W. J. BATES.

GRAIN MIXER OR BLENDER.

APPLICATION FILED APR. 1, 1915.

1,185,865.

Patented June 6, 1916.

2 SHEETS—SHEET 1.

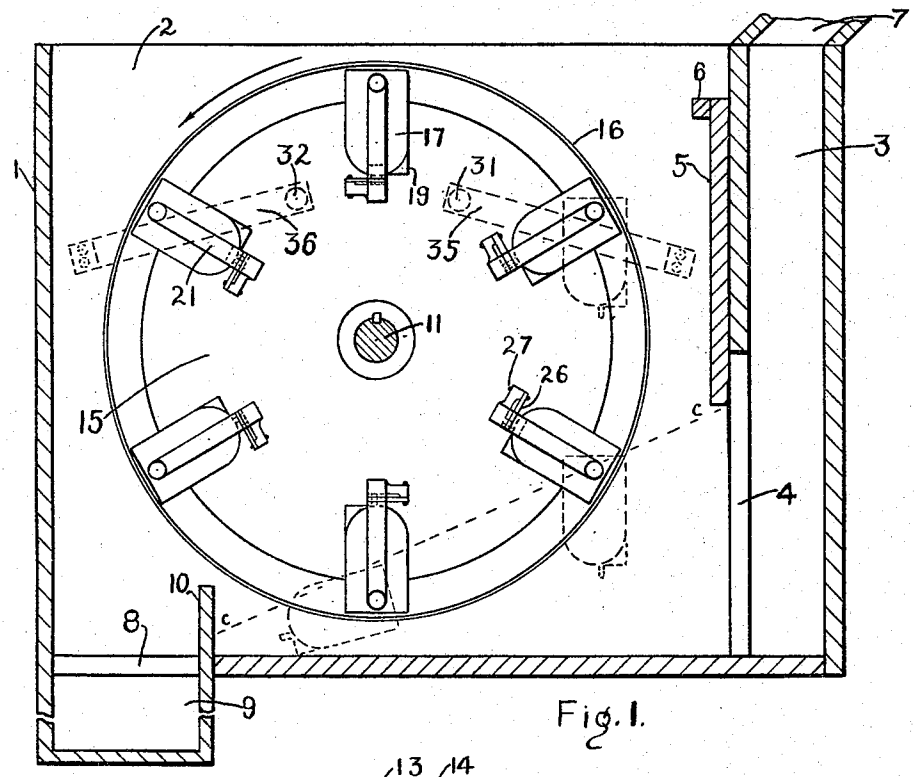


Fig. 1.

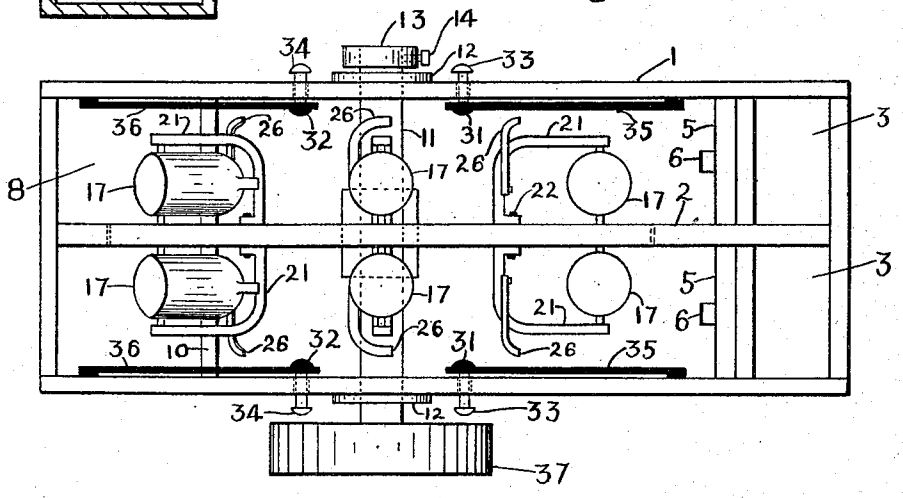


Fig. 2.

WITNESSES.

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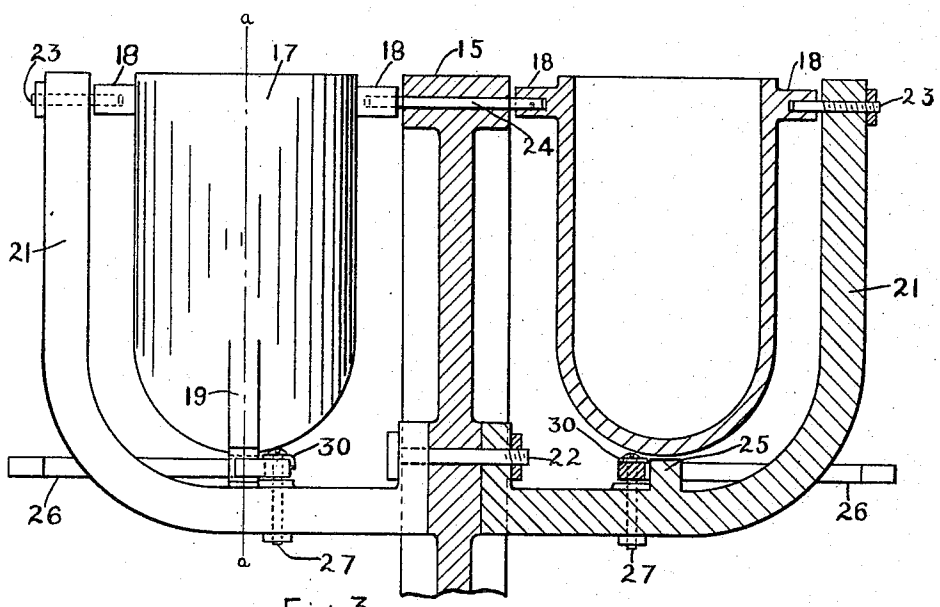


Fig. 3.

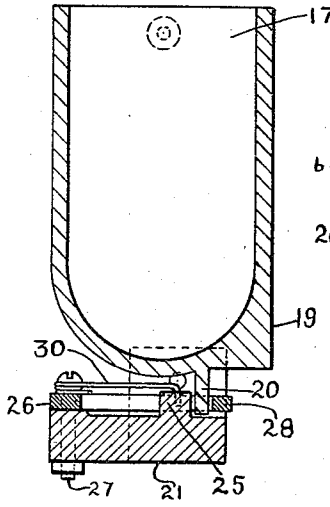


Fig. 4.

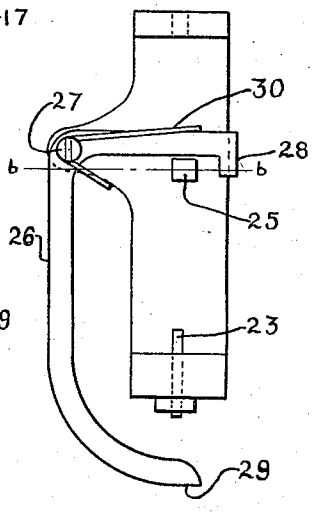


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM JAMES BATES, OF OXENDEN, ONTARIO, CANADA.

GRAIN MIXER OR BLENDER.

1,185,865. Specification of Letters Patent. Patented June 6, 1916.

Application filed April 1, 1915. Serial No. 18,543.

To all whom it may concern:

Be it known that I, WILLIAM JAMES BATES, of Oxenden, in the county of Grey, Province of Ontario, Dominion of Canada, miller, have invented certain new and useful Improvements in Grain Mixers or Blenders, of which the following is a specification.

My invention relates to improvements in grain mixers or blenders and the object of the present invention is to devise an apparatus by which grains of different qualities may be conveniently and thoroughly blended.

A further object is to devise an apparatus for this purpose by which the proportions of the various qualities of grains in the resultant mixture may be closely adjusted.

A further object is to provide means whereby the proportions of the various qualities may be altered during the operation of the machine and a still further object is to provide a machine for this purpose by which the proportions by weight of the various qualities of grains in the resultant mixture may be closely adjusted.

My invention consists of a divided casing having a central shaft, a wheel mounted on said shaft within the casing, cups located at the periphery of the wheel, spring latches to control the emptying of the same, spring cams operating the spring latches, chutes, doors controlling the opening of the chutes and an opening in the bottom of the casing, all as hereinafter more particularly described and illustrated in the accompanying drawings, in which:—

Figure 1 is a sectional elevation of my machine with the front of the casing removed and showing the cups in the locked position in full lines and the cups in the unlocked position in dotted lines. Fig. 2 is a plan view of my machine showing the cups in the unlocked position and some parts removed for the sake of clearness. Fig. 3 is an enlarged elevation partly in cross section showing the method of attaching the cups to the wheel. Fig. 4 is an enlarged sectional elevation on the line *a*—*a*, of Fig. 3, or *b*—*b*, of Fig. 5. Fig. 5 is an enlarged plan view of the cup supporting bracket with the spring latch attached thereto.

Like characters of reference indicate corresponding parts in the different views.

1 is the outer casing. 2 is a vertical partition therein.

3 are chutes in the casing. 4 are openings at the bottom of the inner walls of these chutes. 5 are doors closing said openings. 6 are handles on these doors.

7 are conveyers communicating with the chutes 3.

8 is an opening in the bottom of the casing at the end remote from the chutes 3, and communicating with any suitable conveyer 9.

10 is a low partition extending across the machine at the inside edge of the opening 8.

11 is a shaft extending through the machine and supported in the bearings 12.

13 is a collar held on the end of the shaft 11 by a lock nut 14.

15 is a wheel keyed to the shaft 11 and rotating in the opening 16 in the partition 2.

17 are cups having the trunnions 18 thereon and weighted at 19. 20 are downwardly extending fingers on these cups.

21 are brackets fastened to the wheel 15 by the bolts 22.

23 are pins extending through the brackets 21 and into the trunnions 18.

24 are pins extending through the rim of the wheel 15 and into the trunnions 18.

25 is an upwardly extending boss on the brackets 21.

26 are spring latches pivoted on the pin 27 and having a hooked inner end 28 and a curved outer end 29.

30 is a spring controlling the latch 26.

31 and 32 are cams operated by the knobs 33 and 34 and controlled by the springs 35 and 36.

37 is a pulley for operating the machine.

In the normal position the spring 30 holds the latch 26 in the position shown in Fig. 5. In the locked position of the cups the finger 30 is held between the boss 25 and the hook 28.

The operation of the machine is as follows:—Considering the cups to be in the locked position and the machine rotating in the direction indicated by the arrow, any number of cups may be put into the operating position by pressing upon the knob 33. This will cause the cam 31 to engage the end 29 of the latch 26 thus causing the hook 28 to move laterally and as the bracket 21 is inclined in this position the

cup will swing under the action of gravity so that the finger 20 moves away from the boss 25. The handle 33 is then released and the cam 31 under action of the spring 35 retains its normal position thus allowing the hook 28 under the action of the spring 30 to retain its normal position so that as the wheel continues to rotate the cup cannot become locked as the finger 20 engages the outside edge of the hook 28. The wheel now continues to rotate and the unlocked cups retain the positions shown dotted in Fig. 1 and in Fig. 2. Just as the cup passes the extreme bottom position the action of gravity causes it to fall from the position shown in full line to that shown dotted. If it is desired to cut out or lock any of the cups the knob 34 is depressed, this causes the cam 32 to engage the latches 26 exactly as above described, but in this case since the cup is past center and the bracket 21 is oppositely inclined to that in the previous case the finger 20 passes inwardly under the action of gravity and engages the boss 25. The knob 34 is then released and the hook 28 assumes its normal position thus locking the finger 20 between the boss 25 and the hook 28. It will thus be seen that any number of cups may be brought into action or cut out during the operation of the machine.

The method of employing my machine is as follows: Grain of various qualities is fed into the chutes 3 through the conveyers 7. It will pass into the machine through the openings 4 and assume the position as shown by the line *c*—*c* in Fig. 1. The doors 5 are provided to regulate the position of the various grains in the machine as the angle of the line *c*—*c*, will vary according to the density of the grain. When the cups are in the operating position they pick up grain when passing upwardly as shown in Fig. 1 and empty themselves through the opening 8 when passing downwardly. Any suitable conveyer is provided below the openings 8 for carrying away the mixture.

From the foregoing it will be seen that a very wide degree of adjustment of the component parts of a mixture may be obtained since all or only one of the cups of any wheel may be made to operate. Further this adjustment may be obtained without stopping the machine or in any way interfering with its operation.

Any suitable type of conveyer for removing the mixture may be employed below the openings 8 in the casing.

Modifications may be made in my invention without departing from the spirit of the same or the scope of the claims and the form shown is to be taken as illustrative and not in a limiting sense. For instance while I have shown my machine as employed for mixing only two qualities of grain it is to be understood that any number of sets of cups could be provided on the shaft 11. Each set operating in a separate compartment and delivering its particular quality of grain to the resultant mixture.

What I claim as my invention is:

1. In a grain mixer or blender the combination in a casing, of a vertical passageway at one end of the casing having a vertical opening at its lower end communicating with the interior of the casing, the bottom of the casing being open at the end remote from the passageway, a transverse partition at the inside edge of such open portion, a horizontally disposed transverse shaft rotatably mounted in the casing and having a wheel rigidly mounted thereon, cups swingable in a vertical plane, brackets at the periphery of the aforesaid wheel in which brackets said cups are mounted, stops on these brackets to retain the cups in radial positions when past top center, means for locking any or all of the cups permanently in radial positions and means for rotating the wheel.

2. In a grain mixer or blender the combination in a casing, of a vertical passageway at one end of the casing having a vertical opening at its lower end communicating with the interior of the casing, the bottom of the casing being open at the end remote from the passageway, a transverse partition at the inside edge of such open portion, a horizontally disposed transverse shaft rotatably mounted in the casing and having a wheel rigidly mounted thereon, cups swingable in a vertical plane, brackets at the periphery of the aforesaid wheel in which brackets said cups are mounted, stops on these brackets to retain the cups in radial positions when past top center, the cups being free to swing vertically when past bottom center, means for unlocking any or all of the cups so that they may swing freely when past bottom center, and means for rotating the wheel.

3. In a grain mixer or blender the combination in a casing, of a plurality of compartments formed by longitudinal partitions within the casing, a vertical passageway at one end of each compartment having a vertical opening at its lower end communicating with the interior of the compartment, the bottom of each compartment being open at the end remote from the aforesaid passageway, a transverse partition at the inner edge of such opening, a horizontally disposed transverse shaft rotatably mounted in the casing, wheels rigidly mounted thereon and rotatable in openings in the longitudinal partitions, cups swingable in a vertical plane, radially disposed brackets at the periphery of the aforesaid wheels in which

brackets said cups are mounted, on each side thereof, stops on these brackets, the cups being free to swing vertically when past bottom center, means for locking any or all of the cups permanently in radial positions and means for rotating the wheels.

4. In a grain mixer or blender the combination in a casing, of a plurality of compartments formed by longitudinal partitions within the casing, a vertical passageway at one end of each compartment having a vertical opening at its lower end communicating with the interior of the compartment, the bottom of each compartment being open at the end remote from the aforesaid passageway, a transverse partition at the inner edge of such opening, a horizontally disposed transverse shaft rotatably mounted in the casing, wheels rigidly mounted thereon and rotatable in openings in the longitudinal partitions, cups swingable in a vertical plane, radially disposed brackets at the periphery of the aforesaid wheels on each side thereof in which brackets said cups are mounted, stops on these brackets which retain the cups in radial positions when past top center, means for locking any or all of the cups permanently in radial positions, means for unlocking any or all of the cups so that they may swing freely when past bottom center, and means for rotating the wheels.

5. In a grain mixer or blender, a casing, a suitably supported wheel adapted to rotate in a vertical plane, within the casing, cups swingable in a vertical plane, radially disposed brackets at the periphery of the wheel in which bracket said cups are mounted, depending fingers situated exteriorly of the cups and adapted to engage the brackets for retaining the cups in a radial position when past top center.

6. In a grain mixer or blender, a casing, a suitably supported wheel adapted to rotate in a vertical plane within the casing, cups swingable in a vertical plane, radially disposed brackets at the periphery of the wheel in which bracket said cups are mounted, upwardly extending bosses on the brackets, depending fingers situated exteriorly of the cups and engaging the bosses, spring latches pivotally mounted on the brackets and normally adapted to hold the aforesaid fingers between the bosses on the brackets and the spring latches, for locking the cups in radially disposed positions and means for operating the spring latches separately for locking or unlocking the cups.

7. In a grain mixer or blender, a casing, a suitably supported wheel adapted to rotate in a vertical plane within the casing, cups swingable in a vertical plane, radially disposed brackets at the periphery of the wheel in which bracket said cups are mounted, depending fingers exteriorly of the cups adapted to engage upwardly extending bosses on the brackets, spring latches pivotally mounted on the brackets and normally adapted to lock the aforesaid fingers between the bosses on the brackets and the spring latches, a cam adapted to be put into engagement with any of the spring latches just before top center is reached for unlocking the cups and a similar cam adapted to be put into engagement with any of the spring latches immediately after top center is passed for locking the cups.

8. In a grain mixer or blender, a casing, a suitably supported wheel adapted to rotate in a vertical plane within the casing, cups swingable in a vertical plane, radially disposed brackets at the periphery of the wheel in which bracket said cups are mounted, depending fingers exteriorly of the cups adapted to engage upwardly extending bosses on the brackets, spring latches pivotally mounted on the brackets and normally adapted to lock the aforesaid fingers between the bosses on the brackets and the spring latches, a cam adapted to be put into engagement with any of the spring latches for unlocking the cups and a similar cam adapted to be put into engagement with any of the spring latches for locking the cups.

WILLIAM JAMES BATES.

Witnesses:
ALEX FLETCHER,
KATE BRIGHT.

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