Jan. 4, 1927. 1,612,976

F. X. LAUTERBUR

FLOUR SIFTER

Original Filed May 1, 1922

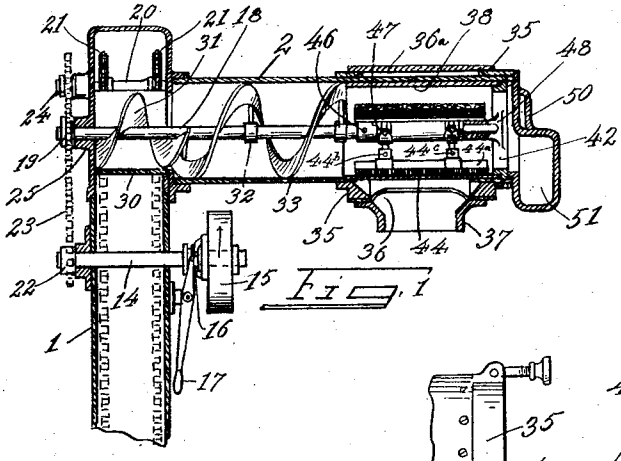


Fig. 1.

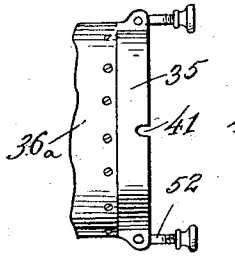


Fig. 4.

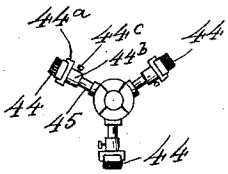


Fig. 5.

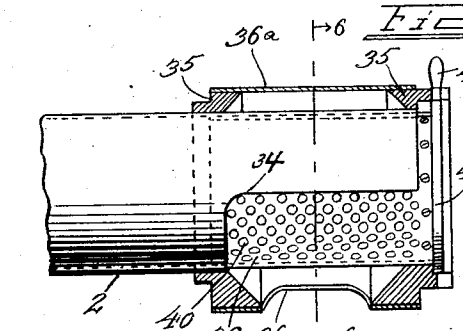


Fig. 2.

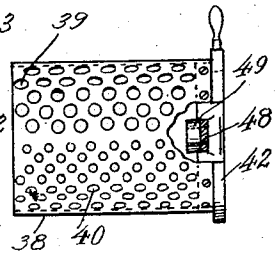


Fig. 3.

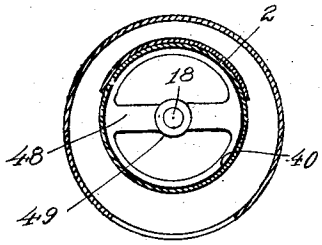


Fig. 6.

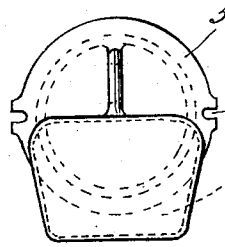


Fig. 7.

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UNITED STATES PATENT OFFICE.

FRANK X. LAUTERBUR, OF SIDNEY, OHIO.

FLOUR SIFTER.

Original application filed May 1, 1922, Serial No. 557,627. Divided and this application filed November 15, 1922. Serial No. 601,051.

My invention relates to flour sifters, such as are used in bakeries for sifting flour into a mixer in mixing a batch of dough. This application is a division of my copending application Serial No. 557,627, filed May 1, 1922, for which Patent No. 1,525,506 was issued February 10, 1925.

In devices of this character a mechanism is desired which can be located alongside of a power mixer and will carry the flour from a bin to an elevated point and there sift and aerate it and deliver it through a spout to the bowl of a mixer.

The feeding of flour mechanically is always a difficult proposition, since atmospheric changes, variations in grades of the material, and its fine bolted condition, result in a product which will become clogged, can be mashed together and the finely powdered condition or "life" upset. The sifting operation on flour is primarily intended to deliver the flour in a fine, aerated powder to the point of mixing it with liquids, to avoid any lumpy condition, wherefore the mechanical handling of the flour in a power elevator and sifter becomes of necessity a delicate matter.

It is the object to provide a combined bin, elevator and sifter, which will at all times preserve the flour in perfect condition and will give a uniform feed without getting it lumpy.

In the sifter screen, which forms the basis of this application, I provide a simple mechanism whereby the mesh of the foraminations can be changed and in connection with the brush used internally of the screen, I provide a quick, detachable mounting means, which is a great convenience. I also arrange the brushes so that they are adjustable.

It is my object to make the whole sifter unit very simple and readily demountable in structure, and in this way I provide for considerable saving in time and work to the baker.

These various objects and other advantages to be noted I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawings,

Figure 1 is a central vertical section taken through the device.

Figure 2 is a side elevation of the sifter screen and cylinder with the retaining rings and outer casing in section.

Figure 3 is a side elevation of the screen partly broken away.

Figure 4 is a detail side elevation of the end of the sifter cylinder.

Figure 5 is a detail end elevation of the adjustable brush holder.

Figure 6 is a section on the line 6—6 of Figure 4.

Figure 7 is an end elevation of the closing plate.

The machine is formed with a casing having an upright, usually rectangular, hollow standard 1, which has extending therefrom at a right angle at the upper end, a cylindrical member 2.

An upper conveyor is formed by means of a short worm section 31 formed on the shaft 18 in the cylinder 2, which section terminates preferably within the standard itself. The shaft carries by means of arms 32 thereon, a spiral ribbon 33, which is of a dimension to come to the inner periphery of the cylinder 2. Thus as the shaft 18 is driven, the worm portion and the ribbon then feed the flour without clogging and with an agitating action toward the sifter brushes and screen.

I prefer to use the cylinder as the support for the sifter mechanism, and thus I cut away the lower half or at least a considerable portion of the lower half of the cylinder from a point where the ribbon terminates to the end of the sifter mechanism, as indicated at 34. Over the cylinder I place and secure two cast rings 35, one of which embraces the cylinder at the outer end and the other embraces it just before the cut-away portion begins.

The rings carry the cylindrical outer cover 36ª of the sifter, which cover has at its lower end an opening 36 (preferably oval), about which opening is secured a spout casting 37.

The sifter screen 38 is formed in cylindrical shape and has the large holes or foraminations 39 for one portion of its body and smaller holes 40 for the remaining portions thereof. These graded opening zones can be varied to give more than two styles of opening, if desired.

In mounting the screen cylinder it is thrust into the cut-away end of the cylinder 2,

The outer ring 35 has slots 41 formed therein, and the screen cylinder has an outer head ring 42 formed with a radially extending pin or handle 43, which fits into said slots. Thus when the screen cylinder is inserted in place, the handle is arranged in the desired slot 41, which holds the screen in adjusted position. The position is varied by pulling the screen slightly out and revolving it a half turn and thrusting the handle into the other slot when setting the ring back in place.

The brush device is formed of a series of adjustable brushes 44, carried by spiders 45, which are held together by the brushes. The spiders slide on the shaft 18 and a notched collar 46 is mounted on the shaft so as to engage with the hub 47 of the inner spider when the brush mechanism has been thrust into place. This collar also holds the brush mechanism as an inner abutment. The brushes have casings 44^a and interspaced socket pieces 44^b, which slide on the ends of the spider arms and are held adjustable by screws 44^c.

The head 42 of the screen cylinder is formed with a cross member 48, which mounts the boss 49, same being the journal for the outer end of the shaft 18. This boss also bears against the hub of the outer spider of the brush mechanism, and holds it in place against the driving collar 46.

A cover plate 50 is mounted over the head 42 on the outside, this cover plate being formed with a dirt trap 51. A pair of hinge bolts 52 engaging notches 52^a are used to fasten on this cover plate, since it must be frequently removed to discard the dirt, hairs, large particles, and the like, which will not go through the screen, and hence pass out into the trap. The plate is thus clamped to the outer surface of the cast ring 35 and bears against the head 42 of the screen, said head being largely open.

As so constructed the sifter is assembled as follows: First the brush spiders are set over the shaft 18 and the brush moved to driving position. The screen is then inserted into the cylinder 2 with its head 42 arranged so that its boss slides over the shaft 18 and comes up against the outer brush spider.

The head is also arranged, at this time, so that the desired screen foraminations are lowermost, and the cover plate is then mounted so as to hold the cylinder and brushes in place.

The action of the conveyor is to feed flour in good condition to the sifter. In the sifter, the brushes dash the flour about and brush it through the holes or foraminations in the lower part of the screen. The presence of the cylinder 2 about the upper portions of the screen prevents flour from being flung out through the undesired portion of the screen, thereby insuring a uniform sifted flour in a fluffy, aerated condition.

By removing the cover plate, all the inner parts may be inspected, and furthermore, they will slide out without manipulation of any further screws or bolts.

I am not aware of any person in the past having produced a feeding device for flour in a sifter which employs a spiral ribbon, thereby protecting the flour during its movement without unnecessary churning, and at the same time without "balling" the flour up during the feed.

I have not attempted to describe alternative mechanism in the above specification, but merely one type of machine embodying the principles of my invention, which principles I will not express in the claims that follow.

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

1. In a sifter device, a casing having an opening formed therein at the outer end, a sifter screen adapted to fit within the casing, and a cover plate for retaining said screen within the casing, said casing having a shaft extending through it, said screen and cover plate device including a journal for said shaft, a brush adapted to fit within the screen, and means for mounting the brush slidably on the shaft, said journal adapted to keep the brush in position on the shaft, and a driving collar with which the brush contacts, said collar being mounted on the shaft and adapted to engage the brush and drive it when the said journal is in place.

2. In a sifter device, the combination with a casing, of a hollow screen mounted therein, said screen having lengthwise zones of different foramination, means for adjustably mounting the screen within the casing in various positions of rotation to bring the desired foramination lowermost, said casing being open at the lowermost portion thereof, but closed at the other portions to block off the foraminations not brought lowermost.

3. In a sifter device, the combination with a casing, of a hollow screen within said casing, said casing having an opening at the lower portion thereof, said screen having lengthwise zones of different foramination, and means for retaining the screen within the casing in various positions to expose the desired zone lowermost, said means comprising a slotted end for the casing, and a radial pin on the screen for engaging in said slots.

4. In a sifter device, the combination with a casing, of a hollow screen within said casing, said casing having an opening at the lower portion thereof, said screen having lengthwise zones of different foramination, and means for retaining the screen within the casing in various positions to expose the desired zone lowermost, said means compris-

ing a slotted end for the casing, and a radial pin on the screen for engaging in said slots, said casing being open at one end and the screen adapted to slide into the casing and fit closely therein, and a cover plate for the casing adapted to hold the screen in place and in adjusted position.

5. In combination with flour sifting mechanism, means of conveying flour to said sifting mechanism comprising a conveyor for feeding and fluffing up flour to be sifted, whereby caking in said sifting mechanism is prevented, said conveying means comprising a hopper having a rotatable shaft extending longitudinally therethrough, said conveying mechanism further comprising a spirally wound band, supported on said shaft and interspaced therefrom, said spirally wound band extending edgewise toward the sides of said hopper a sufficient distance to provide a conveying engagement, said spirally wound band providing conveying means for moving the flour through said hopper and aerating the flour as a step prior to the passage of flour into said sifting mechanism.

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