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ALFALFA MEAL MIXER.
APPLICATION FILED NOV. 6, 1909.

Patented May 17, 1910.

2 SHEETS—SHEET 2.

Fig. 4.

Fig. 5.

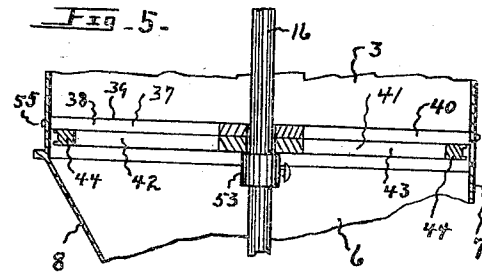
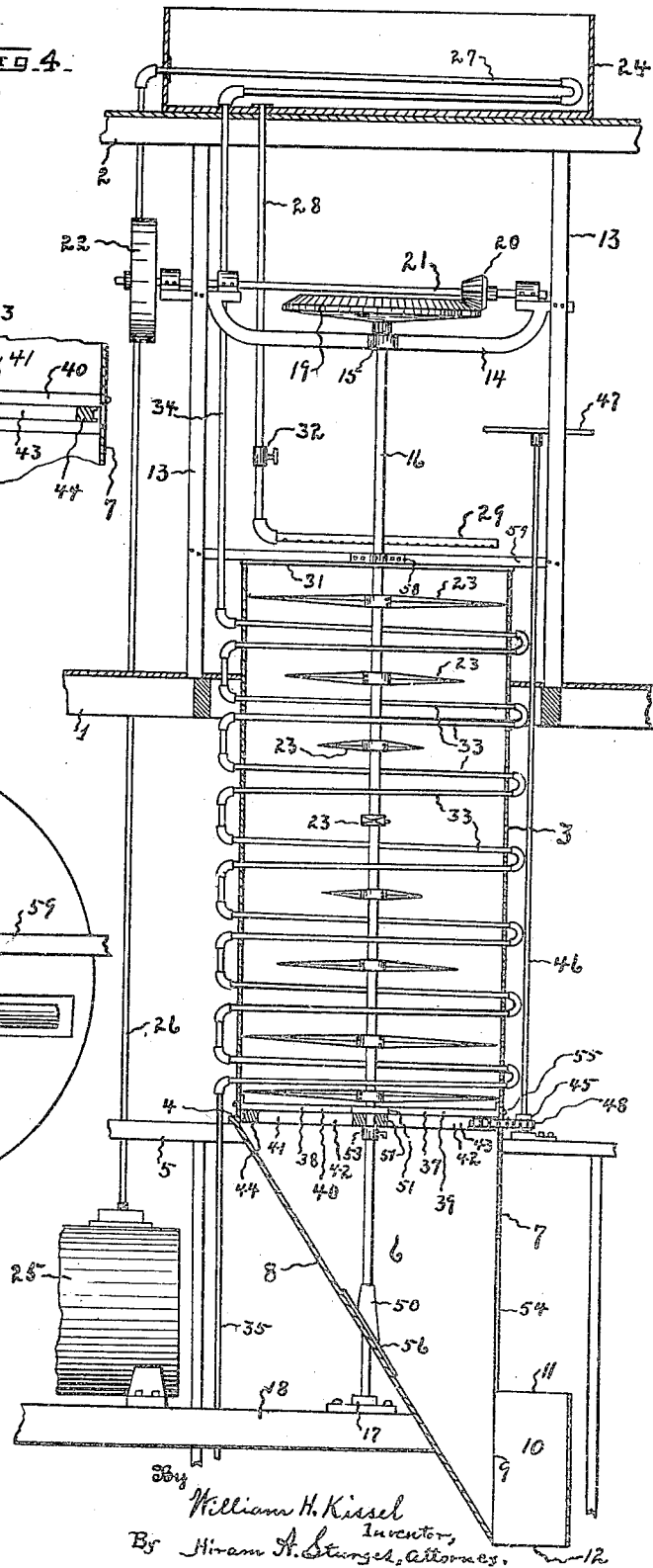
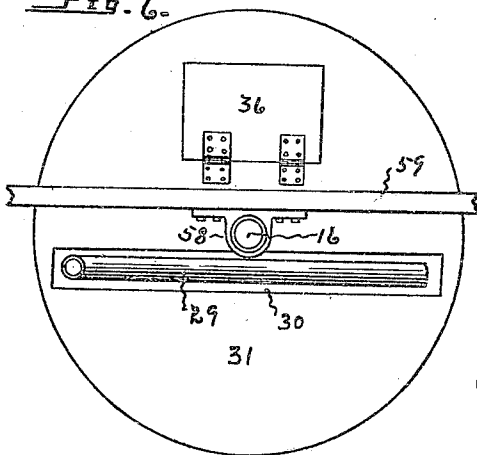


Fig. 6.



Witnesses

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ALFALFA-MEAL MIXER.

958,254.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM H. KISSEL, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Alfalfa-Meal Mixers, of which the following is a specification.

This invention relates to improvements in alfalfa meal mixers of the class adapted for use in connection with the mixing of molasses with ground alfalfa, to provide a prepared food for stock. The herein described mixer may also be used in connection with the preparation of other ground forage.

The object of the invention, broadly, is to provide means for thoroughly mixing the ground alfalfa and molasses or other fluid saccharine material, which will be comparatively economical in construction, and comprising few parts so that connections may be conveniently made when assembling or disassembling the structure, and will be reliable in operation.

The means consist, briefly, of a stationary mixing tank heated by steam sections which traverse the tank between the radial arms or stirrers, moved by a central, vertical shaft, the molasses being heated and supplied to the tank by a valve controlled member, means being provided for the removal of the contents of the tank and adjustable means to control the passage of the mixed or prepared product from the chute or exit way of the tank.

With these objects in view as well as others to be hereinafter explained, the invention discloses a novel combination and arrangement of parts as described and claimed, and as illustrated in the drawing, it being understood that changes in form, size, proportion and minor details may be made within the scope of the claims without departing from the spirit of the invention or sacrificing any of its advantages.

In the drawing forming a part of the application, Figure 1 is a vertical, side view of the mixing tank and exterior parts connected therewith. Fig. 2 is a plan view of the stationary, apertured bottom of the tank. Fig. 3 is a plan view of the apertured, rotatable closure-plate employed in connection with the stationary bottom. Fig. 4 is a vertical, side view of an alfalfa meal mixer, and connecting parts, embodying my in-

vention, the mixing and feed tanks being in section. Fig. 5 is a transverse sectional view of stationary bottom and the rotatable closure plate. Fig. 6 is a plan view of the mixing tank. Fig. 7 is a plan view of a pair of stirring-arms.

Referring now to the drawing for a more particular description, numerals 1 and 2 indicate respective lower and upper platforms or floors of a building, and I employ a mixing tank 3, vertically disposed, and preferably having a flange 4 near its lower end, which may be seated upon support 5. The tank, preferably, is formed as a cylindrical casing, its lower end being provided with a chute 6, preferably having a vertical, flat, front wall 7, and a transversely curved, downwardly inclined and tapered rear wall 8 terminating below wall 7, and thereby providing, near its lower end, an outlet 9, said chute having a chamber or recess 10 communicating with its interior through this outlet, recess 10 having an open top and bottom indicated respectively at 11 and 12, the terminal exit way of the chute being opening 12.

Between platforms or floors 1 and 2 at opposite sides of tank 3 are provided standards 13, and secured therebetween, above the tank, is yoke 14 providing a bearing 15 for the vertical shaft 16, said shaft being disposed centrally of the tank and traversing wall 8 of the chute and having its lower end seated in foot plate 17, upon platform 18. Upon the upper end of shaft 16 is mounted gear wheel 19, meshing with drive pinion 20 of horizontal shaft 21, this shaft having suitable bearings upon yoke 14 and actuated by pulley 22, this pulley being rotated by any convenient source of power.

Secured at suitable longitudinal intervals upon shaft 16 within the mixing tank are provided horizontal stirring-arms 23. These arms are disposed angularly with reference to each other, each having a length substantially equal to the diameter of the tank and, preferably, they are tapered from near their middle toward their ends.

Seated upon support 2 is tank 24 for containing molasses; and connected with boiler 25 is steam conducting pipe 26 having a horizontal section 27 disposed within this tank for the purpose of causing the molasses to attain a desired degree of heat so that, while at a high temperature it will more readily unite or become assimilated with the

alfalfa in the mixing tank. A vertical supply pipe 28 connects with the bottom of tank 24 and is provided with a perforated, horizontal pipe portion 29 disposed in the plane of opening 30 of cover 31 of tank 3, and by means of valve 32 the supply of heated molasses may be regulated which passed from tank 24 to tank 3.

I provide a plurality of pipe sections 33, each being disposed between two of the arms 23, and these sections traverse casing 3 transversely and, substantially, through its middle, the pipes of a section being disposed upon opposite sides of shaft 16. By this construction the circular movements of arms 23 are not obstructed by the pipes and the terminals of the arms may be disposed nearly in contact with the inner surface of the wall of the casing, and thereby tending to loosen or detach, from the wall, adhering material. Pipe sections 33 form a part of the heating system provided by the boiler and pipes 26 and 27, the connecting part being vertical pipe 34, and, communicating with the lower series of connected pipe sections 33 is waste pipe 35.

In operation, ground alfalfa is passed regularly within tank 3, through door 36 of cover 31, in measured quantities, a certain quantity or proportion of heated molasses being supplied by the perforated portion 29 of pipe 28, under control of valve 32, arms 23 moving circularly and tending to cause a uniform mixing of the food parts.

At 37 is shown the stationary bottom of tank 3. It is formed as a flat plate or disk having radial apertures 38 preferably of uniform shape and extent intermediate plate members 39, and plates 39 are also of uniform size and have divergent, radial edges 40; and while the apertures and plates 39 are each fan-shaped, the apertures have less areas than the plates. The stationary bottom may be secured in the tank by any convenient means, as by keepers or screws 55 traversing the wall of the tank, and best shown in Fig. 2.

At 41 is indicated a secondary bottom or rotatable plate operating as a cut-off in connection with bottom 37. It is a flat structure and is provided with large apertures 42 having substantially the same area and shape as plates 39, and is provided with fan shaped blades or barrier-plates 43 of the same area and shape, substantially as apertures 38 of bottom 37. The secondary bottom 41 has a less diameter than casing 3, and is provided with a rim or sprocket-wheel 44.

At 45 is indicated a small sprocket-wheel mounted upon support 5 and having a vertical operating-rod or shaft 46 with a hand wheel 47 upon its upper end by means of which an operator, while upon platform 1, may cause a rotation of sprocket wheel 45; and by means of sprocket-chain 48 in en-

gagement with sprocket-wheels 44 and 45, the secondary bottom 41 may be reliably rotated, chain 48 preferably engaging idler sprocket-wheel 49, supported in any convenient manner to permit this engagement.

It will be seen that a complete closure may be made of apertures 38 of the stationary bottom 37, by causing a partial rotation of shaft 46, since plates 43 may be seated immediately below these apertures, and as both bottoms are flat and are seated in contact with each other, the rotatable bottom 41 provides a cut-off so that the contents of the mixing tank, when completely filled, may be held or detained until thoroughly mixed.

In practice, the food materials above mentioned are fed regularly within the tank in the manner first described, and an adjustment may be made of hand wheel 47 so that plates 43 of the movable bottom will be either wholly without or partly within the plane of apertures 38 of the stationary bottom, as may be desired. When plates 43 are wholly within the plane of plates 39 a greater amount of mixed material will, of course, pass from mixing tank 3 to the chute, and this adjustment is quite important, since the capacity of the mixer and output of the material may be varied, this depending upon the quality or quantity of the saccharine material and fineness of the ground alfalfa; and an adjustment may be readily made of the movable bottom so that closures or partial closures of apertures 38 may be made for this control.

The fan-shaped apertures in connection with the fan-shaped plates wings or blades mentioned for the stationary and movable bottoms of tank 3 is a preferred construction, and no other form would operate to so good an advantage since the broad portion of the apertures are near the periphery of the tank wall where the greater portion of the material rests after being mixed, and the construction as described tends to provide for a uniform discharge of the material into the chute.

One of the objects in forming the chute in the manner described is to provide a passage way for the mixed material, which may be visible to the operator while upon platform 1 who attends to and regulates the feeding of the food material. Since the material, after being mixed, passes through ways 9 and 12, the movement may be visible to said operator through opening 11 of recess 10, this being useful so that any obstruction or other cause which might prevent the passage of material through the cut-off may be determined. Also by reason of the form of the chute, the material is collected within a small space at exit way 12, where it is placed in sacks or otherwise packed, as a completely prepared product. Another object in employing this preferred form of chute, is to

provide a support and a mounting, exteriorly of the chute, for the lower end of shaft 16, for, by this construction, the shaft may traverse wall 8 of said chute. An upright jacket or sleeve 50 is provided and is secured upon the inner side of wall 8, and is tapered from its base 56 to its upper end, and since it circumscribes the shaft and extends above or inwardly of wall 8, the construction tends to prevent wet material from passing downward upon the shaft through the necessary shaft opening of said wall 8.

The preferred construction for the movable and stationary bottoms of the mixing-tank is to provide an apertured central core or body portion 51 which may be traversed by the shaft. The rotatable bottom has a bearing upon the shaft, said shaft being seated in aperture 52 of its core; the stationary bottom has a similar bearing upon the shaft; and collar 53 is keyed to the shaft as a support for said rotatable bottom.

The effect of heat lessens the density of the molasses and causes its absorption by the alfalfa, and on this account the series of pipe sections 33 are employed; while the material moves downward within the mixing tank, it is subjected uniformly to the heat, while agitated or stirred by arms 23.

An opening 54 is provided in wall 7 of the chute, so that the interior of the chute may be accessible, for purposes of cleaning or making repairs.

The stirring-arms are preferably formed of two arm portions 57, the inner ends of these portions being rigidly secured together and upon the shaft, as best shown in Fig. 7.

In order that shaft 16 may be adequately sustained, I provide a boxing 58 therefor, the same being mounted upon cross plate 59 above cover 31, said cross plate being suitably secured upon standards 13.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is,—

1. In an alfalfa meal mixer, the combination with a support, a cylindrical, upright tank upon said support, said tank having terminal passage ways and provided with a lower terminal chute communicating with its lower passage way; a plurality of connected pipe-sections transversely traversing the tank; means for heating said pipe-sections; a vertical, rotatable shaft disposed centrally of said tank and traversing the wall of the chute to a mounting of its lower end upon said support, said shaft being provided with transverse arms disposed between said pipe-sections; and means to make a closure of the lower passage way of said tank.

2. A mixing apparatus comprising an upright receiving tank having an intake and

provided with a first apertured bottom, a feeding tank in communication with said intake; means for heating said feeding tank and said cylindrical tank; a vertical, rotatable shaft having horizontal arms disposed within said receiving tank and traversing said first apertured bottom; a secondary apertured bottom circumscribing and supported by said shaft disposed adjacent to said first apertured bottom; means to cause a rotatable movement of said secondary bottom to dispose its apertures in the plane of the apertures of said first bottom.

3. A mixing apparatus for the purposes described, comprising an upright receiving tank having an intake and provided with a first apertured bottom, a feeding tank in communication with said intake, a plurality of connected pipe-sections traversing said receiving tank; an upright, rotatable shaft disposed within said receiving tank and traversing said first apertured bottom, said shaft being provided with transverse arms disposed intermediate the pipe-sections; a secondary apertured bottom circumscribing and supported by said shaft and disposed adjacent to said first bottom; means for heating said connected pipe-sections; means for heating said feeding tank; and means to cause a rotatable movement of said secondary bottom, its apertures being disposed in alinement with the apertures of the first bottom.

4. A mixing apparatus as described, comprising a vertically disposed cylindrical casing having an intake and provided with a bottom having radially formed apertures, a feeding tank in communication with said intake, a plurality of horizontal pipe-sections having their terminals mounted at spaced intervals in the wall of and at opposite sides of the casing, the terminals of the pipes of said sections being in communication; a pivotally mounted closure plate having radially formed apertures and disposed adjacent to and parallel with the bottom of said casing; a vertical, rotatable shaft disposed in said casing and provided with transverse, outwardly-tapered arms disposed intermediate said pipe-sections; means to cause a rotation of said closure plate, its apertures moving into alinement with the apertures of said bottom; means for heating said feeding tank, and means for heating said connected pipe-sections.

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

WILLIAM H. KISSEL.

Witnesses:

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E. C. HODDER.