

Feb. 11, 1930.

A. J. HAZLE, JR

1,746,590

FEEDING DEVICE WITH CLEARING MECHANISM

Filed Aug. 26, 1929

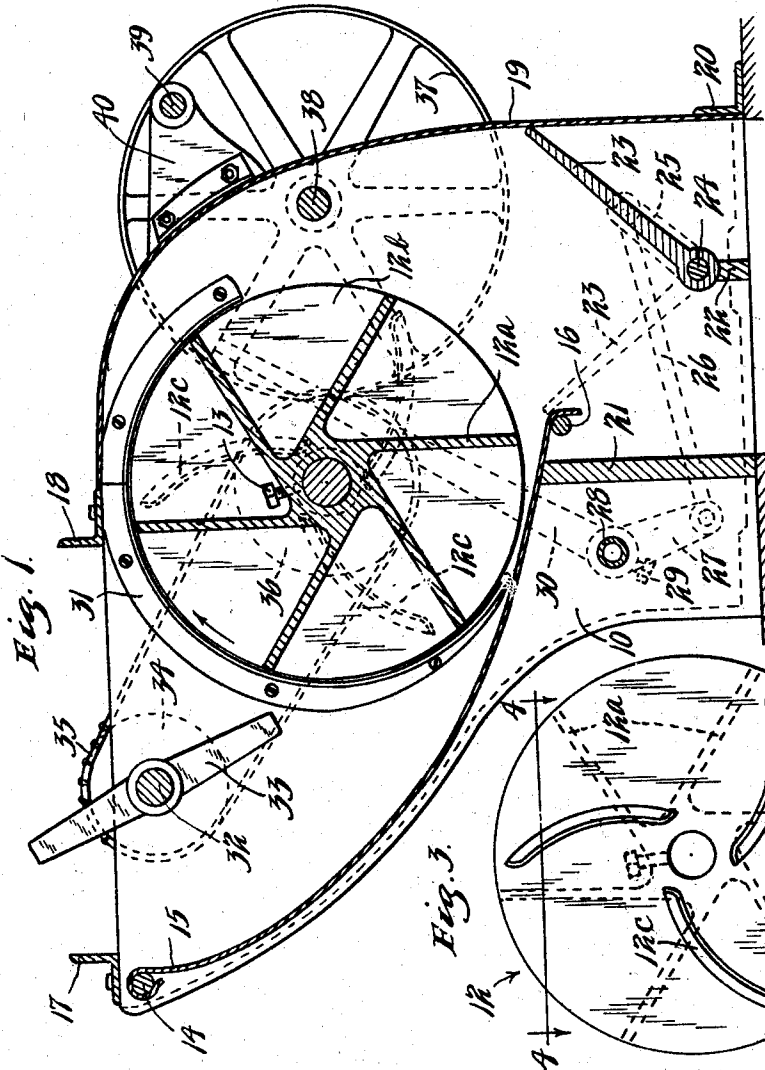
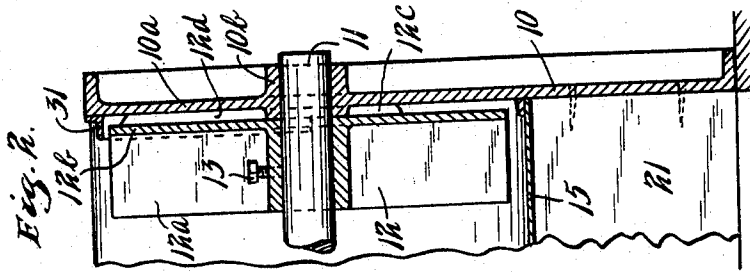
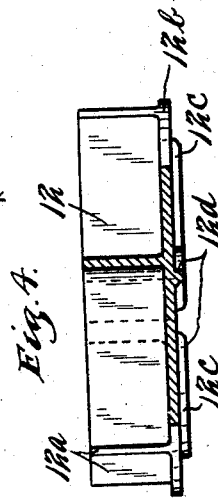
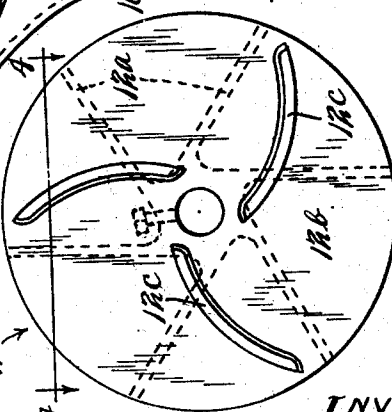


Fig. 3.



INVENTOR.
ALBERT J. HAZLE JR.
BY HIS ATTORNEYS.

William Reif & William

UNITED STATES PATENT OFFICE

ALBERT J. HAZLE, JR., OF CHICAGO, ILLINOIS, ASSIGNOR TO B. F. GUMP CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

FEEDING DEVICE WITH CLEARING MECHANISM

Application filed August 26, 1929. Serial No. 388,435.

This invention relates to a feeding device and while the same is applicable to various kinds of feeding devices for mills, it particularly is designed for use in a feeding device adapted to feed comminuted or liquid material comprising a casing and feeding member movable therein. These feeding devices are now used in large numbers in flour mills and feed mills and also for feeding thick liquids, such as molasses, such feeders being commonly used where it is desired to mix several ingredients. One well known type of such a feeder is that illustrated in Patent No. 1,435,822 granted on Nov. 14th, 1922 to Emil R. Draver on percentage feeder. In such a feeding device the feeding member moves close to the side wall of the casing and material finds its way into the narrow space between the feeding member and casing. This material tends to pack in this space and adhere to the casing wall. In feeding some materials which are semi-liquid and sticky great friction and resistance would be caused by the material which is thus accumulated between the feeding member and wall. In some cases where the feeding machines had stood over night it would be an extremely difficult task to start them the next day. The present invention has for its object to remove this friction and resistance in the machine and eliminate the trouble caused thereby.

It is an object of this invention, therefore, to provide a feeding device comprising means for clearing away any material which may accumulate between the feeding member and the wall of the casing.

It is a further object of the invention to provide a feeding machine comprising a casing through which the material is fed and a feeding member therein which feeding member has a surface moving close to the wall of the casing, together with means carried by said feeding member moving very close to or engaging said wall to scrape and cut any material therefrom which has accumulated thereon.

It is more specifically an object of the invention to provide a feeding machine having a casing and a rotating feeding member

therein which member has a disk-like surface moving adjacent the wall of the casing, said surface having formed thereon means for engaging the wall and adapted to cut or scrape the material therefrom, which means preferably are in the form of spaced ribs or blades projecting from said feeding member.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views, and in which:—

Fig. 1 is a view in longitudinal vertical section of a machine such as illustrated in the patent above identified;

Fig. 2 is a vertical section through a portion of the machine taken at right angles to the section illustrated in Fig. 1;

Fig. 3 is a view in side elevation of the feeding member, and

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 3 as indicated by the arrows.

Of the machine shown it will only be necessary to consider the casing 10 having side walls 10^a and having the hub bearings 10^b which form bearings for the shaft 11 which carries the feeding members 12. Feeding members 12 have central hubs secured to the shaft 11 by any suitable means such as the set screws 13, said members 12 having outwardly extending blades or paddles 12^a extending substantially tangentially to said hubs and secured thereto. The ends of the blades terminate in a cylindrical surface. The feeding member 12 adjacent wall 10^a has a disk-like end 12^b which moves adjacent the end wall 10^a. Casing 10 has a rod 14 extending transversely thereof at its upper front corner and a plate 15 is bent to extend over and be supported by said rod, said plate then extending downwardly and rearwardly and having its other end bent over and extending a short distance downwardly from another rod 16 which extends transversely of casing 10. An angle bar 17 is shown as extending transversely across the top of casing 10 at its upper forward end. Another angle bar 18 extends across the top of casing

10 some distance from the bar 17 and a plate 19 extends from the bar 18 rearwardly and then curves downwardly forming the rear end of said casing and being secured to an angle bar 20 at its bottom which forms the front bottom portion of the casing. A plate or partition 21 extends vertically from the bottom of casing 10 to the under side of plate 15 some distance in front of rod 16, the space between this plate and wall 19 forming the discharge passage for the feeder. Another plate 22 is disposed in the bottom of said discharge passage and engages the hub of a swinging valve 23 pivoted on a pivot 24 journaled in casing 10. Member 24 has secured to one end an arm 25 pivotally connected at its outer end to a link 26 in turn pivotally connected at its other end to an arm 27 which is secured to a lever shaft 28 by some suitable means such as a set screw 29. A hand lever 30 is secured to shaft 28 and extends upwardly therefrom by means of which through the mechanism described valve 23 can be swung from the full line position shown in Fig. 1 to the dotted line position shown therein. An angle iron 31 of curved shape is preferably secured to the inside of the wall 10^a extending partially around the feeder member 12 and adapted to keep most of the material from falling into the space between disk 12^b and wall 10^a. The casing has a shaft 32 extending transversely thereof at its forward portion to which is secured agitator blades 33. Said shaft 32 carries a sprocket 34 over which runs a chain 35 which also runs over a sprocket 36 carried on shaft 11. The feeding member 12 and the other similar members are intermittently rotated by mechanism not shown, but which is disclosed in said patent, which mechanism is driven by a pulley 37 mounted on a shaft 38 carried in the casing 10. Said mechanism also includes a rock shaft 39 journaled in a bearing 40 secured to the casing 10.

The mechanism so far described is substantially the same as shown in said patent above identified and in itself forms no part of the present invention.

In accordance with the present invention the member 12 has projecting outwardly from the disk 12^b at its outer side, ribs or blades 12^c. While these blades may be of various shapes in cross section and extend in various directions, in the embodiment of the invention illustrated they are shown as substantially rectangular in cross section and having a forward comparatively sharp edge 12^d of substantially right angular shape and the blades are shown as extending from the central portion of disk 12^b outwardly toward and adjacent its outer edge. The blades are also shown as slightly curved with their convex sides adapted to advance in the rotation of member 12.

In the operation of the device, pulley 37 will be driven by a suitable belt and through the mechanism referred to shaft 11 is given intermittent and partial rotative movements. This member thus intermittently rotates in the direction of the arrow shown in Fig. 1. At the same time the agitator members 33 are rotated by chain 35. The material is placed in the casing at the side above and at the left of the feeding members and falls into the pockets between blades 12^a and is carried over and discharged at the lower side of the feeding members. It is sometimes desired to divert the material to one side of the discharge passage and the valve 23 is swung for this purpose. In practice it has been found that the material will find its way between the outer side of disk 12^b and wall 10^a and pack in said space and adhere to the wall 10^a. As above stated this was a very serious objection and it was sometimes almost impossible to start the feeder after it had stood for a period of time. With the present invention, as the member 12 revolves the blades 12^c move very close to or engage the wall 10^a and scrape and cut therefrom any material which adheres thereto. As the member 12 revolves, this material, which has been cut loose, drops downwardly and passes out with the discharge. The wall 10^a is thus kept clean and the material which enters between disk 12^b and said wall is continually cleared and the friction and resistance caused by this material is eliminated. The blades 12^c scrape against the wall and keep the same in very clean condition. It may be stated that the member 12 shown in Fig. 3 is for the end of the casing 10 opposite to that shown in Figs. 1 and 2.

From the above description it is seen that applicant has provided a simple and efficient mechanism for greatly improving the operation of feeding machines. The same is quite simple and yet constitutes a great advance. The device has been amply demonstrated in actual practice and found to be very successful and efficient and is being commercially made.

It will, of course, be understood that various changes may be made in the form, details, proportions and arrangement of the parts, without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A feeding device having in combination, a casing through which material is fed having a side wall, a feeding member in said casing for moving the material having a surface movable adjacent said wall and means carried by said surface adapted to substantially engage said wall and cut or scrape ma-

terial therefrom which has collected thereon.

2. A feeding device having in combination, a casing through which material is fed having a side wall, a rotatable feeding means in said casing having a surface and extending outwardly from the central portion thereof to adjacent the outer edge thereof adapted to move very closely to or engage said wall to clear material which has accumulated between said surface and wall.

3. A feeding device having in combination, a casing comprising a hopper portion and discharge portion and having a vertical side wall, a shaft journaled in said casing and extending transversely thereof, a feeding member carried by said shaft having a surface movable adjacent said wall and spaced means projecting from said surface and extending therealong adapted to move close to or against said wall and clear any material which has entered between said member and wall or adhered to the latter.

4. The structure set forth in claim 3, said means comprising circumferentially spaced ribs extending outwardly from adjacent the center of said surface toward its outer edge.

5. The structure set forth in claim 3, said means comprising circumferentially spaced ribs extending outwardly on said surface, said ribs being curved with their convex sides moving forwardly in the rotation of said feeding member.

6. A feeding device having in combination, a casing through which material is fed having a side wall, a rotatable feeding member in said casing having a surface moving adjacent said wall, ribs extending across said surface having sharp angular edges at their forward sides adapted to clear material from between said member and casing.

In testimony whereof I affix my signature.

ALBERT J. HAZLE, JR.

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