Oct. 27, 1931. W. G. KIRCHHOFF 1,829,707

SIFTER STRUCTURE

Filed June 27, 1927 2 Sheets-Sheet 1

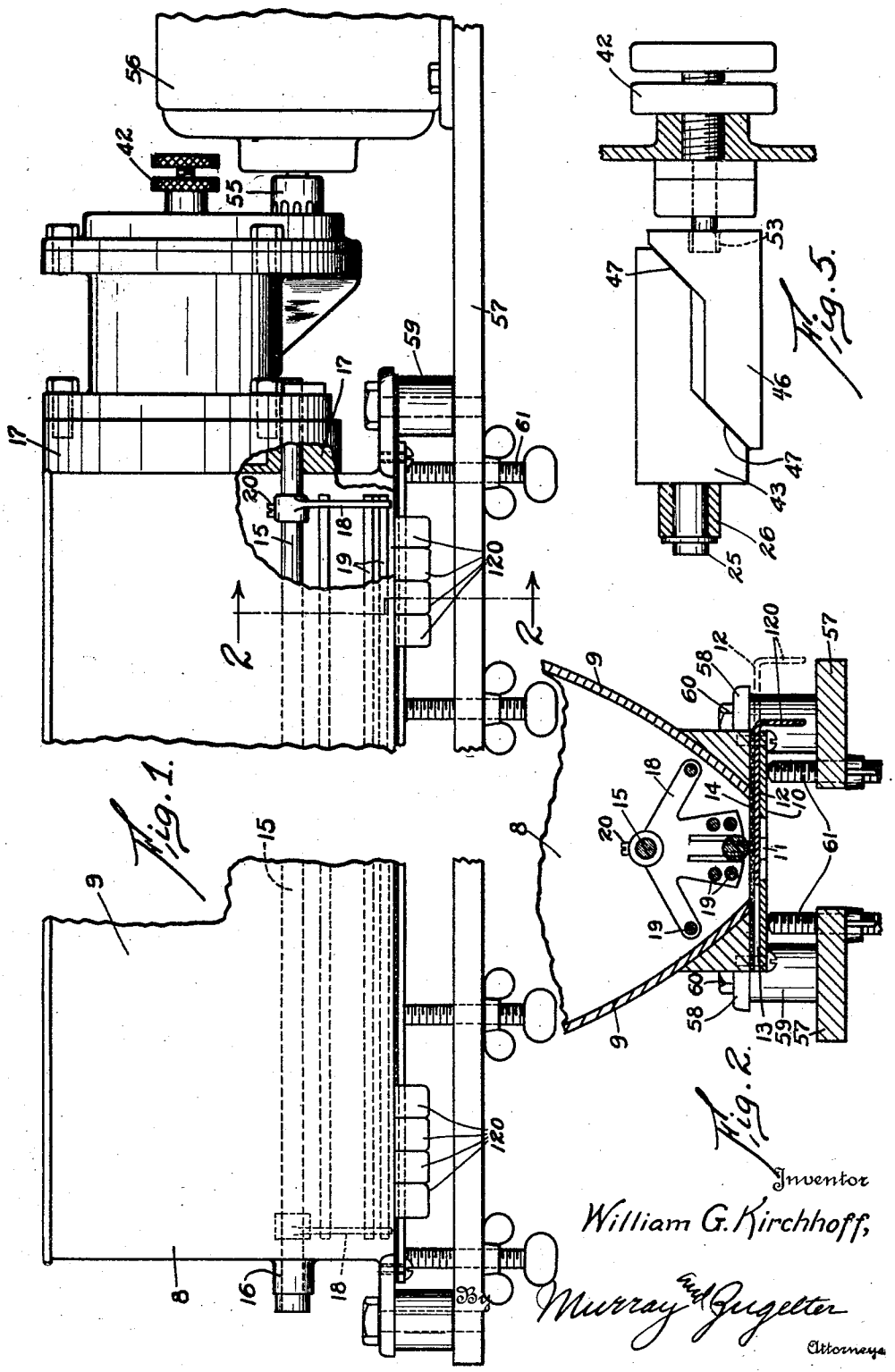


Fig. 1.

Fig. 5.

Fig. 2.

Inventor

William G. Kirchhoff,

By Murray and Gugelet

Attorneys

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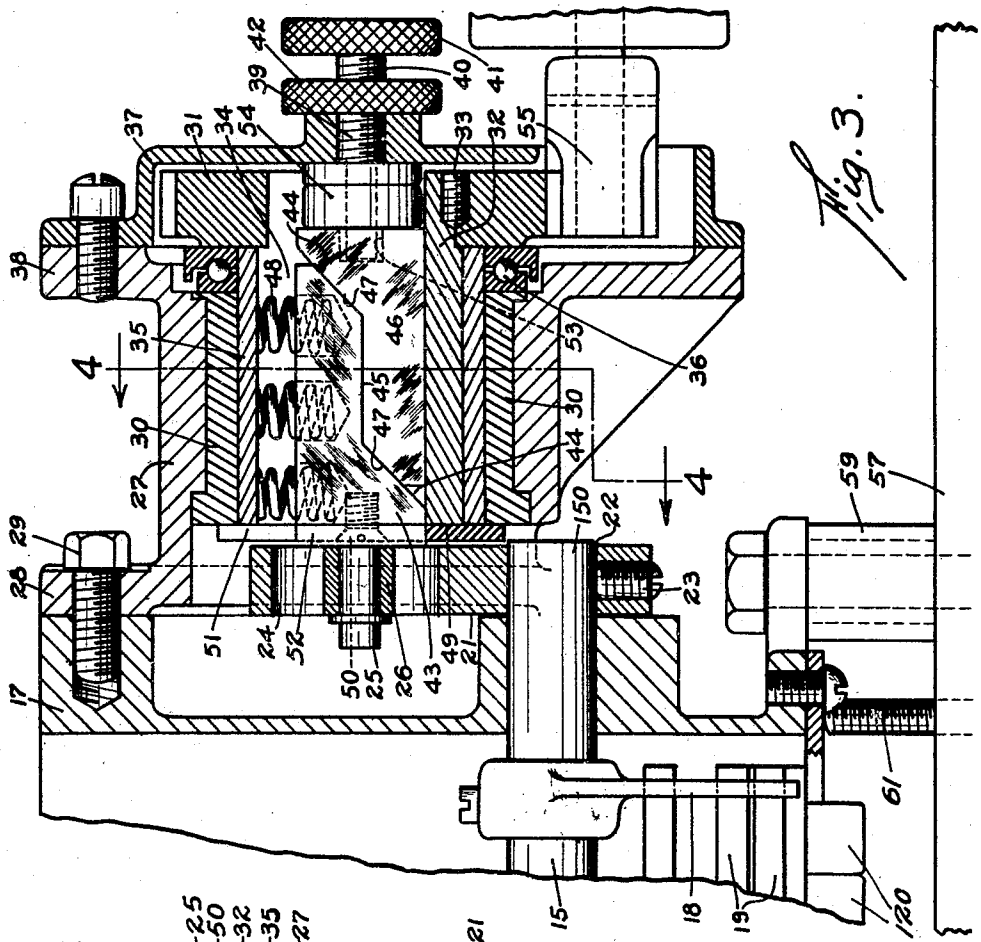


Fig. 3.

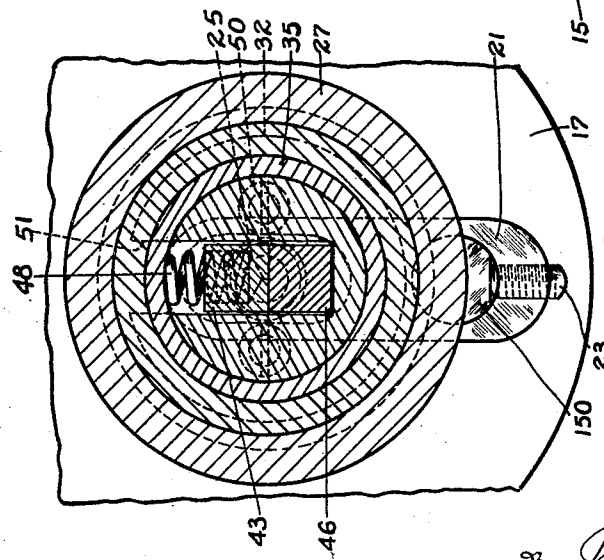


Fig. 4.

Inventor

William G. Kirchhoff,

By Murray & Flugelter

Attorneys

Patented Oct. 27, 1931

1,829,707

UNITED STATES PATENT OFFICE

WILLIAM G. KIRCHHOFF, OF CINCINNATI, OHIO, ASSIGNOR TO THE J. H. DAY COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO

SIFTER STRUCTURE

Application filed June 27, 1927. Serial No. 201,660.

This invention relates to a sifting or dusting appartus such as may be used with bread making and other types of machines and has for an object the provision of a sifter mechanism which is adapted for accurate adjustment in order to regulate the quantity of siftable substance discharged thereby.

Another object is to provide a device having a unitary adjustment unit which may be conveniently assembled on any of a number of different kinds of machines.

Another object is to provide a sifter wherein both the screen or mesh and the agitating means are adjustable for regulating the delivery of siftable substance therefrom.

Another object is to provide a sifter mechanism with an oscillatory agitator and means for effecting a fine adjustment of the oscillation of the agitator.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a side elevational view of a structure embodying a device of the invention, parts being broken away.

Fig. 2 is a cross sectional view on line 2—2 of Fig. 1.

Fig. 3 is an enlarged vertical section showing the right hand portion of the structure shown in Fig. 1.

Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a detail showing a portion of the structure shown in Fig. 3.

In the present embodiment of the invention the sifter or duster comprises a body member 8 having side walls 9 which converge downwardly toward a bottom plate 10 having a longitudinal discharge slot 11. The operative length of the discharge slot 11 is controlled by a plurality of slides 12 arranged in side by side relation in a recess 13 in the top face of plate 10. The slides 12 have suitable finger pieces 120 for facilitating withdrawal thereof. A duster screen 14 is secured intermediate the bottom plate 10 and the bottom of the duster body. An agitator shaft 15 extends longitudinally through the duster body and is journaled in a suitable bearing 16 at one end and in an end plate 17 at the opposite end of said body. This shaft is adapted for oscillation by the mechanism hereinafter described for imparting rocking or oscillatory movement to a suitable agitator 18 which may carry a plurality of rods 19. The agitators 18 may be rigidly secured to shaft 15 by any suitable means such as set screws 20. By regulating the oscillatory movement of agitators 18 and the rods or brush members carried thereby, the rate of discharge of siftable substance through the screen may be controlled with accuracy.

As shown in Fig. 3 the end of shaft 15 extends through end plate or casting member 17 for a distance providing a projecting portion 150 on the shaft 15. An agitator shaft lever 21 has a bore 22 which receives the projecting end 150 of the shaft 15. A set screw 23 serves to secure lever 21 to the shaft 15. Agitator lever 23 has an elongated slot 24 through which projects an eccentric stud 25 having anti-friction roller 26 attached thereto. The stud 25 is arranged for accurate adjustment toward and away from the longitudinal center of a rotating actuating mechanism which is herein arranged in the form of a separate and removable unit. A bearing housing 27 carries a flange 28 whereby said housing is secured by any suitable means such as cap screws 29 to the end member 17. A journal 30 of suitable bearing metal is supplied within the housing 27. A gear 31 has a hub member 32 secured thereto with any suitable means such as by a key screw 33 and has a radial slot or opening 34 extending from one side for a distance beyond center of the hub 32. A bearing bushing 35 encircles the hub 32 and closes the longitudinal opening 34 at the side of said hub. A suitable thrust bearing 36 is interposed between the gear 31 and the end of the bearing journal 30, the mechanism thus far described being retained against withdrawal by a gear cover 37 which may be suitably secured to a flange 38 on the housing 27. Gear cover 37 has a threaded hub 39 through which an adjustment screw 40, having a knob 41, may be moved. A suitable lock nut 42 serves to lock the screw 40 in adjusted positions. The eccentric stud 25 is

secured to or made integral with a stud bar 43 which is provided with a pair of spaced inclined faces 44 and an intermediate face 45 which is in alignment with the axis of stud 25. A wedge bar 46 has a pair of complementary spaced parallel inclined faces 47 which correspond to the inclined faces 44 on the stud bar 43. Springs 48 seated in suitable recesses in stud bar 43 and having their free ends abutting the bushing 35 serve to retain the stud bar in abutment with the wedge bar 46. The washer or disc 49 is secured to the end of hub 32 by means of screws 50. Washer 49 has a slot 51 therein slightly narrower than the opening 34 in the hub. The stud bar 43 has a narrowed flange 52 which rides in the slot 51 of washer 49. Thus it will be noted that the end of the body of the stud bar abuts one face of washer 49 adjacent the slot while a face of the roller 26 on the stud abuts the opposite face of said washer.

The stud bar is thus retained against longitudinal displacement, while it may be moved radially, or in other words radially of the hub by means of the wedge bar 46. The wedge bar 46 is recessed at 53 to receive the end of screw 40, a suitable anti-friction thrust bearing 54 being interposed between the end of the wedge bar and the gear cover 37. From the foregoing it will be noted that a fine degree of adjustment of the stud 25 may be attained by manipulating the knob 41, and that the parts may be securely retained in adjusted positions by means of the lock nut 42.

The gear 31 may be actuated from a power driven pinion 55 which may be driven directly from a motor 56. The entire duster or sifter unit may be conveniently mounted upon a pair of spaced support members 57, the body being provided with perforate base flanges 58 resting on tubular spacers 59 and clamped by bolts 60 extending through the flanges, spacers and into the supports 57. Screws 61 extending upwardly through the supports 57 and abutting the bottom plate 10 at spaced intervals, serve to retain the bottom plate, screen and slides 12 in abutment, thereby precluding undesired escape of the siftable substance and also serving to eliminate vibration.

The operation of the device is as follows; when it is desired to provide a dusting mechanism for a given machine a complete unit such as is shown in Fig. 1 may be conveniently mounted in position by securing the supports thereto. If the machine be previously provided with a hopper body, agitator and agitator shaft, a unit comprising the housing 27 and the parts contained therein may be mounted upon the hopper and the lever 21 connected with the agitator shaft. The several different types of installations mentioned may be quickly made with but very little labor. The adjustment of the means for controlling oscillation of the agitator shaft has been heretofore set forth and will be readily understood. When the device is in the position shown, with all parallel faces of stud bar and wedge bar in abutment, the stud 25 is concentric with the hub 32 and merely rotates therewith so that no oscillatory movement is transmitted to lever 21 and the shaft connected to it. A slight forward adjustment of the wedge bar will move the stud bar and stud will produce a corresponding eccentricity between the hub and stud and a resultant oscillation of the lever and shaft. The stud has a wide range of adjustment.

While the arrangement of slides 12 is disclosed herein at the ends of the hopper, it will be understood that the entire discharge slot may be made controllable by the addition of slides 12. In this way one or more discharge openings may be had and may be arranged in required position relative to the hopper.

What is claimed is:

1. In a device of the class described the combination of a rotatably mounted hub having a radial opening along one side, a stud bar in said opening, a wedge bar in the opening, each of said bars having a pair of spaced inclined faces, the inclined faces of said bars being adapted to ride upon one another, means for effecting longitudinal movement of the wedge bar for effecting radial movement of the stud bar and a stud projecting from the stud bar and movable therewith through the agency of the adjusting means to positions ranging from concentricity with the axis of the hub to various degrees of eccentricity therewith.

2. In a device of the class described the combination of a housing, a hub rotatably mounted within the housing and having a radial opening therein extending beyond the axis of rotation of the hub, a stud bar mounted for radial movement within the opening of the hub and through which passes the axis of the hub, a wedge bar in the opening and including said axis of rotation, cooperative means on the stud bar and the wedge bar whereby the stud bar is moved radially in the opening upon longitudinal movement of the wedge bar, adjustment means normally fixed relative the housing and through which passes the axis of hub rotation for longitudinally moving the wedge bar and means for rotating the hub.

3. In a device of the class described the combination of a housing, a hub rotatably mounted within the housing and having a longitudinal radial opening therein extending diametrally from a surface of the hub and past the axis of rotation thereof to a location closely adjacent the opposite surface of the hub, a stud bar in the opening and occupying a position substantially at one side of the said axis of the hub, a cooperative element in the opening and disposed substantially on

the opposite side of said axis, cooperative means on said element and the stud bar whereby longitudinal movement of said element effects radial movement of the stud bar in the opening, and adjustment means concentric with the axis of rotation of the hub for longitudinally moving the cooperative element.

4. In a device of the class described the combination of a housing, a hub rotatably mounted within the housing and having a longitudinal radial opening therein extending diametrally from a surface of the hub and past the axis of rotation thereof to a location closely adjacent the opposite surface of the hub, a stud supporting member in the opening and occupying a position substantially at one side of the said axis of the hub, a cooperative element in the opening and disposed substantially on the opposite side of said axis, cooperative means on said element and the stud supporting member whereby longitudinal movement of said element effects radial movement of the stud supporting member in the opening, means yieldingly urging the stud supporting member and its cooperative element toward one another, a bearing bushing encircling the hub, and adjustment means concentric with the axis of rotation of the hub for longitudinally moving the longitudinally movable element.

In testimony whereof, I have hereunto subscribed my name this 21st day of June, 1927.

WILLIAM G. KIRCHHOFF.