

E. S. DIXON & H. E. WERNER.
FEED MIXER.

APPLICATION FILED JUNE 24, 1912.

Patented May 20, 1913.

2 SHEETS-SHEET 1.

1,062,086.

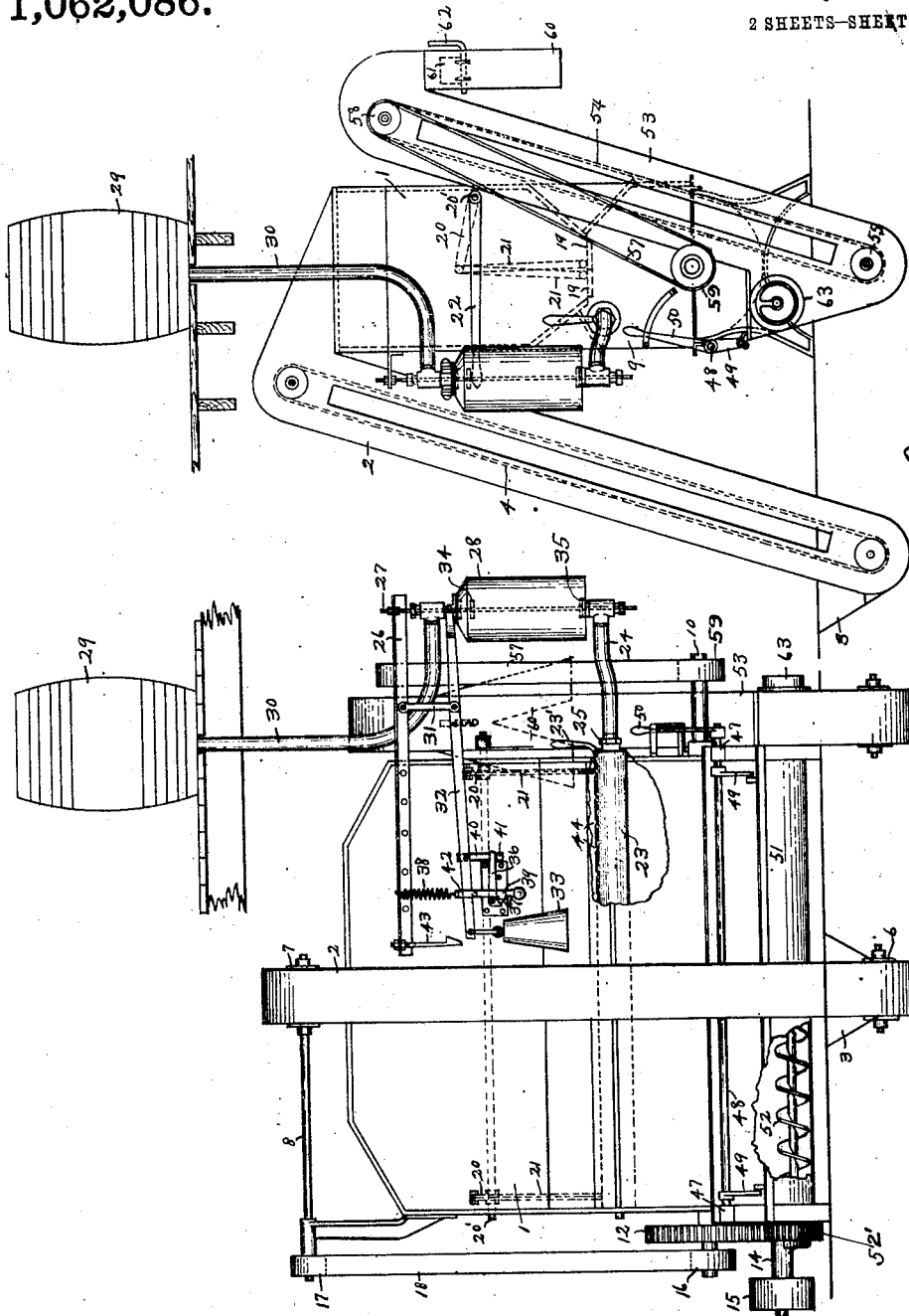


Fig. 2.

Fig. 1.

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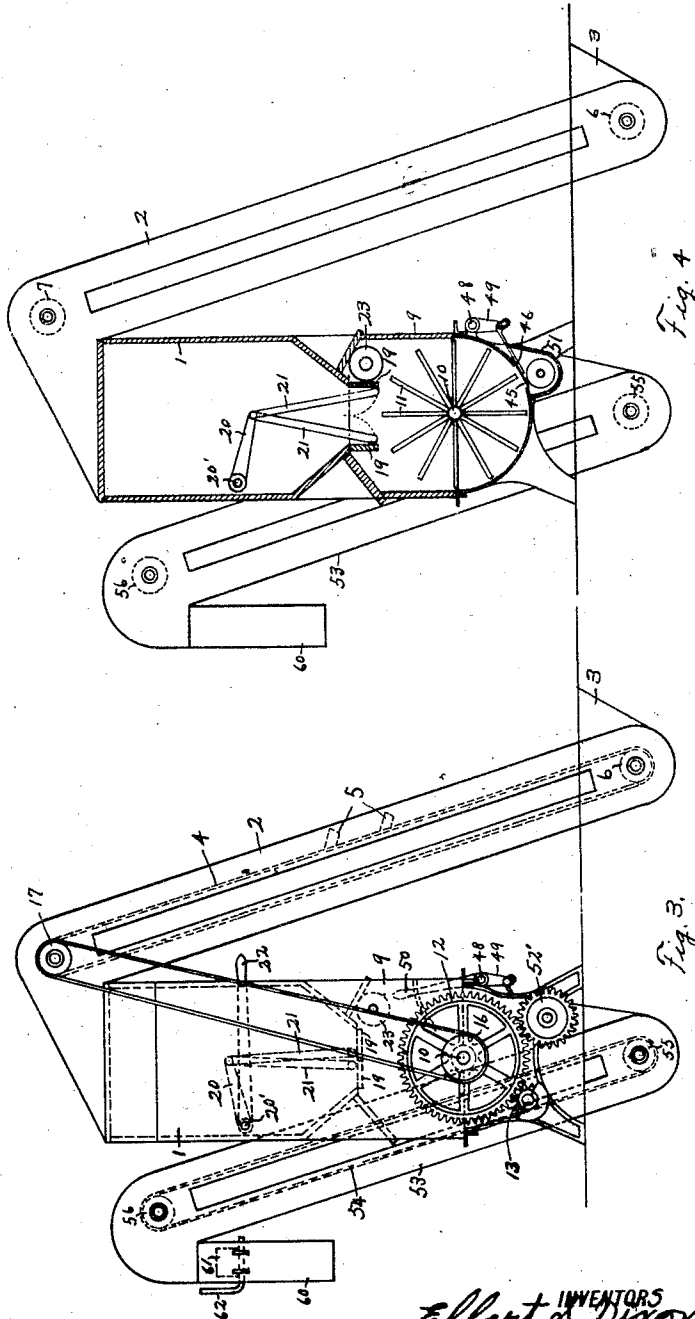
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UNITED STATES PATENT OFFICE.

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FEED-MIXER.

1,062,086.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ELBERT S. DIXON and HENRY E. WERNER, citizens of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Feed-Mixers, of which the following is a specification.

Our invention relates to new and useful improvements in feed mixers.

The object of this invention is to provide a device of the character described constructed for the purpose of mixing such feed as is used for stock consumption and comprehends a mechanism whereby the syrup commonly used as an ingredient in such foods may be applied to and thoroughly mixed therewith. This device is so constructed as to receive the feed from the usual feed bin and transfer the same to the mixing chamber wherein it is thoroughly mixed and mingled with the syrup and from which it is transferred to a conveyer and thence delivered to the bags or other receptacle for receiving the prepared feed.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the device shown partially in section. Fig. 2 is an end view looking toward one end of the machine, Fig. 3 is an end view of the other end of the machine, and Fig. 4 is an end view similar to that shown in Fig. 3, but partially shown in section.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 refers to a measuring chamber arranged in the upper part of the mixer casing into which the elevator 2 discharges the ground grain, hay, or other feed elevated from the feed bin 3. This elevator consists of the usual belt 4 carrying elevator buckets 5, said belt operating upon suitable rollers 6 and 7, the latter of which is driven through shaft 8 mounted in suitable bearings carried by the mixer casing.

Beneath the measuring chamber 1 is the mixing chamber 9 which is approximately cylindrical in shape. Extending axially through this chamber and transversely of

the mixer is a shaft 10 which is rotatable in suitable bearings in the ends of said chamber. This shaft is provided with a plurality of radiating arms or agitators 11 arranged therealong and provided for the purpose of agitating the contents of said feed chamber. One end of the shaft 10 carries the rigidly mounted spur gear wheel 12 which meshes with and receives rotation from the spur gear wheel 13 rigidly mounted upon the shaft 14, operating in suitable bearings in the end wall of the mixer casing. The shaft 14 has a rigidly mounted pulley 15 which receives rotation from a suitable motor (not shown). The shaft 10 also carries a rigidly mounted pulley 16 through which rotation is imparted to the pulley 17, carried by the shaft 8, through the belt 18.

The bottom of the measuring chamber 1 is provided with two trap doors 19, 19 arranged to open downwardly. Two arms 20, 20 are secured to the same shaft 20', one on each end of the end walls of the measuring chamber 1 and to the free ends of these arms are pivoted two pairs of links 21, 21, whose lower ends are also pivoted to the free sides of the trap doors 19, 19. A hand lever 22 is rigidly secured to one end of the shaft 20' and as said hand lever is manipulated up and down, a corresponding movement is imparted to the free ends of the arms 20, 20, and to the links 21, and the doors 19 may thus be opened by a downward movement of the lever 22 and closed by an upward movement thereof, and when a suitable quantity of feed is delivered into the measuring chamber 1, the lever 22 may be manipulated downwardly and the contents of the measuring chamber will be discharged through the trap doors 19 into the mixing chamber 9.

In the upper part of the mixing chamber is arranged a syrup receptacle 23 which is cylindrical in shape and extends entirely along said chamber from end to end of the mixer. This receptacle is rotatable in suitable bearings in the end walls of the mixing chamber 9 and one end thereof is provided with a flexible inlet pipe 24 connected thereto by means of a swivel joint 25. Secured to the casing of the measuring chamber and projecting out some distance from the side thereof is an angle-iron support 26, depending from the free end of which is a rod 27. A receptacle 28 is supported by this rod 27 and has a limited slidable movement thereon.

The numeral 29 refers to a syrup cask which is supported above the receptacle 28 and from the bottom thereof leads a flexible pipe 30 which conducts the syrup from said cask and discharges the same through the top of the receptacle 28.

The numeral 31 refers to a link whose upper end is pivoted to the support 26 and whose lower end is pivoted to the beam 32. The outer end of this beam is pivoted to the top of the receptacle 28 and the other end thereof supports a weight 33.

The rod 27 carries two valves 34 and 35 rigidly mounted thereon and within the receptacle 28. The former of these valves is arranged to close the discharge end of the pipe 30 and the latter is arranged to close the receiving end of the pipe 24.

When the receptacle 28 is empty, the weight 33 will operate through the beam to hold said receptacle elevated in which case the valve 35 will rest against the receiving end of the pipe 24 and close the same, as shown in Fig. 1 and the valve 34 is so positioned on the rod 27 as to open the discharge end of the pipe 30 when the receptacle 28 is elevated. When syrup has been admitted to the receptacle 28 until it becomes sufficiently heavy to overbalance the weight 33, said weight will be elevated and the receptacle will move downwardly carrying the discharge end of the pipe 30 against the valve 34 and cutting off the flow of syrup and the receiving end of the pipe 24 will move away from the valve 35 and will thus be open and the syrup will flow from the receptacle 28 into the receptacle 23.

Underneath the free end of the beam 32 and pivoted at one end to the casing of the measuring chamber is a trigger 36, whose pivoted end is provided with a shoulder 37 and depending from the support 26 is a strong coil spring 38 attached to the lower end of which is a hook 39 which engages over said shoulder 37. The beam 32 also carries a spring 40 whose lower end carries a catch 41 which engages underneath the free end of the trigger 36. The free end of the beam 32 passes through an oblong slot 42 in the hook 39. This slot is of sufficient length to permit the beam 32 to have a slight vertical movement therein.

When the receptacle 28 receives a sufficient quantity of syrup to cause it to overbalance the weight 33, the free end of the beam 32 moves upwardly in the slot 42. This upward movement of the free end of said beam exerts a pull through the catch 41 upon the free end of the trigger 36 and disengages the hook 39 from the shoulder 37 of said trigger. When the trigger 36 is disengaged, the hook 39 is released to the pull of the spring 38 which operates to suddenly elevate the free end of the beam 32 and closes the discharge end of the pipe 30 and

opens the receiving end of the pipe 24. When the free end of the beam 32 is suddenly elevated, it is forced to engage over the spring catch 43 depending from the inner end of the support 26 and the pipe 30 is thus held closed and no more syrup is admitted to the receptacle 28. When it is desired to again open the receptacle 28 to the reception of the syrup, the spring catch 43 is manually released from the free end of the beam 32 and the hook 39 is manually engaged over the shoulder 37 of the trigger 36 and said trigger is open, as shown in Fig. 1 and will so remain until a sufficient quantity of syrup is again admitted to overbalance the weight 33. It is obvious that the quantity of syrup will be varied in accordance with the size of said weight 33 or in accordance with the adjustment of the weight on the beam 32.

The receptacle 23 is provided along its upper side with a row of orifices 44 and after the feed has been discharged from the measuring chamber into the mixing chamber, the receptacle 23 may be manually turned, through the hand lever 23' until the orifices 44 are on the underside thereof and the syrup will be discharged through said orifices into the mixing chamber and by the rotation of the agitators, thoroughly mixed with the contents of the mixing chamber.

Along the lower side of the mixing chamber, is a passageway 45 extending from end to end of said chamber which is normally closed by the sliding door 46. Mounted in suitable bearings 47, 47', carried by the frame work of the mixer, is a rotatable shaft 48 which carries rigidly mounted arms 49, 49', whose free ends are pivotally attached to the upper edge of the sliding door 46. One end of the shaft 48 carries a rigidly mounted lever 50 which may be manipulated back and forth and the shaft 48 thereby partially turned in either direction. When the lever 50 is manipulated forwardly, the arms 49 operate to withdraw the sliding door 46 from over the passageway 45 and the mixture is permitted to pass from the mixing chamber through said passageway into a semi-cylindrical compartment 51 arranged underneath the mixing chamber and extending from end to end thereof. This compartment is provided with a screw conveyer 52, by means of which the mixture is forced along through the compartment 51 and delivered into an elevator 53. The conveyer shaft carries a spur gear wheel 52' which meshes with spur gear wheel 12 and receives rotation therefrom.

The elevator 53 is provided with a belt 54 carrying elevator buckets, (not shown) similar to the buckets 5. The belt 54 operates over the rollers 55 and 56, the latter of which is driven by the belt 57 which oper-

ates on pulleys 58 and 59, the latter of which is rigidly mounted on the shaft 10 and the former of which is rigidly mounted on the shaft of roller 56. This elevator is provided with a double discharge 60, 60 provided to discharge the mixed feed into sacks or bins. These discharges are controlled by a gate 61 which is operated by means of a hand lever 62. The lever 62 may be manipulated so that the gate 61 will close either of the discharges 60 and divert the contents of the elevator through the other discharge or it may be so manipulated that the gate will separate the contents of the elevator and allow the contents to discharge through both of the discharges at the same time, as shown in Fig. 1.

The discharge end of the conveyer 52 has an overflow 63 and in case the elevator 53 should stop or begins to clog, the contents of the conveyer will be forced through said overflow and the conveyer will not become clogged or choked.

While we have shown only one form of our device, it is obvious that the mechanical arrangement thereof may be varied without departing from the principle thereof and we hereby reserve the right to make mechanical changes in the construction thereof, so long as we do not depart from the principle thereof, as set forth in the appended claims.

What we claim is:—

1. A mixing device composed of a measuring chamber and a mixing chamber arranged therebelow, a conveyer arranged to discharge the contents thereof into said measuring chamber, a means for discharging the contents of the measuring chamber into the mixing chamber, a conveyer arranged adjacent to the mixing chamber and provided to receive the contents of said chamber and a gate controlling the passage of the contents of said mixing chamber to said conveyer.

2. A mixing device including a measuring chamber and a mixing chamber therebeneath, a suitable agitator arranged in said mixing chamber, a means controlling the passage of the contents of the measuring chamber to the mixing chamber, a conveyer arranged adjacent to the mixing chamber and provided to receive the contents thereof, a gate controlling the passage of the contents of the mixing chamber to said conveyer, means for operating said agitator, means for operating said conveyer.

3. A mixing device including a suitable measuring chamber and a conveyer discharging therein, a mixing chamber arranged beneath said measuring chamber and provided with a discharge outlet therefrom, a gate arranged at the bottom of said measuring chamber for controlling the passage of the contents of the former chamber to

the latter, a manual mechanism for operating said trap door, an agitator within said mixing chamber, a conveyer arranged adjacent to the mixing chamber and so disposed as to receive the contents of said mixing chamber passing through the outlet passageway thereof, means for operating said agitator and means for operating said conveyer.

4. A mixing device including a measuring chamber and a suitable elevating mechanism discharging therein, a gate arranged in the bottom of said measuring chamber and a mechanism for opening and closing the same, a mixing chamber arranged beneath said measuring chamber and having an outlet passageway therein, a gate controlling said passageway and means for opening and closing the same, a conveyer adjacent to said mixing chamber so disposed as to receive the contents discharged through said outlet passageway, an agitator within said mixing chamber, means for operating said agitator, means for operating said conveyer and a rotatable receptacle arranged in the mixing chamber for containing a fluid ingredient, said receptacle having orifices in one side thereof for the discharge of the contents of said receptacle.

5. A mixing device composed of a suitable casing having an upper and lower compartment and provided with a suitable passageway from the former to the latter, a gate controlling said passageway and a manual mechanism for opening and closing the same, an agitator in the lower compartment and means for operating the same, said lower compartment being provided with a discharge outlet and a slidable gate controlling said outlet, a mechanism for operating said gate, a conveyer adjacent to said lower compartment, positioned so as to receive the contents thereof discharged through said discharge opening, an elevator arranged to receive the contents of said conveyer, said elevator having a plurality of discharges and a means controlling the passage of the elevator contents through said discharges.

6. A mixing chamber including a suitable casing having an upper and lower compartment and a passageway leading from the former to the latter, a gate controlling said passageway and a manual mechanism for operating the same, a rotatable fluid receptacle in the lower compartment having a plurality of orifices along one side thereof, means for rotating said receptacle so that the contents thereof will flow through said orifices, an agitator within said lower compartment, said lower compartment having a discharge passageway in the under side thereof, a sliding gate controlling said passageway and means for operating said gate,

a conveyer arranged to receive the contents of said last mentioned receptacle which passes through said discharge openings, all in combination with an elevator discharging into the upper compartment and an elevator for receiving from said conveyer.

7. A mixing chamber including a suitable casing having an upper and lower compartment and a passageway leading from the former to the latter, a gate controlling said passageway and a manual mechanism for operating the same, a rotatable fluid receptacle in the lower compartment having a plurality of orifices along one side thereof, means for rotating said receptacle so that the contents thereof will flow through said orifices, a fluid reservoir and a feed pipe leading therefrom and discharging into said receptacle, an agitator within said lower compartment, said lower compartment having a discharge passageway in the under side thereof, a sliding gate controlling said passageway and means for operating said gate, a conveyer arranged to receive the contents of said last mentioned receptacle which pass through said discharge openings, all in combination with an elevator discharging into the upper compartment and an elevator for receiving from said conveyer.

8. A mixing device, composed of a suitable casing having an upper and lower compartment and provided with a suitable passageway from the former to the latter, a gate controlling said passageway and a manual mechanism for opening and closing the same, an agitator in the lower compartment and means for operating the same, said lower compartment being provided with a discharge outlet, and a slidable gate controlling said outlet, a mechanism for operating said gate, a conveyer adjacent to said lower compartment positioned so as to receive the contents thereof discharged through said discharge opening, an overflow outlet carried by the discharge end of said conveyer, an elevator arranged to receive the contents of said conveyer, said elevator having a plurality of discharges and a means controlling the passage of the elevator contents through said discharges.

9. A device of the character described including a measuring chamber and a mixing chamber arranged therebeneath, an elevator discharging its contents in to the measuring chamber, a gate arranged in the bottom of said measuring chamber and a mechanism for opening and closing the same and thereby discharging the contents of

said measuring chamber into said mixing chamber, a rotatable fluid receptacle in the mixing chamber having a plurality of orifices in one side thereof, means for automatically supplying a predetermined quantity of fluid to said receptacle, means for rotating said receptacle, an agitator within said mixing chamber, a conveyer casing arranged adjacent to the mixing chamber and having a passageway along one side thereof which communicates with the mixing chamber, a conveyer within said casing provided to convey the contents of said casing which pass from the mixing chamber through said passageway, a slidable gate controlling said passageway, and a mechanism for operating said slidable gate.

10. In a device of the character described, a rotatable fluid receptacle having a row of perforations along one side thereof, means for rotating the receptacle, a fluid reservoir, a passageway leading from the reservoir to the receptacle and a mechanism controlling said passageway whereby a predetermined quantity of fluid is admitted from said reservoir to said receptacle.

11. A mixing device including a measuring chamber and a suitable elevating mechanism discharging therein, a gate arranged in the bottom of said measuring chamber and a mechanism for opening and closing the same, a mixing chamber arranged beneath said measuring chamber and having an outlet passageway therein, a gate controlling said passageway and means for opening and closing the same, a conveyer adjacent to said mixing chamber so disposed as to receive the contents discharged through said outlet passageway, an agitator within said mixing chamber, means for operating said agitator, means for operating said conveyer, a rotatable receptacle arranged in the mixing chamber for containing a fluid ingredient, said receptacle having orifices in one side thereof for the discharge of the contents of said receptacle, a fluid reservoir, a passageway leading from the reservoir to the receptacle and a mechanism controlling said passageway whereby a predetermined quantity of fluid is admitted from the reservoir to the receptacle.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ELBERT S. DIXON.
HENRY E. WERNER.

Witnesses:
J. W. YEAGLEY,
MAY MONTGOMERY.