Nov. 28, 1961 A. STEINLE 3,010,612

FEED METERING DEVICE

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Fig. 1

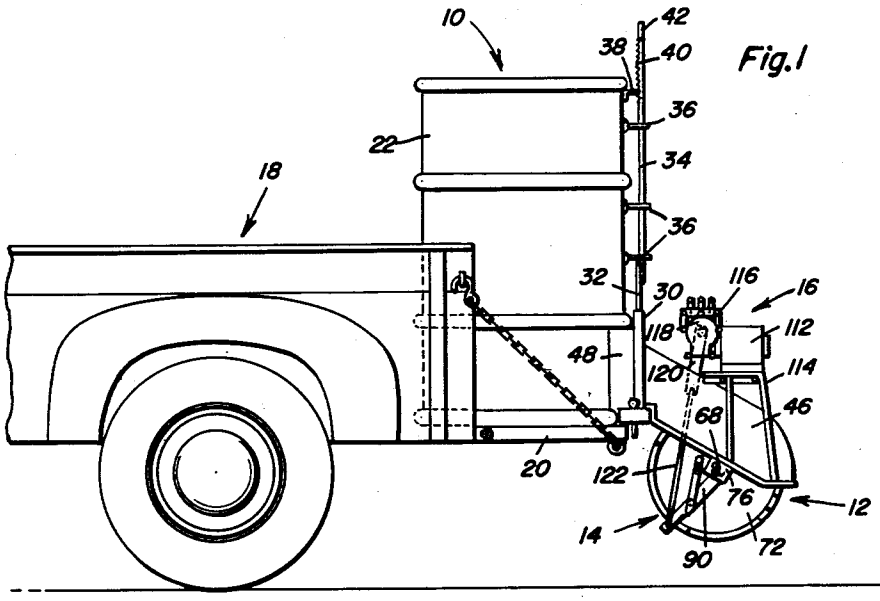


Fig. 2

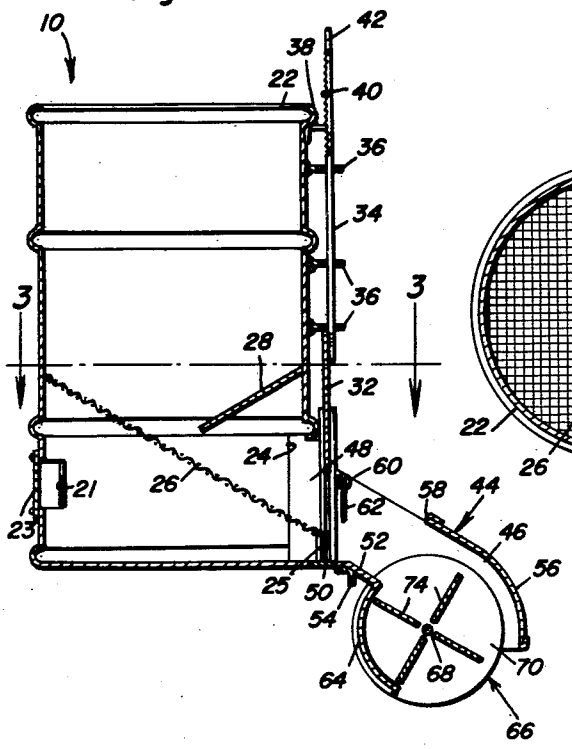
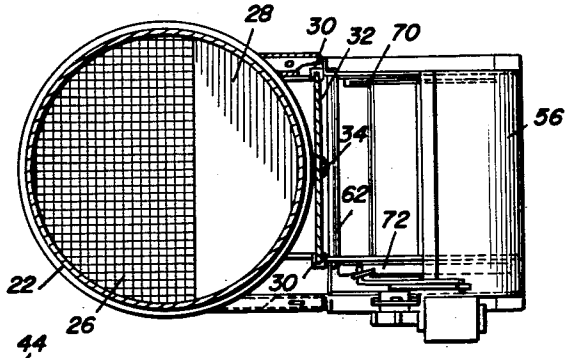


Fig. 3



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FEED METERING DEVICE

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Fig. 4

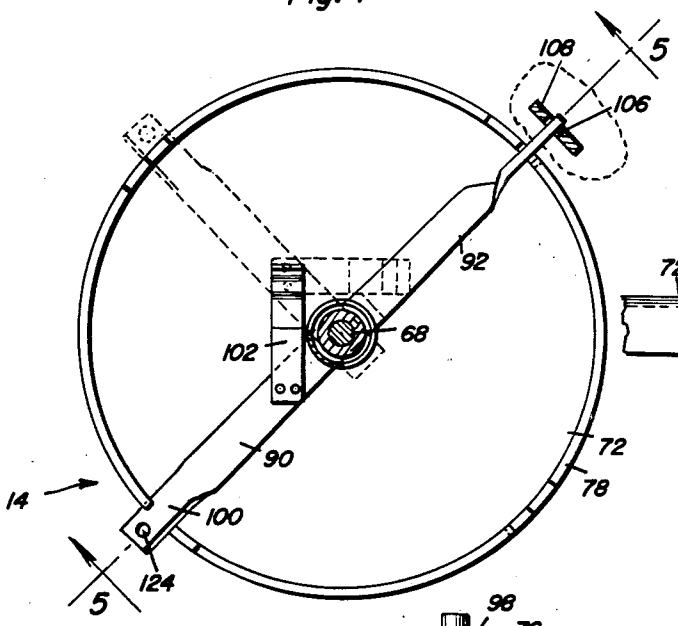


Fig. 7

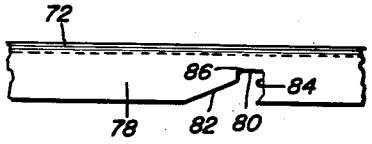


Fig. 5

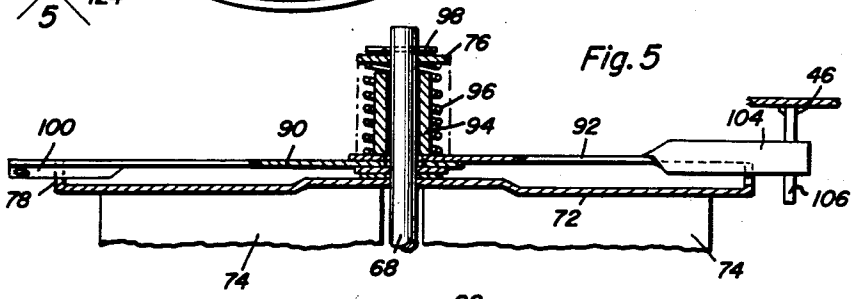
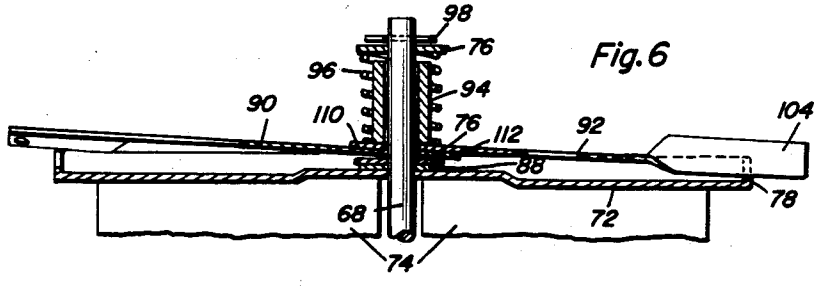


Fig. 6



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FEED METERING DEVICE

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3 Claims. (Cl. 222—189)

This invention relates generally to metering devices, and more particularly to a feed metering device for attachment to the back of a pick up or truck which is to be used while the vehicle is travelling.

The primary object of this feed metering device is to measure feed and deposit it in little piles behind a pick up where cattle are fed on an open range, or to place piles of feed in troughs from the sides of pick ups or trucks. This device is very beneficial for range feeding because large ranches have been just letting feed pour out of the back end of a pick up in long strings of feed and the cattle rushing along behind the pick up or truck crush much of the feed and scatter it all about. When it is in piles of a predetermined number of pounds to the pile, the cattle or other animals gather around these piles and do not trample so much of it into the ground.

Another object of this invention is to provide a measuring means for use in metering the feed, which means may only move in one direction, this being the forward direction, and prevent movement of the measuring means in the opposite direction, so that constant forward movement of the feeding means is possible, with the prevention of backward movement thereof.

A further object of this invention is to provide a device of the character described wherein reservoir means are provided for holding a large quantity of feed, this reservoir having an outlet in the bottom end thereof, so that the feed will be passed from the reservoir into the measuring means and then be dispersed in piles onto the ground.

An even further object of this invention is to provide a device of the character described wherein the amounts of feed in each of the piles may be varied so as to adapt this device for use under varied circumstances.

Yet a further object of this invention is to provide a device of the character described wherein the feed will be screened and kept in a special compartment which may be emptied when desired, so that the problem of losing one-fourth of the feed which normally will be caught in a screen in the bottom of a feed barrel, is obviated, and this otherwise wasted feed may be saved and re-used.

A further object of this invention is to provide means for starting and stopping the metering device independently of the movement of the pick up or truck, whereby the metering device may be controlled by a switch in the front of the truck so that the driver may stop the metering device when the truck has to stop during its feeding rounds, as when animals get in front of the vehicle.

Still a further object of this invention is to provide a simple and inexpensive device and yet one which is exceedingly effective for the purpose for which it is designed.

This invention contemplates the use of a barrel which is to be mounted on the rear of a pick up or truck. An opening is provided in the lower end of the barrel so that feed located therein may flow outwardly therefrom. Baffles are provided within the barrel so that the feed will constantly be urged, by means of gravity, downwardly and outwardly of the barrel, and into a chute which leads the feed into a revolving, measuring drum. A door is provided for the opening in the barrel, and this door may be either closed, or adjusted to a variety of selectable positions. One end of the drum has circumferential slots formed therein, so that a lever which is pivotally mounted to the same shaft on which the drum is rotatably mounted, may selectively engage the slots, and upon movement of the lever will rotate the drum therewith. A motor and

gear reduction box are provided to oscillate the lever and thus move the drum about its shaft in predetermined angular increments. Another lever is provided, which is stationary, which engages the slots on the opposite side from the movable lever, and because of the shape of the slots, prevents backward movement of the measuring drum. A motor is mounted atop the chute which communicates the barrel outlet with the measuring drum, and this motor drives a gear reduction mechanism which in turn drives a crank arm connected to a pitman rod which engages the outer end of the oscillatable lever.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of the feed metering device illustrating the same as attached to the rear of a pick up or truck;

FIGURE 2 is a vertical sectional view taken centrally through the device illustrated in FIGURE 1, illustrating the path of flow of the feed through the device;

FIGURE 3 is a horizontal sectional view taken substantially along the plane defined by reference line 3—3 of FIGURE 2;

FIGURE 4 is a side elevational view of the measuring drum illustrating the means for actuating the same, with parts being broken away for clarity;

FIGURE 5 is a sectional view taken substantially along the plane defined by reference line 5—5 of FIGURE 4 illustrating details of construction thereof;

FIGURE 6 is a sectional view similar to FIGURE 5, illustrating the actuating mechanism in a different position;

FIGURE 7 is an elevational view illustrating one of the slots which is formed in the circumferential flange extending outwardly on the actuating mechanism side of the measuring drum.

Referring now more specifically to the drawings, the numeral **10** generally designates the feed reservoir which is to be used in conjunction with the present invention. The measuring mechanism **12** is connected rearwardly of the reservoir **10**, and an actuating mechanism **14** is drivingly connected thereto, and receives its motion from drive means **16**.

The feed metering device is mounted on the rear of a truck **18** having the conventional type of tailgate **20**. The reservoir **10** sets partially on the tailgate **20** and partially on the floor of truck **18**. The reservoir **10** is constructed generally of a conventional type of **55** gallon oil barrel, having an opening **24** formed in the lower rearward wall thereof. A mesh baffle **26** is fixed within the barrel **22**, near the bottom thereof, and slants rearwardly and downwardly so as to allow the feed to be forced out of opening **24** by means of gravity. A solid baffle **28** is provided at the rearward portion of the barrel and is disposed above the mesh baffle **26**. This baffle **28** is inclined forwardly and downwardly so that feed resting thereon will be urged toward the mesh baffle **26** for screening the feed and keeping pressure on the feed coming out of the reservoir.

Another opening **21** is formed in the lower forward wall of the barrel **22**, and has a removable door **23** closing this opening. A partition **25** is mounted across the lower portion of opening **24** and serves to support the rearmost edge of mesh baffle **26**, while also enclosing the area beneath the tank under this baffle **26**. So the feed as it passes along mesh baffle **26** will be screened, and the small pieces will fall therethrough in the bottom of the barrel, where they may be removed when desired by removing door **23**, whereby access may be gained thereto through opening **21**. A solid baffle may be placed on the

top or in place of the mesh baffle if whole or ground grain is being fed.

The opening **24** and barrel **22**, is framed on either side by means of vertical channel members **30**, to which the rearward and lower end of mesh baffle **26** is connected. A sliding door **32** which is of solid construction, is slidably engaged within channel members **30**, and the position of closure **32** controls the amount of feed that will be allowed to flow through opening **24**. A vertical control rod **34** is connected to the medial upper portion of closure member **32**, and is slidably journaled within vertically aligned bearings **36**, connected along the rearward wall of barrel **22**. An angle member **38** is connected near the upper portion of barrel **22** and disposed above and in alignment with the bearings **36**. The outer edge of angle member **38**, engages a toothed upper portion of control rod **34**, so that the control rod **34** may be selectively held in a plurality of adjusted position. A handle **42** is provided atop the control rod **34**, so that easier manipulation of the control rod will be attained.

The measuring mechanism **12** is constructed of a chute **44** which depends downwardly from the barrel **22**, and has sides **46** which are connected to vertical channel members **30**. In substantial alignment with the walls **46** of the chute **44**, are vertical plates **48** which are connected on either side of outlet **24**, to prevent the feed from falling out of the sides instead of going into chute **44**. Thus, it may be seen, that these plates **48**, are actually a continuation of or part of the chute **44**. A plate **50** is connected below vertical channel members **30**, and in alignment with the bottom of barrel **22**, and the bottom **52** of the chute **44** is fixed thereto. An angle member **54** is conneced on the lower surface of chute bottom **52**, and serves to act as a limiting stop when the barrel is placed on the tailgate **20**, since the angle member **54** will contact the end of tailgate **20**, and limit the forward movement of the barrel. A top **56** is provided on the chute, and this top extends so as to enclose the rearward portion of the chute, but does not extend forwardly, and is not located above the bottom **52** of the chute, so that an opening **58** is hereby formed. A shaft **60** is fixed to the upper corner of the chute walls **46**, and a door **62** depends from this shaft **60** and is pivotally mounted thereon. The chute bottom **52** leads into a curved portion **64**, which is the same shape as the measuring drum **66**.

A shaft **68** is fixed to chute walls **46**, and is located between top **56** and curved portion **64**. The drum **66** is rotatably mounted upon this shaft **68**, and has circular heads **70** and **72** at either end thereof. Intersecting divider plates **74** are connected between the heads **70** and **72** of the drum, so that measuring compartments for the feed are thereby formed.

Actuating mechanism **14**, is attached to bracket **76** which depends from sides **46**, and has shaft **68** extending therethrough. The drum head **72** has a circumferential outwardly extending flange **78** connected at the peripheral edge thereof. A plurality of slots **80** are formed in the flange **78** approximately 90° apart. Each of these slots **80** has a cammed surface **82** so that each of the slots **80** has a long vertical wall **84**, located forwardly in the slot with respect to the direction of travel, a short wall **86** located rearwardly in slot **80** with respect to the direction of travel, and the cammed surface **82** is disposed between the wall **86** of the slot and the outer edge of the flange **78**. Looking now more particularly at FIGURES 5 and 6, it may be seen that one end of the shaft **68** extends outwardly from the drum. A washer **88** is disposed about the shaft, and located between one leg of bracket **76** and the head **72** of the drum. Then, a moving lever **90** is connected about the shaft, and thereabove is connected a stop lever **92**. A sleeve **94** is connected about the shaft and outwardly of the two previously mentioned levers, and a spring **96** is connected thereabout, this spring being connected between the upper or outer edge of stop lever **92** and the inner edge of the outer leg of bracket **76**. A cotter pin **98** is connected on the outer end of shaft **68**, so that the mechanism is firmly locked thereon. The moving lever **90**, is disposed in a plane parallel to that of drum head **72**, having its outer end **100** bent at a slight angle thereto, so that the forward edge of this end **100** may contact the slot wall **84**, and upon movement of lever **90**, the drum will be rotated therewith. A spring clip **102** is connected near the inner end of lever **90** and rides up upon stop lever **92** when the moving lever **90** has nearly reached its limit of travel, the spring clip **102** rides up upon stop lever **92** and resiliently urges its outer end inwardly. Stop lever **92** has an outer end **104** which is bent at right angles thereto and travels in a slot **106** in plate **108** provided for the purpose. This plate **108** is connected to side wall **46** of the chute. As one of the slots **80** is located below outer end **104**, the latter is urged inwardly and becomes engaged within the slot and locks the drum from movement in either direction because of the walls **84** and **86** of the slot **80** preventing the flange **78** from moving past outer end **104**. This position is illustrated in FIGURE 6, as the moving lever is being moved backward toward its starting position. Whenever the movable lever **90** is engaged on the outer edge of flange **78**, it is tilted upwardly a slight amount, so that the inner end of lever **92**, designated as **110** is also moved upwardly by the action of lever **90**. Thus, the outer end **104** of the stop lever is forced downwardly and firmly into slot **80**. However, when the lever **90** is returned to its rearward limiting position, it snaps downwardly along wall **84** of slot **80**, and thence into the slot, because it is being urged downwardly by means of spring **96**. When this happens the inner end of lever **112** pushes upwardly on lever **92** causing a fulcruming or pivoting about the shaft **68**, thus urging the outer end **104** of stop lever **92** upwardly to a position at least above that of wall **86** so that upon forward movement of movable lever **90** the stop lever **104** will ride up along cam surface **82**, and allow forward movement of the drum.

The drive means **16** is constructed of a motor **112** which is mounted on a bracket **114** connected to one of the chute side walls **46**. To this motor is attached a reduction mechanism **116** which is in turn connected to a reversing mechanism **118**, which drives a crank arm **120**. This crank arm moves from a position as illustrated in FIGURE 1, and from this position oscillates clockwise until the movable lever **90** has reached its forward limiting position, whereupon the reversing mechanism moves the lever counterclockwise to the position illustrated in FIGURE 1. The pitman rod **122** is connected to the outer end of crank **120**, and the free end of crank arm **120** is connected to an opening **124** formed in the outer end of movable lever **90**, see FIGURE 4. It may thus be seen that motor **112** will drive the lever **90**.

The motor **112** may be a small electric motor running on 6 or 12 volts depending on the battery voltage of the vehicle, so that this motor may be driven directly by the vehicle battery. Furthermore, a switch for activating the motor will be located in the front of the vehicle, as on the dashboard, so that it may be actuated from the truck, so that the feeding device may be stopped or started at any time.

In use, after the barrel **22** has been filled with feed, the baffles will directly feed outwardly through the outlet **24**, and thence into the drum between the divider **74** into the compartment formed therebetween. Then, upon movement of the drum **66**, 90°, the feed which was deposited therein will be dropped and an adjacent compartment will be filled with feed.

It may now be seen that a new and novel type of feed metering device which is extremely useful for range feeding has been described.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those

skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A device for dispensing feed comprising a reservoir having a delivery chute, dispensing means connected to the delivery end of said chute for intermittently dispensing measured quantities of feed, said dispensing means comprising a measuring drum pivotally mounted on the delivery end of said chute, said drum having circumferentially spaced thereabout a plurality of measuring components, actuating means for intermittently rotating said drum in one direction a predetermined distance and stop means operatively connected to said actuating means for retaining said drum in position after each movement by said actuating means against movement in said one direction until further action by said actuating means, a shaft on which said drum rotates, said drum having notches formed circumferentially about one end thereof, said actuating means including an actuating lever pivotally connected to the shaft and engageable with said notches, said retaining means comprising a stop lever rotatably journaled on said shaft and engageable with said notches, means for preventing rotation of said stop lever relative to said device and thereby preventing rotation of said drum, and means operatively connecting said actuating lever to said stop lever whereby operation of said actuating lever will resiliently urge said stop lever into engagement with said notches to retain said drum in position against rotation in said one direction after havng been rotated by said actuating lever.

2. A device for dispensing feed comprising a reservoir having a delivery chute, dispensing means connected to the delivery end of said chute for intermittently dispensing measured quantities of feed, said dispensing means comprising a measuring drum pivotally mounted on the

delivery end of said chute, said drum having circumferentially spaced thereabout a plurality of measuring components, actuating means for intermittently rotating said drum in one direction a predetermined distance and stop means operatively connected to said actuating means for retaining said drum in position after each movement by said actuating means against movement in said one direction until further action by said actuating means, a shaft on which said drum rotates, said drum having notches formed circumferentially about one end thereof, said stop means including a stop lever pivotally connected to said shaft and engageable with said notches, means for preventing rotation of said stop lever relative to said device, means operatively connecting said stop lever with said actuating lever to resiliently urge said stop lever toward engagement with said notches upon operation of said actuating lever.

3. The combination of claim 1 including means in said reservoir for screening and removing the smaller particles of feed entering said chute from said reservoir, said screening means being disposed above the bottom of said reservoir wherein said smaller particles of feed will drop to and be retained in the bottom of said reservoir.

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