Dec. 23, 1958 C. E. JACKSON 2,865,537

DISPENSER

Filed Aug. 22, 1955 2 Sheets-Sheet 2

FIG. 4.

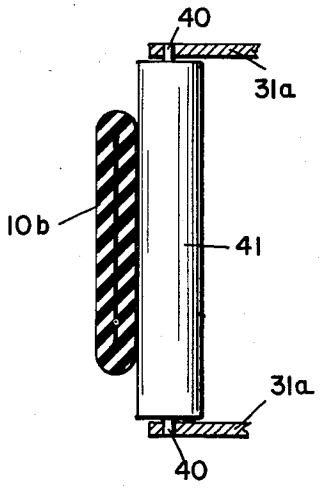


FIG. 5.

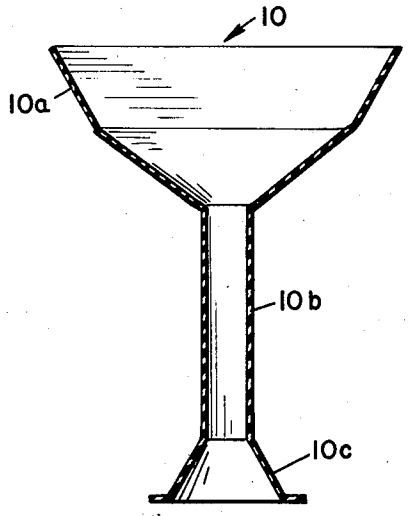


FIG. 7.

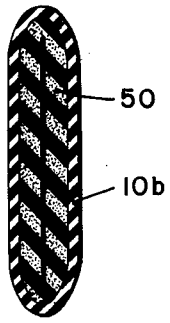
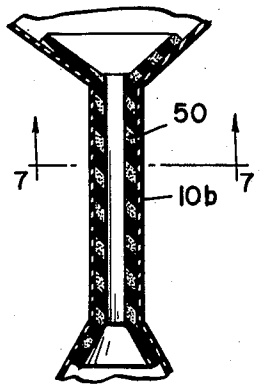


FIG. 6.



INVENTOR

CLARK E. JACKSON

BY Mason & Graham

ATTORNEYS

Dec. 23, 1958 C. E. JACKSON 2,865,537

DISPENSER

Filed Aug. 22, 1955 2 Sheets-Sheet 1

FIG. 1.

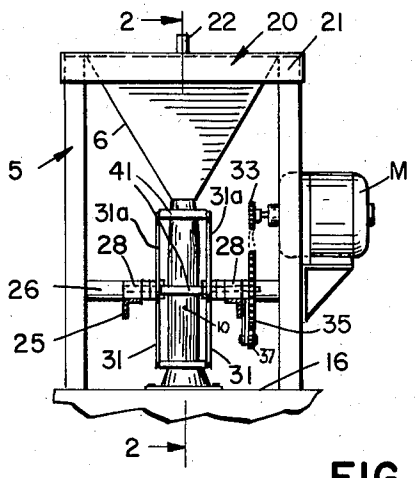


FIG. 3.

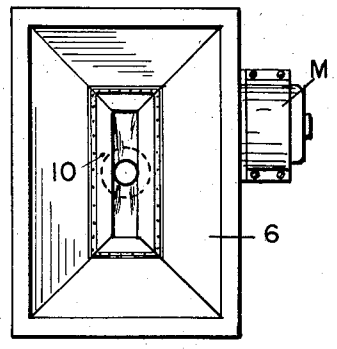
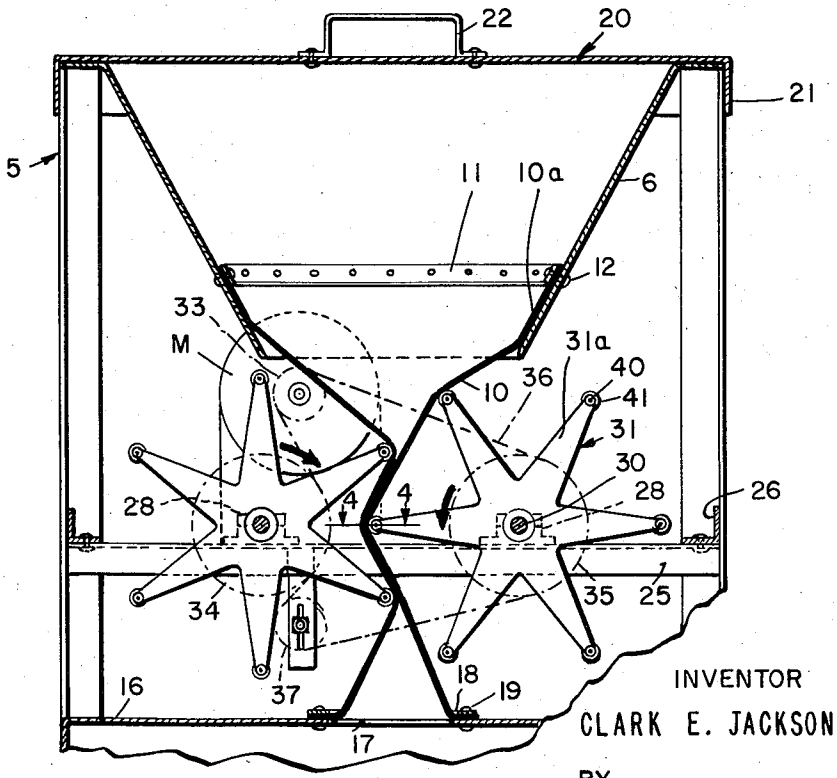


FIG. 2.



INVENTOR

CLARK E. JACKSON

BY Mason Graham

ATTORNEYS

United States Patent Office 2,865,537 Patented Dec. 23, 1958

2,865,537

DISPENSER

Clark E. Jackson, Alhambra, Calif., assignor to Turco Products, Inc., a corporation of California

Application August 22, 1955, Serial No. 529,709

3 Claims. (Cl. 222—214)

My invention has to do with dispensers, and relates more particularly to a dispenser peculiarly adapted to dispense powdered materials, such as powdered soaps and detergents, for dishwashing machines and the like, although my device is capable of efficiently dispensing viscous materials.

The dispensing of powdered soaps and detergents has always presented a difficult problem because the materials tend to become caked and lumpy, particularly where the dispensers are located in areas in which there is considerable moisture, such as is the case in dishwashing machines. When such caking occurs, the dispenser becomes clogged and inoperative to efficiently dispense the material.

It is therefore an object of my invention to provide a dispenser for such materials which effectively prevents caking and lumping in the dispensing tube, even in the presence of moisture.

It is a further object to provide a dispenser which incorporates a flexible dispensing tube together with novel means for, in effect, "milking" the material through the tube.

A still further object is to provide a dispenser of this character wherein the dispensing tube is effectively closed at some point between its ends during all stages of operation so that there will be no leakage of the material when the device is not in operation or passage of moisture containing vapors through the tube.

Further objects and advantages will appear hereinafter.

While I shall point out in the appended claims the features which I believe to be new, I shall now, for the purpose of explaining my invention, describe in detail a presently preferred embodiment thereof, for which purpose I shall refer to the accompanying drawings, wherein,

Fig. 1 is a side elevation of a dispenser embodying my invention;

Fig. 2 is an enlarged section taken on line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the device with the cover member removed;

Fig. 4 is an enlarged section taken on line 4—4 of Fig. 2;

Fig. 5 is a longitudinal section of the dispensing tube;

Fig. 6 is a fragmentary sectional view showing a modified form of dispensing tube; and

Fig. 7 is a section taken on line 7—7 of Fig. 6, the tube being shown in "flattened" position.

Referring now to the drawings, I show at 5 a frame, in the top portion of which I mount a material hopper 6.

Within the bottom or outlet end of the hopper I secure the flared top portion 10*a* of a dispensing tube 10 by means of a clamping strip 11 and attaching means such as rivets 12.

As best shown in Fig. 5, the dispensing tube 10, which is made of elastic rubber or like material, has an upper portion 10*a* of squared cross-section tapering to a cylindrical medial or neck portion 10*b* and thence flaring

at 10*c* to its discharge end. The discharge end of the tube is secured to the bottom wall 16 of the frame around a discharge opening 17 therein, as by clamping strip 18 and screws 19.

A cover cap 20 is provided for the hopper, said cover cap having a depending perimetric flange 21 and a handle 22.

At each of its sides the frame 5 carries a cross member 25 secured to the frame by brackets 26, and each cross member carries a pair of bearings 28 to journal the shafts 30 of star wheels or rotors 31.

The shafts 30, and consequently the wheels 31, are driven in relatively opposite directions by a motor M, sprocket wheels 33, 34, 35 and a chain belt 36, the belt passing around an idler sprocket 37. It will be understood of course that any suitable driving means may be utilized which will rotate the wheels 31 at the desired speeds in relatively opposite directions.

Each of the wheels has two spaced star-shaped sides 31*a* and carries a plurality of equidistant, circumferentially spaced spindles 40, journaled at its ends in the opposite sides 31*a*, each spindle rotatably carrying a sleeve 41. That is, there is one of the spindles and its carried sleeve at the outer end of each of the radial projections 31*b* of each wheel or rotor. The axes of the wheels in relation to their radii are so spaced that the projections of the opposed wheels somewhat intermesh—that is, in the course of their relative rotation, the sleeves 41 of one wheel intermittently project between the two contiguous sleeves 41 of the other wheel to a point beyond a line intersecting the axes of rotation of the two contiguous sleeves, as best shown in Fig. 2.

Thus, since the dispensing tube extends between the peripheries of the wheels, as the wheels are rotated each of the sleeves 41 engages and stretches the tube as well as flexes it laterally between contiguous sleeves of the other wheel, each of the sleeves continuing to travel longitudinally of the tube during this flexing and stretching operation so that a highly effective "milking" action is produced which progressively causes the material in the tube to move from its inlet end towards its discharge end, from which latter end the material falls by gravity through the opening 17.

As will be apparent, the engagement of the tube by the sleeves 41 adjacent the hopper also continuously flexes the inlet end portion of the tube adjacent the hopper to facilitate the powdered material continuing to move by gravity into the tube and to prevent localized caking or arching of the material.

To insure that the wall of the tube portion 10*b* is fully collapsed to prevent leakage when rotation of the wheels is stopped, I may provide the tube portion 10*b* with a sponge rubber lining 50, as shown in Figs. 6 and 7, the tube portion 10*b* being shown in flattened condition in Fig. 7.

My dispenser may be operated continuously to constantly dispense material, or by controlling the electrical circuit to the motor by means of a conventional timing switch, not shown, the dispenser may be made to operate intermittently or at timed intervals, so that only carefully measured quantities of material may be dispensed during each intermittent operation of the motor.

I claim:

1. In a material dispenser, a body, a pair of radially spaced rotors rotatably carried by said body to rotate about parallel axes and each rotatably carrying at its periphery a plurality of circumferentially spaced rollers mounted to rotate about axes parallel with the axes of rotation of said rotors; the radius of each of the respective rotors being greater than half the distance between the axes of rotation of said rotors whereby the rollers carried by one of said rotors extend between

rollers of the other of said rotors during rotation of said rotors, means for simultaneously rotating said rotors in opposite directions, and a flexible material-carrying tube having a top inlet end and a bottom outlet end, extending longitudinally between said rotors in position to be simultaneously engaged at longitudinally spaced points by at least two of the rollers carried by one of said rotors and at an intermediate point by a roller carried by the other of said rotors, whereby, in response to said rotation of said rotors, to be collapsed and stretched by said rollers in a manner gradually to work the contents of said tube toward the outlet end thereof, and means supporting the inlet end of said tube.

2. The dispenser of claim 1 wherein said tube has a relatively soft sponge-rubber lining portion.

3. The dispenser of claim 1 wherein each of said rotors is comprised of a pair of spaced parallel star wheels each presenting a plurality of circumferentially spaced, radially disposed arms, and wherein the said rollers carried by each of said rotors are rotatably carried by the outer end portions of said arms.

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