To all whom it may concern:

Be it known that I, Elven Norbo, a citizen of the United States, residing at Cashton, in the county of Monroe and State of Wisconsin, have invented certain new and useful Improvements in Automatic Cattle-Feeding Machines, of which the following is a specification.

My invention relates to machines for feeding cattle and has for one of its objects the provision of a frame mounted upon a track arranged in the feeding department of the barn or stable and having mounted on said frame a vertically movable receptacle for holding the feed and providing means whereby said receptacle is caused to deposit feed in each trough or manger.

Another object of my invention is the provision of means by which a predetermined weight of food may be deposited in each trough or manger, said means consisting of scales controlling the delivery of feed to the cattle and providing means whereby the weight on the scale beam may be adjusted to permit the predetermined weight of food to be deposited in the trough.

My invention will be described in detail hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a view of the interior of a barn showing the front of the cattle stalls and my improved feeding machine therein; Fig. 2, a view on an enlarged scale of a section of the track showing the front of my improved feeding machine in position thereon and in side elevation; Fig. 3, a rear view of the feeding machine; Fig. 4, a top plan view; Fig. 5, an end view in elevation; and Fig. 6, a bottom plan view of the feeding receptacle and the valve in position.

In the drawings similar reference characters will be used to designate corresponding parts throughout the several views.

As shown in Fig. 1 my improved feeding machine is adapted to be installed in the feeding room of a barn or stable A and is mounted upon a track designated 1 that is arranged to carry my feeding device opposite the front of each of the stalls B.

My improved feeding device comprises an inverted U-shaped frame 2 having rods 3 swivelly mounted on its upper cross bar and provided with casters or rollers 4 55 that are grooved to engage the track 1.

Secured adjacent to one end of the upper cross bar 2 of the frame 2 is an inverted U-shaped bracket 5 having one of its lugs 6 secured to the cross bar 2 and said bracket extends laterally from said cross bar.

7 indicates a shaft pivotally mounted in the lower terminals of the U-shaped bracket 5 and which has a scale beam 8 secured adjacent to the outer terminal of said shaft 7. Secured adjacent to the other terminal of the shaft 7 is a lever 10 and pivotally mounted on the cross bar 2 is a lever 9 having one of its terminals connected with the adjacent terminal of the lever 10 by means of a link 11. 12 indicates the feed receptacle that is suspended from the free terminals of the lever 9 and lever 10 by means of rods 13 and the free terminals of said bar 9 and lever 10 heretofore referred to.

The lower portion of the receptacle 12 is formed with a hopper bottom extending 80 in a spout 16 having its delivery mouth segmental in shape as shown at 17. The spout 16 is provided with doors 18 formed of plates of metal or other suitable material bent to engage the segmental opening in said spout and having upwardly extending triangular flanges 19 that are pivotally mounted on the sides of said spout as shown at 20.

21 indicates bell crank levers fulcrumed 90 on the ends of the receptacle 12 and having one arm of each of said levers connected with the doors 18 by means of rods 22, while the other arms of said bell crank levers are connected with arms 23 secured 95 to the side bars of the U-shaped frame 2 by means of rod 24.

The scale beam 8 has slidably mounted thereon the weight 25. 26 indicates a shaft journaled in the upper portion of the U-shaped bracket 5 and having an arm 27 extending downwardly therefrom.

28 indicates a rod pivotally secured to the lower terminal of arm 27 and slidably mounted in an opening 29 in the weight 25. 105 Pivotally secured to the weight 25 is an arm 30 having an opening 31 to receive the rod 28, said opening being slightly
larger than the diameter of the rod 28 so as to permit movement of the rod freely therethrough in one direction, while when the rod is moved in the opposite direction, a spring 32 engaging said arm 30 and the weight 25 causes the edges of the walls of the opening and arm 31 to engage said rod and slide the weight along the scale beam 8 toward the shaft 7. Secured to the front terminal of shaft 26 is a U-shaped member 33 and pivotally secured to the arms of said U-shaped member 33 is an angular plate 34. 33 indicates a spring mounted on the rear end of shaft 26 and has one of its terminals engaging the rear arm of the U-shaped bracket 5, while its other terminal engages the arm 27. In front of each stall B in the stable A is an arm 36 that is adjustably secured to the track 1 and provided with a roller 37 on its free terminal that is adapted to engage the upper angular edge of the plate 34 as the frame 2 is moved in front of the stall. It will be apparent from the above description and inspection of the drawings that when the frame 2 is moved along the track 1 opposite a stall and the roller 37 on the arm 36 engages the upper edge of the plate 34, that said plate will be depressed and by the downward movement thereof, shaft 26 is rotated and through the instrumentality of the arm 27 and the rod 28 engaging the clamping arm 30, the weight 25 will be moved along the scale beam so that the weight of the feed within the receptacle 12 will be sufficient to overcome the weight 25 on the scale beam 8 and the receptacle 12 will move downwardly. By such downward movement of the receptacle, the doors 18 will be opened by means of the bell crank lever 21 and the rod 22 and 24 secured thereto and to the doors 18 and arms 23, thus permitting the feed to pour from the spout 16. As soon as sufficient feed has poured from the receptacle so that the weight of the feed therein is insufficient to overcome the weight 25 on the scale beam 8, the weight 25 will move the scale beam 8 downwardly and through the instrumentality of the shaft 7 the lever 9, lever 10 and their connections with the ends of the receptacle, said receptacle will be lifted and when lifted, the bell crank levers 21 will close the doors 18 and prevent any further emission of the feed from the receptacle. It will be apparent that the amount of grain to be fed to each head of cattle may be predetermined and automatically regulated by adjusting the arm 36 so as to move the angular plate 34 downwardly more or less, as may be necessary to adjust the weight 25 on the scale beam. As it may be desired to omit feeding some of the head of stock while moving the receptacle through the barn, I provide means for throwing the angular plate 34 into an inoperative position consisting of the following instrumentality: 35 indicates a shaft journaled on suitable bearings on the frame 2 and having an upwardly extending arm 39 on one of its terminals provided with a forwardly extending prong 40, said upwardly extending arm 39 and prong 40 being adapted to engage the plate 34 and the U-shaped member 33 to swing said plate 34 outwardly and the U-shaped member 33 downwardly so that the plate 34 will not be in position to be engaged by the roller 37 on the arm 36 heretofore referred to. The shaft 38 is rotated for the purpose heretofore stated by means of the lever 41 fully crummed on one of the arms of the U-shaped frame 2 and connected with a laterally extending arm 42 on the shaft 38 by means of a rod 43. 44 indicates a detent mounted on the frame 2 and adapted to engage lever 41 to hold it in adjusted positions, said detent comprising a spring member preferably made of wire and having a hump 45 that engages said lever and holds it in its two positions. 46 indicates a bell crank lever mounted on the cross bar 29 and having one of its terminals adapted to engage the U-shaped member 33 to limit the rearward movement of said member under the impulse of the spring 35 heretofore referred to. 47 indicates a stop secured to the U-shaped bracket 5 to limit the movement of the lever 9 on the shaft 7 during the downward movement of the receptacle 12. 48 indicates a shaft journaled in the lower ends of the arms of the U-shaped bracket 2 and adapted to be rotated by a crank arm 49 mounted on one of its terminals and 50 indicates a chute secured to said shaft intermediate of its terminals, said chute being adapted to be positioned by means of said shaft so that the contents of the receptacle 12 pouring from the spout 16 may be directed to either side of the receptacle and furthermore, said chute may be adjusted to deliver at different heights as may be required through the different constructions of stalls.

Having thus described my invention what I claim is:

1. In a cattle feeding machine, a balanced feed receptacle, means to automatically adjust the machine so that the receptacle may be temporarily the heavier, means to permit egress of feed from the receptacle when overbalanced, and means to close the receptacle when balanced.

2. In a cattle feeding machine, a vertically movable receptacle, a hopper communicating with said receptacle, doors closing the delivery opening of said hopper, means to hold the receptacle in a raised position.

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with the doors closed, and means to release said receptacle to downward movement and to simultaneously open the doors.

3. In a cattle feeding machine, a vertically movable receptacle for containing feed and having its delivery opening provided with a valve, a scale beam operatively connected with said receptacle, a weight slidably mounted on said scale beam and adapted to balance the receptacle and its contents, means to adjust said weight on the scale beam to permit the receptacle and its contents to overbalance it, and means to open said valve when the receptacle overbalances the weight aforesaid.

4. In a cattle feeding machine, a track, a frame movably mounted on said track, a feed receptacle suspended on said frame, a scale beam operatively connected with said receptacle, a weight slidably mounted on said scale beam, a valve mounted in the delivery opening of said receptacle, and means secured to said track and mounted on the frame aforesaid to move the weight to permit the receptacle and its contents to overbalance it and open the valve aforesaid.

5. In a cattle feeding machine, a track, a frame movably mounted on said track, a shaft pivotally mounted on said frame, a receptacle suspended on said shaft, a scale beam secured to the shaft, a weight slidably mounted on said scale beam, a valve mounted in the delivery opening of said receptacle, and means secured to said track and mounted on the frame aforesaid to move the weight to permit the receptacle and its contents to overbalance it and open the valve aforesaid.

6. In a cattle feeding machine, a track, a frame movably mounted on said track, a shaft pivotally mounted on the frame, a bar secured to said shaft, a lever pivotally mounted on the frame and having one of its terminals operatively secured to one of the terminals of the bar aforesaid, a receptacle suspended from the free terminals of the lever and bar aforesaid, a valve for controlling the delivery opening of said receptacle, a scale beam secured to said shaft, a weight slidably mounted on said scale beam, and means secured to said track and frame to move the weight on said scale beam to permit the contents of the receptacle to overbalance said weight and to open the valve in the receptacle.

7. In a cattle feeding machine, a track, a frame movably mounted on said track, a shaft pivotally mounted on the frame, a receptacle suspended from said shaft, a hopper forming the delivery opening of said receptacle, a scale beam secured to said shaft, a weight slidably mounted on said scale beam, and means secured to said track and frame to move the weight on said scale beam to permit the contents of the receptacle to overbalance said weight and to open the valve in the receptacle.

8. In a cattle feeding machine, a track, a frame movably mounted on said track, a shaft pivotally mounted on said frame, a receptacle suspended from said shaft and adapted for vertical movement, a scale beam secured to said shaft, a weight movably mounted on said scale beam, said weight being adapted to balance the receptacle and its contents, a shaft journaled on said frame, an angular plate operatively connected with said shaft, an arm secured to said shaft, a rod pivotally secured to said arm, said weight being provided with an opening to receive said rod and to permit slidable movement thereof therein, an arm pivotally secured to said weight and provided with an opening to receive said rod, a spring engaging said arm to move it away from the weight and into position to frictionally engage the rod aforesaid, an arm secured to said track and adapted to engage the angular plate aforesaid to rock the shaft, said receptacle being provided with a hopper, doors mounted to close the delivery opening of said hopper, and means to open said doors when the receptacle moves downwardly and to close the doors during the upward movement of the receptacle.

9. A cattle feeding machine comprising a track, a frame movably mounted on said track, a shaft pivotally mounted on said frame, a bar secured to said shaft, a lever pivotally mounted on the frame, a link pivotally connecting adjacent terminals of the lever and bar, a receptacle suspended from the free terminals of the bar and lever, a hopper forming the delivery opening of said receptacle, doors pivotally mounted on said hopper and adapted to close the opening therein, means operatively connected with the frame to operate the doors to open them during downward movement of the receptacle and to close them during upward movement thereof, a scale beam secured to said shaft, a weight slidably mounted on said scale beam, another shaft journaled on said frame, an angular plate operatively secured to said shaft, an arm secured to said shaft and adapted to move said weight in one direction when said shaft is rotated, and an arm secured to the track and adapted to engage the angular plate aforesaid to rotate the last mentioned shaft.

10. In a cattle feeding machine, a weight controlled feeding receptacle, a shaft suitably journaled, an arm secured to said shaft and operatively connected to said weight to move the weight during rotation of the shaft in one direction, a U-shaped member secured to said shaft, an angular plate pivotally mounted in said U.
shaped member, said plate being adapted to be engaged to rotate said shaft, a rod pivotally mounted on said frame, one of the terminals of said rod being provided with an angular extension adapted to engage said plate, a crank on the other terminal of said rod, a lever suitably fulcrumed on said frame, and a rod connecting said lever and crank, the first mentioned rod being adapted to be rotated to move the angular plate 10 aforesaid into an inoperative position.

In testimony whereof I affix my signature in presence of two witnesses.

ELVEN NORBO.

Witnesses: Ludwig Halley, Carrie Johnston.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."