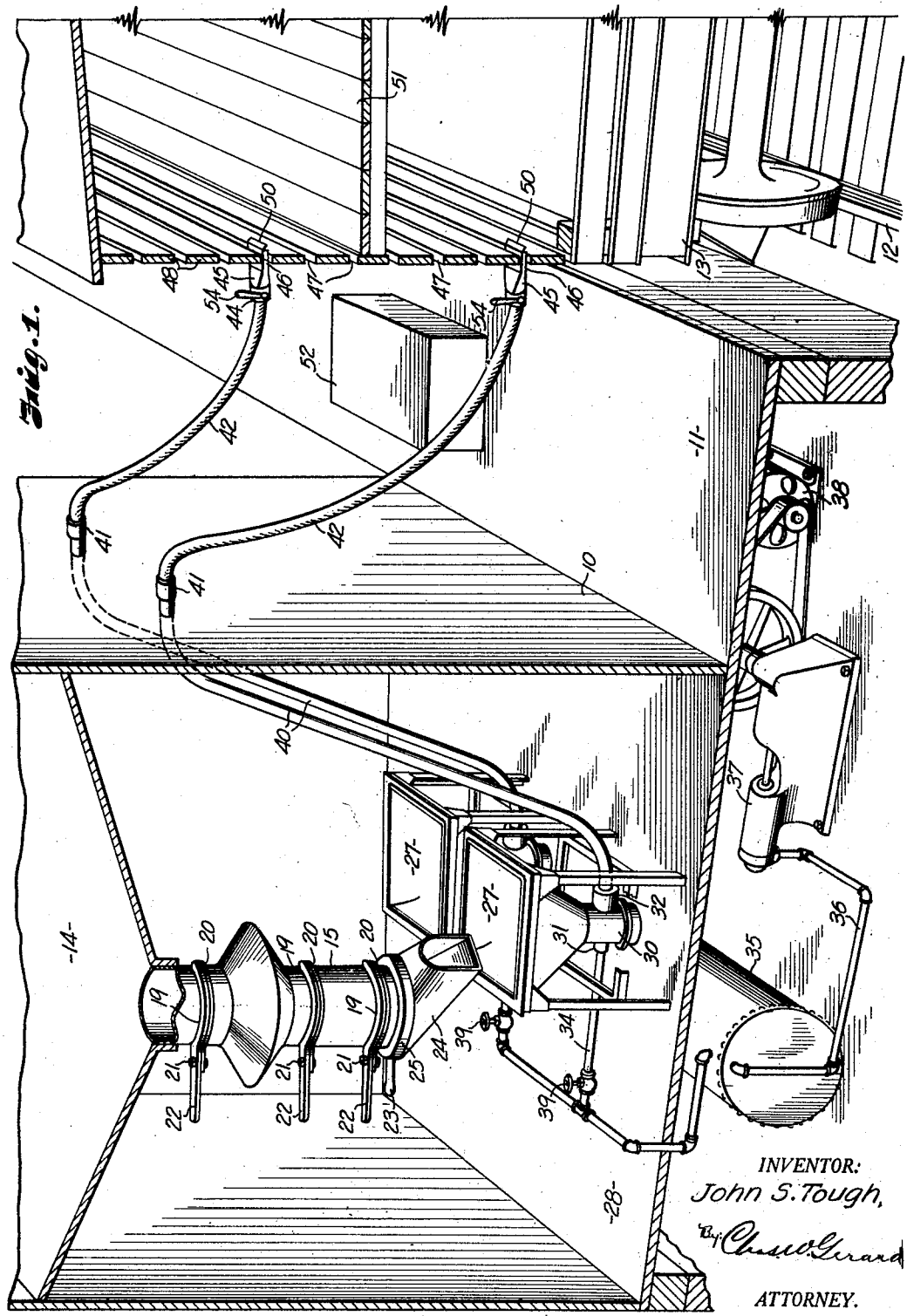
Jan. 24, 1933. J. S. TOUGH 1,895,180

GRAIN FEEDING DEVICE

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GRAIN FEEDING DEVICE

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Fig. 2.

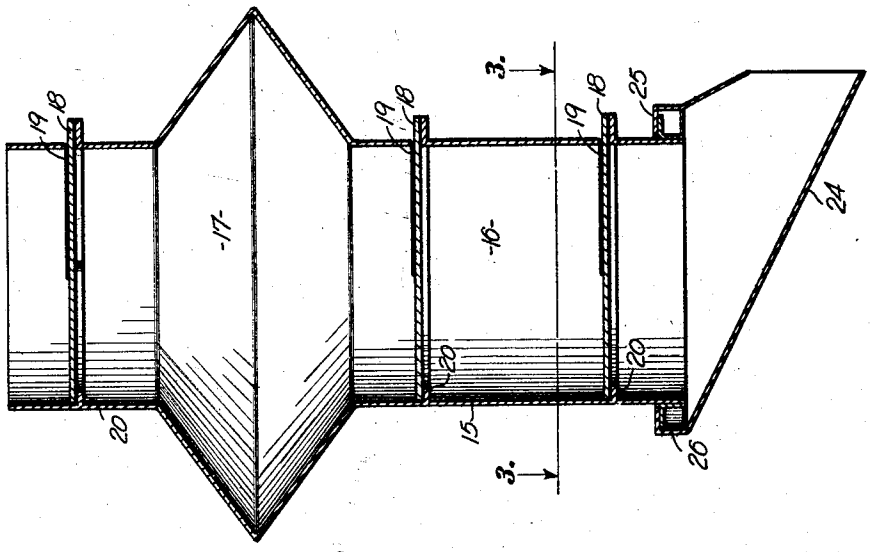
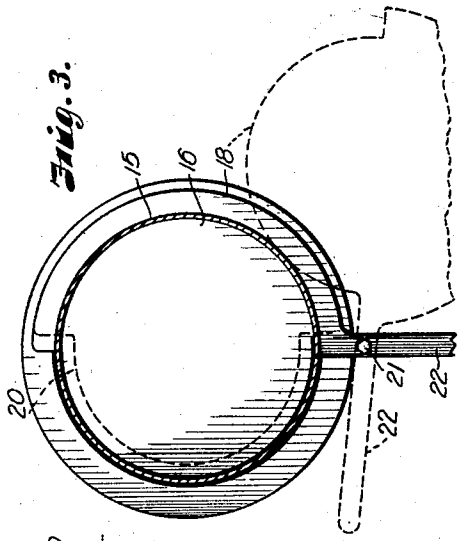


Fig. 3.



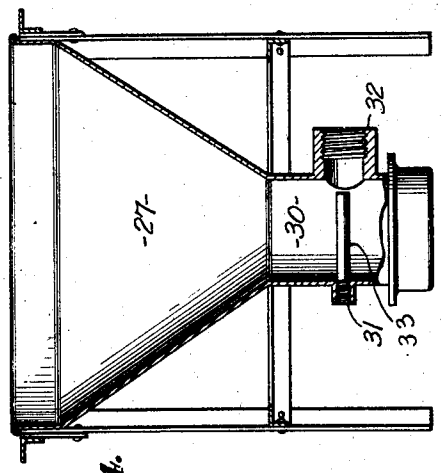


Fig. 4.

Fig. 5.

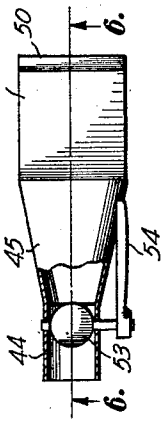
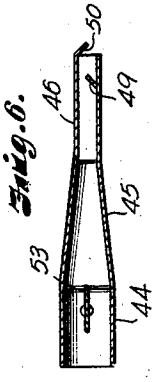


Fig. 6.



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Patented Jan. 24, 1933 1,895,180

UNITED STATES PATENT OFFICE

JOHN SLOAN TOUGH, OF KANSAS CITY, MISSOURI

GRAIN FEEDING DEVICE

Application filed May 11, 1932. Serial No. 610,578.

The present invention relates to stock feeding apparatus, and particularly to equipment employed in feeding live stock while in transit, on being shipped from one point to another.

Accordingly the primary object of the invention is to devise efficient means whereby measured quantities of stock feed may be conveniently and quickly distributed to the cars containing the stock, thus enabling the stock to be properly fed without removing it from the car.

It is also an object to provide an apparatus by the operation of which both decks of double-deck stock cars may be quickly serviced, and in a manner which will prevent waste by the proper distribution of the feed upon the floors of the stock compartments.

In carrying the invention into practice, suitable feed measuring apparatus is provided and equipped with suitable air-pressure means adapted to produce a flow of the feed material (such as shelled corn and the like) through flexible hose, the discharge ends of which are equipped with improved nozzle devices for effecting the required discharge and distribution of the feed within the cars.

With the foregoing general objects in view, the invention will now be described by reference to the accompanying drawings illustrating one form of apparatus which has been devised for accomplishing these purposes, after which those features and combinations deemed to be novel will be particularly set forth and claimed.

In the drawings—

Figure 1 is a sectional perspective view illustrating an apparatus constructed in accordance with this invention;

Figure 2 is a sectional elevation of the feed measuring means, on a larger scale;

Figure 3 is a horizontal sectional view, representing a section taken on the line 3—3 of Figure 2, with the dotted lines representing one of the valves or cutoffs in open position;

Figure 4 is a vertical sectional view of one of the hoppers for receiving the feed from the measuring apparatus and subjecting the same to the compressed-air feeding action;

Figure 5 is a plan view of one of the discharge nozzles, partly broken away; and

Figure 6 is a longitudinal section taken on the line 6—6 of Figure 5.

Referring now to the drawings in detail, and primarily to Figure 1, this shows a feed servicing station comprising a suitable building 10 provided with a track platform 11 alongside the track 12 traversed by the stock cars 13 in the servicing operation. The building 10 contains a storage bin 14 for the stock feed material, such as shelled corn or the like, which is to be dispensed and fed to the stock in accordance with given feeding regulations, requiring specified quantities to be apportioned to the several cars of a train.

Accordingly measuring means is provided as shown in Figure 2 in the form of a bin structure 15 comprising several measuring compartments of different sizes, as for example a lower half-bushel compartment 16, and an upper one-and-a-half bushel compartment 17, shown as of flaring cross section suitable for a space having limited vertical clearance. Communication between the compartments 16 and 17, as well as the intake and discharge from said compartments, respectively, is controlled by means of suitable valves or cutoff devices in the form of shutter members 18 operating in horizontal slot openings 19 provided with flanges or ledges 20 forming supporting rests or seats for the shutters, which are pivoted upon vertical pins 21 and provided with operating handles 22. Thus the shutter members perform the cutoff function by an approximately shearing stroke across the bin passage in the planes of said openings 19, and by appropriate operation the feed can be measured in quantities equal to one-half bushel, one-and-one-half, or two bushels as desired.

The lower compartment 16 discharges into a swivel spout 24 formed with a supporting flange 25 rotatively mounted upon a ring 26 (see Figure 2) secured to the lower end or mouth of the measuring bin 15. This spout is provided with a handle 23 which permits it to be turned for discharging the feed into either of two discharge hoppers 27 support-

ed side by side upon the floor 28 of the building (see Figure 1).

Each of the hoppers 27 is provided with a bottom extension 30 of substantially cylindrical form, at one side of which is provided a compressed air intake opening 31, and directly opposite each opening 31 is provided a considerably larger feed discharge opening 32, as clearly illustrated in Figure 4, which also shows an injector pipe section 33 projecting from opening 31 practically entirely across the extension 30.

These openings are suitably threaded for pipe connections, which in the case of openings 31 are compressed air supply pipes 34 communicating with a tank or reservoir 35 (which may be located beneath the floor 28) connected by a pipe 36 with a compressor 37 actuated by a suitable motor 38, as shown in Figure 1. Each of the branches of the pipe 34 communicating with the hoppers 27 is provided with a control valve 39.

To each of the outlet or feed discharge openings 32 is attached a pipe or conduit 40 connected with a wall fitting 41 at an appropriate height above the platform 11, as shown in Figure 1. These fittings serve as a means of attachment of suitable lengths of flexible hose 42, each of which is provided with an improved discharge nozzle structure of the type illustrated in Figures 3 and 4.

Each nozzle comprises a casing of cylindrical form at one end 44, which connects with the hose 42, while the middle portion 45 of the casing is of combined flaring and tapered design (that is, flaring as seen in plan view in Figure 5, and tapering when viewed edgewise or in elevation, in Figure 6), terminating in a flat and square nozzle end or tip 46 adapted to permit insertion through the openings 47 between the slats or side rails 48 of the car. This nozzle tip is formed with an upturned internal baffle 49 for deflecting the feed toward a downturned exterior baffle or lip 50, the function of which is to deflect the feed discharge downwardly or towards the floor of the car. The provision of two discharge nozzles enables two workmen to be employed for simultaneously servicing both the upper and lower stock compartments of a double-deck car, as where an upper deck 51 is provided in transporting the smaller sizes of stock, the platform 11 having an auxiliary platform 52 for enabling one of the attendants to service this upper deck.

Each nozzle moreover is provided with a suitable cutoff, such as a butterfly valve 53 in its cylindrical portion 44, and an operating handle 54 which, for convenience, is arranged to be swung in the direction of the discharge tip for opening the same, as illustrated in Figure 5.

From the foregoing it will be apparent that a practical and efficient construction is provided for carrying out the various desired objects of the invention, the method of operation of which will also be apparent without a detailed explanation, although this may be briefly summarized. By manipulation of the cutoffs or shutter members 18, the required amount of feed is measured in the bin structure 15 and then discharged into the hoppers 27, both being supplied in this manner in the case of a double-deck stock car transporting stock in both of its compartments. An operative pressure being maintained in the storage reservoir 35, the valves 39 are opened and the attendants prepare to manipulate the discharge nozzles by thrusting their flat tips through the openings 47 in the sides of the car, these being inserted through said openings with the flange lips 50 pointing downward or in the direction of the car floor. On opening the valves 53 by operation of the handles 54 forward or toward the discharge ends of the nozzles, the feed is discharged forcibly in a flat stream, under the air pressure delivered from the tank 35, and as the operators move the nozzles along the openings 47, this flow of the feed in flat sheet form is evenly and uniformly distributed over the whole floor area of the stock compartment. It will be seen that with the improved form of nozzle, with the internal and external lips 49 and 50 cooperating to preserve a sheetlike form of feed stream, and the external lip directing this flow downwardly, an efficient distribution of the feed results with no waste of it being permitted, such as might otherwise occur to a considerable extent due to the feed being shot clear across the car and out through the openings 47 on the opposite side thereof.

One important feature of advantage which characterizes the improved apparatus is the fact that it enables a train to be serviced while still in continuous movement past the feeding station, as distinguished from any previous method requiring an extra, separate track over which the servicing equipment is obliged to be drawn and intermittently stopped at the several cars of the train. The present system requires no extra trackage and the apparatus remains permanently in one position, past which the stock train needs only to be drawn at a sufficiently slow speed to permit operation of the servicing equipment for delivering the proper amount of feed to each car of the train.

The improved apparatus is not only highly efficient and economical, and convenient and rapid in its operation, but also of a construction which is simple and inexpensive in its design as well as easy and inexpensive to maintain, with practically nothing of a nature which is likely to get out of order. While I have illustrated and described what I now regard as the preferred form of embodiment of the improvements, I desire to be understood as reserving the right to make

whatever changes or modifications may fairly fall within the spirit and scope of the appended claims.

Having thus described my invention, what I claim to be new and desire to secure by Letters-Patent is:

1. A nozzle device for discharging feed into stock cars as driven through the nozzle under air pressure, said device comprisng a casing flaring towards its discharge end and having a flat tip or discharge end formed with an internal baffle projecting upward in the direction of the mouth of the nozzle, and also having an external lip projecting downward over the mouth of the nozzle.

2. A nozzle device for discharging feed into stock cars as driven through the nozzle under air pressure, said device comprising a casing having a cylindrical end portion provided with a controlling valve and a body portion flaring towards the discharge end of the nozzle and formed with a flat and relatively wide tip for insertion within the slot openings between the side rails of the car and terminating in a flange or lip projecting downward over the mouth of the nozzle and also having a baffle element inside said flat tip portion of the nozzle.

3. A nozzle device for discharging feed into stock cars as driven through the nozzle under air pressure, said device comprising a casing flaring towards its discharge end and provided with an external lip projecting downward over the mouth of the nozzle, and interior baffle means within said casing for exerting a deflecting action in a direction opposite to that of said external lip.

In witness whereof I hereunto affix my signature.

JOHN SLOAN TOUGH.