



## UNITED STATES PATENT OFFICE

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## FLOUR SIFTER

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This invention relates to a new and improved flour sifter.

The sifter of my invention is of that type in which the sifting operation can be done with one hand, thus leaving the other hand of the operator free to do whatever other work is necessary at the same time. Sifters of this general type have been devised before but have not operated as easily as desired, the designs not having provided the necessary mechanical advantage to insure easy operation of the agitator. It is therefore the principal object of my invention to provide a flour sifter in which the operating lever pivoted in the handle has a push and pull connection with the agitator at a point fairly remote from its pivot, whereby a good mechanical advantage is secured and the agitator can be operated rapidly to and fro with very light finger pressure on the lever. There is, therefore, no likelihood of fatigue.

Other objects and advantages of the invention will appear in the course of the following description, in which reference is made to the accompanying drawing, wherein

Figure 1 is a central vertical section through a flour sifter made in accordance with my invention;

Fig. 2 is a horizontal section approximately in the plane of the line 2—2 of Fig. 1, and

Fig. 3 is a vertical sectional detail on the line 3—3 of Fig. 1.

The same reference numerals are applied to corresponding parts throughout these views.

The sifter comprises a sheet metal casing 4 of cylindrical form, open at the top and bottom, and having a flat screen bottom 5 suitably secured at its marginal edges in the lower end of the casing, as indicated at 6. The flour is sifted through the screen 5, and the sifting operation is facilitated by the oscillation of the agitator 7 relative to its pivot 8 by means of a lever 9 pivoted in the handle 10 at 11. Generally speaking sifters of this type wherein an agitator is oscillated or reciprocated by means of a lever movable relative to the handle by the same hand gripping the handle for support of the sifter have been provided heretofore, but invariably the operating connection between the operating lever and the agitator has been provided in conjunction with and close to the pivot for the agitator, with the result that the operating lever had very little leverage to operate the agitator, and, in some instances, there was the further objection that the agitator could not be moved as far as the confines of the casing would permit and, as a result, a large percentage of the sifting area of the screen was not swept by the

agitator. These objections have to a large extent been eliminated in the sifter of my invention by locating the pivot 8 for the agitator 7 approximately 90° removed from the handle 10 and providing a push and pull link connection 12 between the lower end of the lever 9 and the agitator 7 at a point between the ends thereof, at or near the middle. In that way the lever 9 has a much greater mechanical advantage than where it operates the agitator from its pivoted end through a short crank arm, and it should be evident that a simpler and cheaper construction is obtained. There is moreover no difficulty in regard to having the agitator sweep nearly the entire area of the screen 5, there being sufficient movement of the lower end of the lever 9 within the handle 10 to move the agitator from the one extreme position shown in Fig. 2 to the other extreme position adjacent the diametrically opposite side of the casing. Due to the good mechanical advantage derived with my arrangement of the agitator 7 relative to its operating lever 9, the operator experiences no fatigue in the operation of the sifter, the lever 9 being operable like a trigger with very light finger pressure. A leaf spring 13 of inverted U form is provided between the upper end of the lever 9 and the upper end of the handle 10 and tends normally to urge the lever away from the handle so that the agitator 7 is adapted to be moved in one direction by finger pressure on the lever 9 and to be returned by spring pressure.

The handle 10 is formed from two strips of sheet metal 14 and 15 riveted together at 16. The piece 15 is U-shaped and has oppositely bent free ends 17 riveted as at 18 to the wall of the casing 4 at the lower end thereof. The other handle part 14 is generally of inverted L-shape so as to provide a substantially horizontal portion 19, which has a downwardly projecting free end 20 riveted to the wall of the casing 4 at the upper end thereof, as at 21. The substantially vertical portion 22 of the handle part 14 is curved longitudinally and also transversely, as shown, to fit the palm of the hand of the operator. The lever 9 has its upper end 23 forked to accommodate the curled end 24 of a small sheet metal strap 25 that is soldered, welded, or otherwise suitably secured to the bottom of the portion 19 of the handle part 14, the curled end 24 of this strap providing a support for the pivot pin 11, the separate ends of which have the forked end 23 of the lever 9 bent around the same so as to support the lever 9 for pivotal movement in the handle, with the lower end 26 of the lever movable between the arms of the U-shaped bottom part 15 of the

handle. The leaf spring 13 is retained in place by a lug 27 struck rearwardly from the lever 9 near the upper end thereof and projecting through a hole 28 provided in the adjacent end of the spring. The other end 29 of the spring is held against sidewise displacement relative to the handle by fitting in the trough of the transversely curved handle grip portion 22, as shown.

The agitator 7 is suitably stamped from a single piece of sheet metal to a generally ellipsoidal shape and has downwardly struck ribs 39 to ride on the screen 5. A longitudinal channel 31 is formed in the agitator, extending diametrically thereof, to accommodate a rod 32 which has an upwardly bent end providing the pivot 8. The rod 32 has its other end flattened, as indicated at 33, and projecting through a loop 34 struck upwardly from the end of the agitator, whereby to connect the end of the rod to the agitator. Lugs 35 struck upwardly from the other end of the agitator and bent over the adjacent end of the rod 32 serve to connect that end of the rod to the agitator. A sheet metal plate 36 curved to fit the inside of the casing 4 is riveted in place, as indicated at 37, and has a vertical rib 38 struck therefrom which accommodates the upwardly bent end 8 of the rod 32 and forms a bearing therefor, closed at its upper end against entry of flour, as clearly indicated in Fig. 3. An inverted U-shaped sheet metal strap 39 is soldered, welded, or otherwise suitably secured to the agitator 7 approximately at the middle of one side thereof and has a longitudinal slot 40 provided in the transverse portion thereof, in which the downwardly bent end 41 of a rod 12, forming the push and pull connection between the agitator 7 and lever 9, is entered. The downwardly bent end 41 has its extremity 42 bent at right angles to prevent accidental disconnection of the rod 12 from the agitator. The rod 12 extends freely through a hole 43 in the casing 4 and has its outer end 44 bent downwardly to provide an operating connection with the lower end 26 of the lever 9, said lower end being bent U-shaped and having a hole 45 in the cross-portion of the U through which the rod 12 projects and another hole 46 in the lower arm of the U through which the bent end 44 of the rod projects. The lower end 26 of the lever 9 is threaded onto the end 44 of the rod 12 before the lever is assembled in the handle 10. The same is true in regard to the agitator 7, which must have the other end 41 of the rod 12 threaded through the slot 40 before the agitator is fastened in place by means of the plate 36.

In operation, when the lever 9 is pulled toward the handle grip portion of the handle 10, the rod 12 moves with it and slides freely in the hole 43, the downwardly bent end 41 of the rod working in the slot 40 to provide a sliding pivotal connection between the rod and the agitator 7 to move the agitator in the same direction as the lever 9. When the lever 9 has been moved as far as it will go, finger pressure thereon is released and the spring 13 returns it to the position shown in Fig. 1, thus returning the agitator 7 by means of the connection 12. The operation is smooth and comparatively quiet, and is so easy that the operator experiences no fatigue in the operation.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. A sifter comprising a casing having a sifting screen in the bottom thereof, a vertically extending handle attached to one side of said casing, an elongated agitator pivotally mounted in said casing alongside the wall thereof at a point spaced appreciably from the handle circumferentially of the casing for oscillatory movement relative to the screen bottom toward and away from the lower portion of the handle, an operating lever for the agitator pivoted in the upper portion of the handle and having its lower portion movable relative to the lower portion of the handle in the oscillatory movement of said lever, the lower portion of said lever providing a perforated vertical portion above a perforated horizontal portion, and a rod slidable substantially horizontally through an opening provided therefor in the wall of the casing adjacent the lower portion of the handle and projecting through the perforation in the vertical portion of the lower end of said lever and having its end portion bent downwardly substantially at right angles and projecting through the perforation in the horizontal portion on the lower end of said lever, whereby said rod is movable with the lever in the oscillation thereof, the inner end portion of said rod being pivotally connected with the agitator at a point intermediate the ends thereof, said lever being movable manually in one direction and having spring means acting to move it in the opposite direction.

2. In a sifter, a casing having a sifting bottom, an agitator oscillatable relative to said bottom in said casing about a vertical pivot alongside the wall of said casing and above the sifting bottom, a supporting handle for said casing, the pivot being spaced relative to the handle about 90° circumferentially relative to the casing, a trigger type operating lever pivoted on the handle, a spring normally tending to move the same in one direction, said lever being operable by hand in the opposite direction, and a push-and-pull rod guided for lineal movement in a hole provided in the wall of said casing above the sifting bottom and pivotally attached at its outer end to said lever and having the inner end portion thereof bent substantially vertically for a sliding pivotal connection in a slot provided in the agitator, said slot extending transversely relative to the rod.

3. A flour sifter comprising, in combination, a casing having a sifter bottom, a supporting handle for said casing, an elongated agitator adapted to oscillate in said casing relative to the sifter bottom, means on the handle operatively connected with the agitator intermediate the ends thereof to transmit oscillatory movement to the agitator, and means for pivotally mounting said agitator at one end independently of the last mentioned means, said pivotal mounting means comprising an upwardly extending, substantially vertical element on one end of said agitator parallel to the side wall of the casing and in abutting relation thereto, and a sheet metal bearing plate attached to the wall of said casing on the inner side thereof and having struck therefrom a generally channel-shaped, substantially vertical, hollow bearing portion closed at its upper end and open at its lower end for reception of the pivot element on the agitator, said bearing plate being disposed in tight engagement with the inner side of the wall of said casing to prevent entrance of flour behind the same, and the closed upper end of said bearing portion preventing entrance of flour therein,

4. In a sifter, a casing having an open top and a sifting bottom, a handle on one side of said casing, an elongated agitator pivotally mounted in said casing alongside the wall thereof at a point spaced appreciably from the handle circumferentially of the casing for oscillatory movement on top of the sifting bottom toward and away from the handle, a substantially vertically disposed operating lever outside the casing pivoted at its upper end in the handle for operation in a plane disposed substantially radially relative to the casing, and a substantially straight radially extending link disposed substantially horizontally in closely spaced substantially parallel relation to the top of the sifting bottom providing a push and pull connection between the lower end of said lever and the adjacent intermediate portion of the agitator through an opening provided in the lower portion of the intervening wall of the casing above the sifting bottom, said lever being movable manually in one direction and having spring means acting to move it in the opposite direction.

5. In a sifter, a casing having an open top and a sifting bottom, a handle on one side of

said casing, an elongated agitator pivotally mounted in said casing alongside the wall thereof at a point spaced appreciably from the handle circumferentially of the casing for oscillatory movement on top of the sifting bottom toward and away from the handle, a substantially vertically disposed operating lever outside the casing pivoted at its upper end in the handle for oscillatory movement relative thereto in a plane disposed substantially radially relative to the casing, and a substantially straight radially extending link reciprocable with the lower end of said lever and extending through an opening provided in the lower portion of the wall of said casing substantially horizontally in closely spaced substantially parallel relation to the top of the sifting bottom and slidably pivotally connected at its inner end with the agitator at a point intermediate the ends thereof, the sliding movement of the link relative to the agitator being in a direction transversely relative to the link whereby the agitator is oscillated with the lever, said lever being movable manually in one direction and having spring means acting to move it in the opposite direction.

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