Feb. 16, 1932. R. S. WALKER 1,845,636

SOAP DISPENSING DEVICE

Original Filed March 12, 1929 2 Sheets-Sheet 1

Fig. 1.

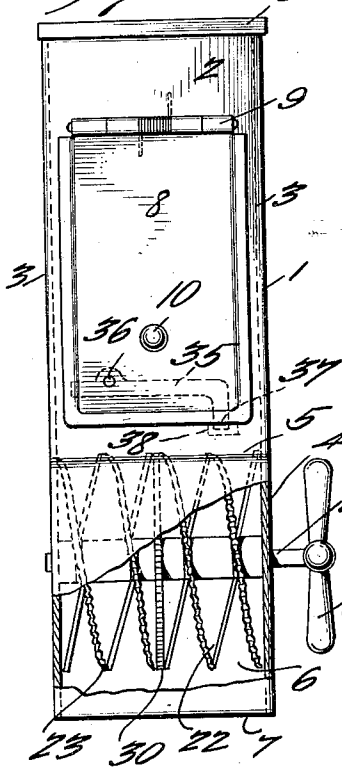


Fig. 2.

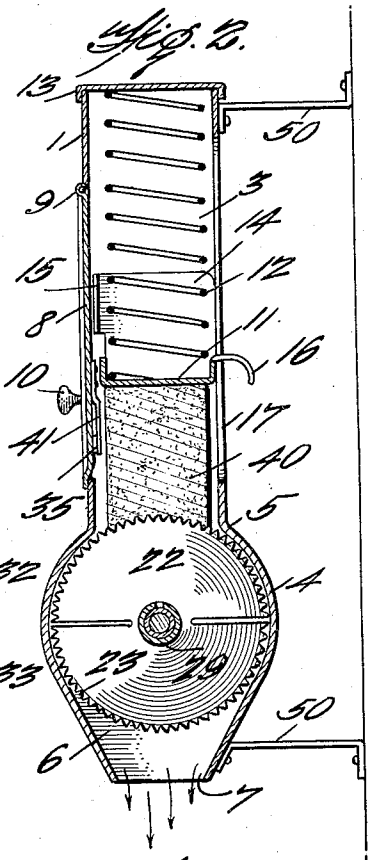


Fig. 3.

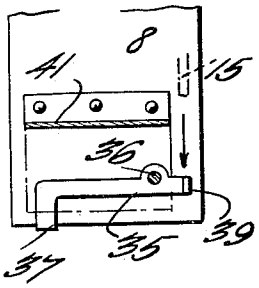


Fig. 6.

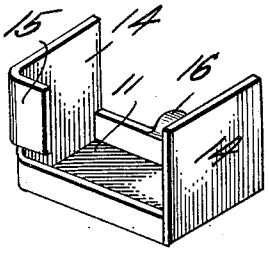


Fig. 4.

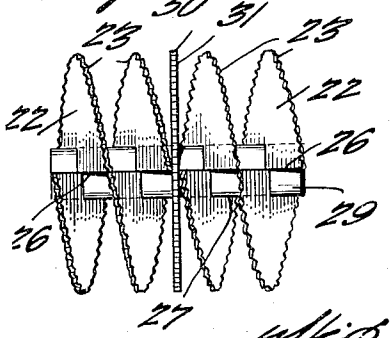


Fig. 5.

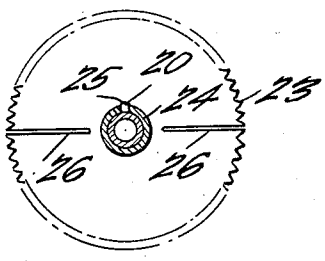


Fig. 8.

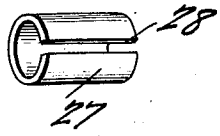
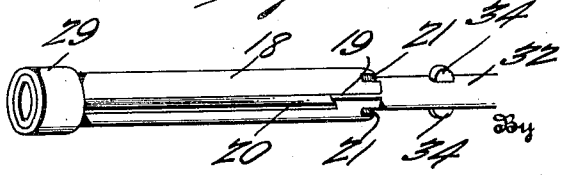


Fig. 7.



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SOAP DISPENSING DEVICE

Original Filed March 12, 1929 2 Sheets-Sheet 2

Fig. 9.

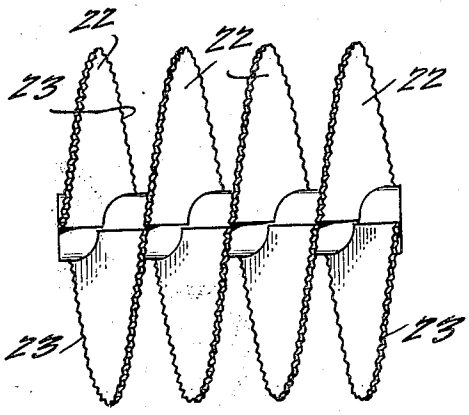


Fig. 10.

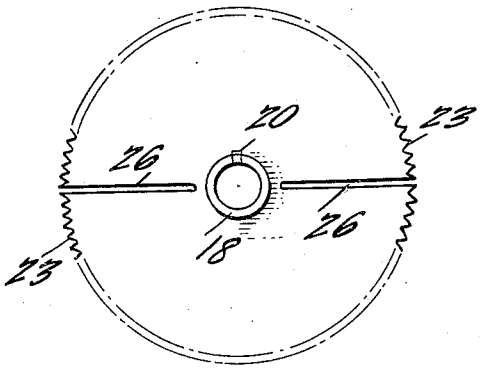


Fig. 11.

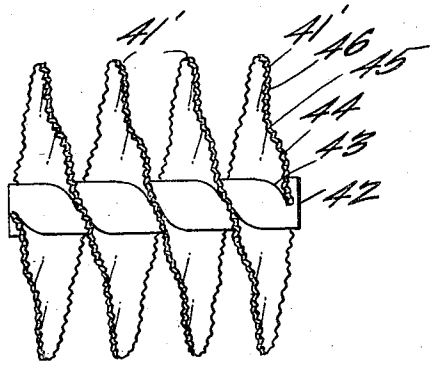


Fig. 12.

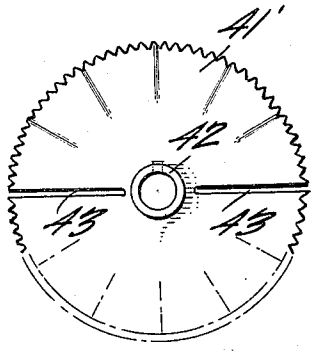
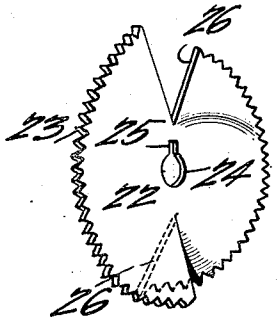


Fig. 13.



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UNITED STATES PATENT OFFICE

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SOAP DISPENSING DEVICE

Continuation of application Serial No. 259,852, filed March 7, 1928. This application filed March 12, 1929, Serial No. 346,400. Renewed July 9, 1931.

This invention is directed to an improvement in soap dispensing devices in which a cake of soap is under more or less constant feeding pressure, which soap, through control of a manually operable element, is delivered through the outlet of the device in a finely comminuted form.

In devices of this character, it is important that the soap material be delivered in as fine a form as possible and that the operation on the soap body or cake to form it into the fine powder be of a character to insure as complete a use of the entire cake as possible. To secure this result it has been heretofore proposed to subject the surface of the soap cake to a cutting or abrading action, acting on the cake in one direction only, with the result that the particles so delivered are somewhat coarse and not as easily soluble in water as the finer powder, and the cake, in those portions not immediately attacked by the cutters, will flake off or break in larger particles, which is objectionable.

It is, therefore, the primary object of the present invention to provide a cutter peculiarly adapted for the treatment of the soap cake in that in its operation it not only cuts into the cake vertically but also horizontally, thus insuring that the full surface area of the cake is similarly operated on and that the particles delivered as a result of the cutting operation are in the finest powdery form to insure easy and speedy solubility.

A further object of the present invention is the provision of means whereby the cake of soap is held substantially fixed against any lateral movement in the casing which might be otherwise incident to the use of the particular type of cutter referred to and at the same time utilizing this soap holding means as a cutting element. Under the action of the cutter of this application, and in the absence of holding means, there is a tendency to move the soap laterally in the direction of operation of the cutter, and as the soap is under spring pressure, the cake of soap will be alternately directed laterally in the direction of cutting feed and then back to a central position in more or less rapid succession, the forcing of the soap against the wall of the casing producing an undesirable sound. With a device cooperating with the cutter and serving to engage and hold the soap, the latter is held centrally of the casing and all objectionable noise avoided.

Devices of this character are usually in the form of containers fixed to the walls of public wash rooms and the like and unless provision is made to the contrary, the soap cakes are frequently extracted in their entirety from the device by unauthorized persons. This in some instances has been overcome by the use of a key-controlled lock which, while it may function to prevent extraction of the soap cake, requires that the person authorized to renew the soap make more or less frequent inspection to determine whether or not the soap requires renewal, coupled of course with the use of a key or other unlocking element.

A further object of the invention is to provide a means for automatically notifying any interested party of the fact that the soap in the container has been exhausted. This means includes a lock or the closure, with a spring hinge connecting the closure with the container. The lock is arranged to be automatically released by cooperation with the plunger when the latter has reached a position incident to the complete use of the soap cake. The automatic release of the lock causes the spring hinge to move the closure to open position, thus notifying both the attendant and anyone desiring to use the device that the soap is exhausted.

A further object of the present invention is the provision of means for relatively fixing the cutting disks in proper spaced and relatively fixed relation on a shaft for receiving the handle.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a view in elevation, partly broken out, of the soap dispensing apparatus,

Figure 2 is a vertical longitudinal section through the same.

Figure 3 is a broken elevation of the closure from the inner side, showing the locking means, the cover for the locking means being broken away.

Figure 4 is an elevation of the cutting implement.

Figure 5 is a vertical section through the same.

Figure 6 is a perspective view of the follower.

Figure 7 is a view of the hollow shaft and handle member cooperating with the cutting element.

Figure 8 is a perspective view of one of the spacing sleeves for the cutting element.

Figure 9 is a view in elevation of a slightly modified form of cutting element.

Figure 10 is a vertical section through the same.

Figure 11 is a view in elevation of another form of cutting element.

Figure 12 is a vertical section through the same.

Figure 13 is a perspective view of one of the cutting disks making up the cutting element.

It is an essential purpose of the present invention to provide a simple, thoroughly effective device of this character which may be economically produced and which as a result will permit the use of such devices to an extent now prohibited by the first cost thereof. To this end, it is to be understood that the various parts of the device now to be described are constructed of stampings and are formed so that but the minimum mechanical operation other than a stamping process is necessary in the construction of the device.

In the preferred embodiment of detail, as illustrated in the accompanying drawings, the construction provides a casing 1, preferably rectangular in cross section, formed with front and rear walls 2 and side walls 3, the side walls 3 throughout their lower portions being extended into rounded or circular form at 4 and the front and rear walls being curved in coincidence with the edges of the side walls, as at 5, to form a more or less circular enlargement 6 at the lower end of the casing which provides a delivery outlet 7.

The front wall 2 of the casing 1 is formed with an opening having a door or closure 8 hinged at the upper end, as at 9, and provided at its lower end with an operating knob or handle 10. The hinge 9 is of the spring type capable of opening and raising the closure if the latter is unlocked. Within the upper rectangular portion of the casing is mounted a follower 11, corresponding in contour but of less sectional dimensions than the casing. The follower is preferably hollow to permit it to be formed as a stamping, and a spring 12 bears between the upper or cap end 13 of the casing and the plunger, the spring being preferably of a diameter to permit its lower end to seat within the plunger. The follower is preferably formed with side wall extensions 14 to bear against the side walls of the casing 1 to guide the follower, and one of these walls is provided with a projection 15 serving as a lock trip for a purpose to be later referred to. The follower is also provided with a curved extension 16, in the form of a finger hold, which projects through a slot 17 in the rear wall of the casing, to thereby provide a means for manually raising the follower against the tension of the spring 12 when it is desired to insert a fresh cake of soap.

A rotary cutting and comminuting element is mounted in the circular enlargement 6 of the casing. This element forms one of the essential features of the invention and includes a hollow shaft 18 of a length to fit between the side walls of the casing and split longitudinally, as at 19. The shaft in radial alignment with one edge of the longitudinal division is formed with an outstanding key 20, which terminates short of the ends of the shaft. The shaft 18 at one end is formed with diametrically opposed handle locking recesses 21.

The cutter proper includes disks 22, of a diameter somewhat less than that of the circular enlargement 6, the peripheral edges of the disks being preferably formed as a series of teeth 23. Each disk is formed with a central opening 24 of a size to fit over the shaft 18, the edge of the opening being recessed at 25 to cooperate with the key 20. Immediately beyond the opening 24 each disk is divided on a diametric line 26, the divisions extending to the peripheral edge of the disk. By means of the line of division 26, each disk is divided substantially into halves, and considering the line of division 26 as in a vertical position, each half of the disk is twisted from its normal plane at right angles to the axis of the shaft 18 into a plane at an angle to said axis other than the right angle. Each half is twisted with respect to its vertical plane as a single element, so that the upper portion of the half is on one side of a vertical plane passing through and at right angles to the axis and the lower portion is on the opposite side of such plane. Each half of the disk is twisted in a reverse direction.

The disks are assembled on the shaft 18 and held in spaced relation by spacing collars 27, the collars having slots 28 to cooperate with the key 20. The ends of the shaft beyond the key are provided with keepers 29 in the form of collars.

The spacing of the disks on the shaft and the degree to which they are twisted is such that the marginal edge of the twisted half of one disk is in circumferential continuity with the peripheral edge of the opposing half of the next adjacent disk. Thus, each half of each disk is deflected at relatively reverse inclinations from the shaft 18, with one portion of a particular disk in coincidence with the ends of an opposing portion of an adja-

cent disk. There is thus provided a cutting element of substantially spiral form constructed originally of flat disks and presenting a substantially unbroken toothed margin. The disks of course are very thin so that in effect they present cutting teeth.

In the rotation of the cutting element thus provided it will be apparent that there is a tendency to move the cake of soap laterally incident to the spiral cutting operation, and under this tendency the cake of soap and follower to some extent will be moved laterally and then under spring tension returned to a central position. Each revolution of the handle, therefore, tends to the production of an objectionable noise incident to this movement.

An essential feature of the present invention is the provision of means for avoiding this tendency to movement on the part of the cake of soap, and to hold such soap cake substantially in a central position during the cutting operation. This soap locking or holding means is provided in the form of a cutting disk 30, similar to the disks 22 without, however, any radial line of division. The holding disk has peripheral teeth 31 similar to the teeth of the disks 22 and is secured upon the shaft 18 exactly as are the disks 22. The holding disk 30 is arranged centrally of the shaft by preference and operates in a plane at all times at right angles to the axis of the shaft. The holding disk passes between the twisted portions of adjacent disks and at the meeting ends of such twisted portions, thus in a measure interrupting the continuity of the spiral edge of the main cutter.

A handle shaft 32 having a handle 33 on one end is passed through the shaft 18, the handle shaft having lugs 34 to fit in the recesses 21 of the shaft to secure the parts against relative rotation. The ends of the shaft are then upset within and against the keepers 29 and the whole is thus locked as a unit.

The closure 8 is provided with a locking element in the form of a bar 35 pivotally connected at 36 and formed at one end with a depending lip 37 adapted to seat in an opening 38 in the inturned margin at the lower end of the door opening. That end of the bar 35 opposite the lip 37 is formed with an offset 39 adapted in the descent of the follower 11, and at substantially the lowest point of the latter, to be engaged by the projection 15, with the effect to swing the bar 35 and withdraw the projection or lip 37 from the opening 38, thereby automatically releasing the lock as the cake of a soap is exhausted. The lock functions to locking position by gravity on moving the closure 8 to closing position, and is automatically released when the cake of soap is exhausted. On the automatic release of the lock, the spring hinge 9 operates the closure 8 to open position, visually advising the user or attendant that the particular device is exhausted.

In the preferred form, a cake of soap, indicated at 40, is placed beneath the follower 11 which, under the influence of the spring 12, forces the soap in contact with the cutting and soap holding element. Whenever it is desired to obtain a quantity of soap, the handle 33 is turned, causing the toothed edge of the spiral cutter to engage in and operate on the lower surface of the cake of coap. In this operation, the teeth of the spiral cutting edge will of course cut into the soap in a vertical direction, but as these teeth are, during this vertical cut, being moved transversely of the cake of soap, it follows that the cutting operation is taking place simultaneously in two directions relative to the cake of soap, and hence the soap material is divided into the finest powder-like flakes, which will gravitate through the outlet 7 into the hand or onto any article placed beneath.

During the cutting operation of the spiral cutter, the holding and cutting disk 30 is operating on the lower edge of the soap but always in a plane at right angles to the axis of the shaft. This cutting and holding disk 30, therefore, tends not only to cut the soap but to in effect form a continuous channel transverse the end of the soap being cut which, by reason of the interfit therewith of the disk 30, holds the soap at all times in a central position. As the cutting edges of adjacent spiral disks substantially merge into the peripheral edge of the disk 30, it is apparent that the full surface of the soap is cut away and that while the holding disk is effective in forming the holding groove in the soap, this groove is completely eliminated by the action of the spiral cutter.

A cover plate 41 is preferably secured on the closure 8 to overlie the locking bar 35, thus preventing the soap from interfering with the operation of the locking bar.

It will of course be understood that where it is not particularly essential that the soap cake be held against lateral movement, the disk 30 may be omitted, and the cutter present a true spiral cutting edge, as indicated in Figure 9. Furthermore, as indicated in this figure, the spacing collars 27 may be omitted as independent elements and formed integral with the cutting disks, as indicated.

Furthermore, the cutting disks may be otherwise formed than as true spiral cutting edges. Thus, for example, as indicated in Figures 11 and 12, the disks 41′ may be secured to a sleeve 42 adapted to be interlocked with the shaft 18 and these disks bent or twisted in a manner to present cutting edges in part spiral and in part normal to the shaft, with the normal to the shaft portions serving as holding portions for the cake of soap. Thus, each disk on the line of its diametric division 43 is bent sharply at an

angle to a plane at right angles to its axis to merge into the similarly bent portions of the adjacent disk, exactly as in the preferred form. Immediately beyond this sharply bent portion, each disk is maintained for a portion of its peripheral length, as at 44, in a plane at right angles to the axis of the disk, so that throughout these portions the cutting edges of the disks are parallel. Beyond these parallel portions, the disks are again deflected at an angle in parallelism with the first deflected angular portion, as at 45. All disks throughout the portion 45 are of course parallel in their cutting edges but such edges are at an angle to a right angled plane passing through the axis. Beyond such portions 45 the disks are again deflected into portions 46 parallel to each other and in a plane at right angles to their axis. The portions 46 merge into the twisted portions which form a continuous cutting edge with the adjacent disk.

In this form, the cutting disks are in part of spiral cutting edge and in part of cutting edge at right angles to the axis. The spiral cutting edges provide the cut in each of two directions, as in the preferred form, while the right angled cutting edges serve to prevent undue lateral movement of the soap.

The soap dispensing device as a whole is preferably provided with a bracket 50 by which it may be secured to a suitable fixture. The various parts are constructed to facilitate the production of the device largely by stamping operations, thereby reducing the cost of production.

This application is filed as a continuation of my application for soap dispensing devices, filed March 7, 1928, Serial No. 259,852.

What is claimed to be new is:

1. A soap dispensing device including a cutting element for cooperating with a cake of soap, said element having a cutting edge operating simultaneously in two angularly related directions on the cake of soap, and a member forming part of the cutting element and acting to hold the soap against lateral movement during the cutting operation.

2. A soap dispensing device including a cutting element for cooperating with a cake of soap, said element having a cutting edge operating simultaneously in two angularly related directions on the cake of soap, means serving to hold the cake of soap against lateral movement under the operation of the cutting element, said cutting element being formed in part to act to prevent lateral movement of the soap cake.

3. In a soap dispensing apparatus, a cutting element presenting a spiral cutting edge for contact with a cake of soap, means for operating the cutting element to cause the spiral edge to cut the material of the cake of soap in each of two angularly related directions simultaneously, and a holding element associated with the cutting element and acting to cut into the cake of soap in one direction only.

4. A cutting element for soap dispensing apparatus, including a plurality of disks having their respective halves oppositely twisted to present with the adjacent disks a substantially peripheral spiral line, the peripheral edges of the disks being formed for cutting, and a holding disk having a peripheral cutting edge and operating at an angle to the line of cut of the spiral cutting edge.

5. A cutting element for soap dispensing apparatus, including a shaft mounted for rotation, a cutting member secured on the shaft and presenting a spiral cutting edge in a plane parallel to the axis of the shaft, and a cutting disk mounted on the shaft and operating in a plane at right angles to the axis of the shaft.

6. A cutting element for soap dispensing apparatus, including a shaft having a key, a plurality of disks mounted on the shaft and formed with keyways to cooperate with the key, spacing collars longitudinally slotted to cooperate with the key and arranged between the disks to maintain the disks in spaced relation, each of the disks beyond the shaft being divided on a diametric line and the divisions oppositely twisted to present with the adjacent disks a substantially continuous spiral line, and a cutting disk mounted on the shaft and cooperating with the key, with its cutting edge operating in a plane at right angles to the axis of the shaft.

7. A cutting element for soap dispensing apparatus, including a shaft having a key, a plurality of disks mounted on the shaft and formed with keyways to cooperate with the key, spacing collars longitudinally slotted to cooperate with the key and arranged between the disks to maintain the disks in spaced relation, each of the disks beyond the shaft being divided on a diametric line and the divisions oppositely twisted to present with the adjacent disks a substantially continuous spiral line, a cutting disk mounted on the shaft and cooperating with the key, with its cutting edge operating in a plane at right angles to the axis of the shaft, and a handle member fitting in and interlocking with the hollow shaft.

8. A soap dispensing device including a cutter having a cutting edge operating simultaneously in two angularly related directions on a cake of soap, and an element operating with the cutter and serving to hold the cake of soap against lateral movement under the operation of the cutting element.

9. A soap dispensing device including a cutting element for operation on a cake of soap, said element having an uninterrupted spiral cutting edge formed with serrations to thereby cut the cake of soap in two an-

gularly related directions, and a disk movable with the cutting element and peripherally serrated to cut into the cake of soap in one direction, the cutting function of the disk serving to hold the soap against lateral movement during the cutting operation of the cutting element.

In testimony whereof I affix my signature.

RICHARD S. WALKER.