C. H. J. DILG & J. O. FOWLER.

SOAP DISPENSING MACHINE.

APPLICATION FILED MAY 28, 1909.

1,037,821. Patented Sept. 3, 1912.

Fig. 1.

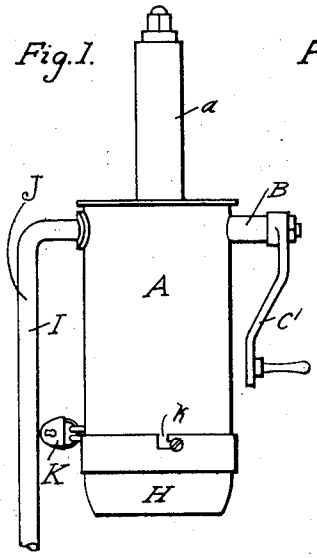


Fig. 5.

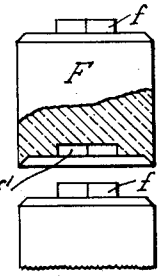


Fig. 3.

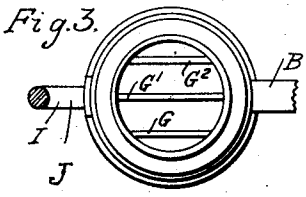


Fig. 2.

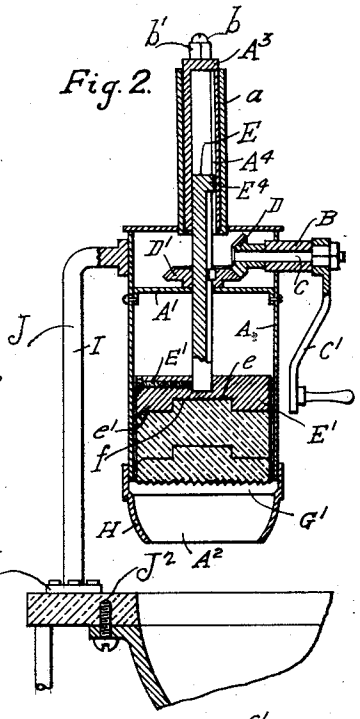


Fig. 4.

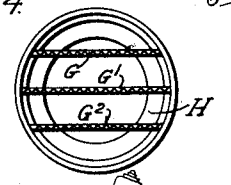


Fig. 7.

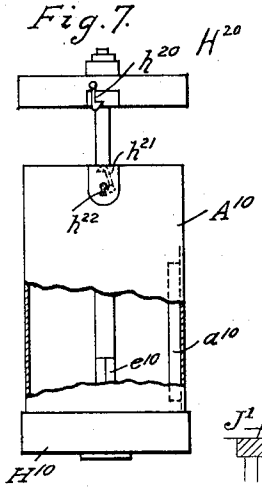


Fig. 2ª.

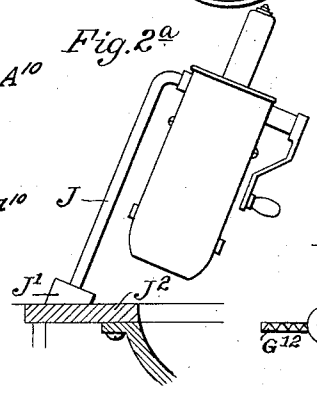


Fig. 6.

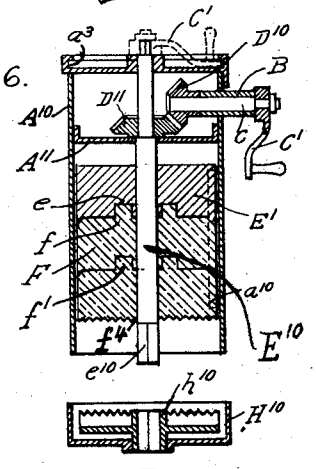


Fig. 9.

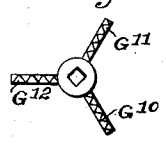


Fig. 8.

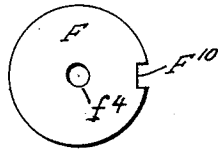


Fig. 10.

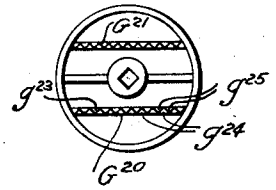
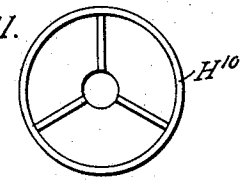


Fig. 11.



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UNITED STATES PATENT OFFICE.

CHARLES H. J. DILG AND JONATHAN O. FOWLER, OF NEW YORK, N. Y., ASSIGNORS TO GRANULATOR SOAP COMPANY, A CORPORATION OF NEW YORK.

SOAP-DISPENSING MACHINE.

1,037,821. Specification of Letters Patent. Patented Sept. 3, 1912.

Original application filed May 15, 1905, Serial No. 260,435. Divided and this application filed May 28, 1909. Serial No. 498,808.

To all whom it may concern:

Be it known that we, CHARLES H. J. DILG and JONATHAN O. FOWLER, citizens of the United States of America, and residents of New York, in the county and State of New York, have invented a certain new and useful Soap-Dispensing Machine, of which the following is a specification, the same being a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, the present application being a division of our application for a soap-supplier filed by us on May 15, 1905, Serial No. 260,435.

This invention relates to apparatuses by means of which solid blocks of material may be disintegrated and furnished for use in the form of fine shavings, or in a comminuted condition, and it has for its object the comminution of a cake of soap by means of a dispensing machine therefor that may be used in the desired manner.

With this object in view, the invention consists in certain novel features of construction and arrangement of parts.

In the drawings which accompany and form a part of this specification, Figure 1 represents a side elevation of an apparatus involving this invention, secured to the support J^2 by arm J and base J', Fig. 2 is a sectional view of the same, Fig. 2^a is a view of a soap supplier located in an inclined position, Figs. 3 and 4 are views in detail of serrated cutting or granulating means, Fig. 5 is a detail view in elevation, partly in section, of interlocking cakes of soap, Fig. 6 is a view in section, and Fig. 7 is a side elevation, with the casing partly broken away, of other soap suppliers in which our invention is employed, Fig. 8 is a plan view of a cake of soap, Figs. 9 and 10 are views in detail of other cutting devices used in the said machines, and Fig. 11 is an end view of the soap supplier.

Like letters of reference indicate like parts in all the views.

Referring particularly to Figs. 1 and 2 of the drawings, A denotes the shell or casing of the soap supplier, the same, preferably, consisting of a cylinder upon which is ordinarily mounted the vertical tubular extension *a* communicating with the said shell. A bearing is ordinarily formed in the shell of the soap supplier, consisting, in the present embodiment, of a sleeve B. Within the said sleeve works a spindle C, which may be provided with any suitable means for operating the same, as the manually actuated crank arm C' which is held attached to the spindle C by the nut *d'* encircling a screw *d*. The inner end of the spindle C preferably carries a bevel gear D which meshes with another bevel gear D' mounted in a movable relation upon the plate or partition A' of the cylindrical casing A. The said bevel gear D' is ordinarily keyed to a shank or spindle E the axis of which corresponds, or is identical with, that of the receptacle or casing A, and which works in a bearing in the plate or partition A' and extends up into the upper portion of the tube *a*, with which spindle is engaged a weight E' in order that the rotation of the spindle E may cause the said weight or follower E' to revolve. The upper portion of the gravity shank or spindle E works in, and is embraced in, the sleeve A^3 contained in the tube *a*, and the upper end of the said hollow sleeve or spindle preferably projects up from the top of the casing in order to serve as a means of actuating the said shank or spindle E by means of the handle or crank arm C' which may be held attached to the spindle by the nut *b'* encircling a screw *b*, if desired. The sleeve or spindle A^3 is provided with a longitudinal slot or keyway A^4 in which works a key or pin E^4 projecting from the upper part of the shank or spindle E. The weight E' is ordinarily provided with any suitable means of interlocking with the soap, through one or more engaging means, as for example, the recess *e*, which recess is constructed and arranged to preferably engage the soap and to register and interlock with a head *f* in the top of the cake of soap F, as in Fig. 6. Each cake of soap is not only also ordinarily provided with means to engage with the weight, through one or more interlocking devices, as for example, the recessed portion *f'* on one, say the lower face thereof, as in Fig. 6, but is preferably furnished with other interlocking means, as projecting portions *f*, of practically the same size and contour as the recesses, and ordinarily also located in the upper face of the same, and constructed and arranged to interlock with the recessed por-

tion f' of an adjacent cake of soap. One end, preferably the lower portion, of the casing A is provided with a cutting device consisting of a series of scraping, shaving, or granulating devices, as for example, the serrated blades G, G′, G², the serrations of said blades being preferably arranged in staggered order, the teeth of one of the blades, as G′, being wider than those of the other cutting blades or knives, the said teeth being ordinarily respectively inclined at an angle from the horizontal plane of the cutter, as shown in Figs. 2, 4, 6, 9 and 10. The lower part of the casing head H, which is ordinarily attached to the bottom of the casing A, is preferably reduced in diameter so as to converge and form a contracted opening or mouth A², which ordinarily detachable casing head is preferably interlocked, as at k, with the upper shell or casing A, and may be fastened to the casing or cylinder, as by means of a padlock K. The soap supplier may be sustained by any suitable means, as for example, by means of a supporting arm or standard J secured by its base J′ to a support J². The depending portion of the projection e' of the weight E′ will hold the body of the weight up from the teeth of the cutting device, and thus prevent the same from being cut or marred, or the teeth being dulled, as might occur if the knives or cutting blades were to come in actual frictional contact with the weight in cases where the soap is practically entirely cut or worn away.

In the apparatus shown in Fig. 6, the casing A^{10} is provided with a partition A^{11} through which and the top of the shell or casing works the spindle E^{10}. The said spindle actuates the bevel gear D^{11} fixed thereto, which meshes with another bevel gear D^{10}, the shaft C of which works in a sleeve B and carries a crank arm C′. The crank arm may, however, be attached directly to the top of the spindle E^{10} if preferred, as is indicated by the dotted lines. The lower and detachable part of the casing, consisting of the head H^{10}, supports the cutters G^{10}, G^{11}, G^{12}, which are interlocked with the lower end e^{10} of the spindle E^{10}. The hub h^{10} of the said head H^{10} prevents the weight from coming at any time into frictional contact with the blades, as the depending projections of the weight will rest thereon when the soap is entirely disintegrated. The interior of the casing or shell A^{10} is provided with means for preventing the rotation of the weight and the soap, consisting, in the present instance, of a vertical part or spline a^{10} projecting into the chamber and registering and engaging with the groove or recess F^{10} of the soap F, and a similar groove formed in the weight E′. A recess e (single or duplex) extending up into the weight E′ engages the projection (or projections) f of the soap F, as before described, whereby the projections and recesses of the weight and those of the upper face of the soap are held rigidly together. The soap cakes may also have a central opening or bore f^4 in the same to allow the insertion therein of the spindle or shank of the preferably rotary cutter contained in the casing. The top of the shell or casing is preferably furnished with an inbent rim or curb a^3, thus forming a circular groove in which the end of the crank arm C′ works when the handle is located at the top of the apparatus.

In the soap supplier illustrated in Fig. 7, the upper head H^{20} of the casing is detachable, and it (or, if so desired, the parts H or H^{10} of Figs. 1 and 6) may be secured to the casing of the apparatus by means of a catch or keeper h^{20} which is constructed and arranged to be engaged with a pivoted spring latch h^{21} attached to the casing, and which may be released by moving the lower arm of the latch h^{21} upwardly by means of a key inserted in the key hole h^{22}.

The operation is as follows:—The cylinder A is charged with a suitable number of preferably interlocking cakes of soap, the upper one of which is interlocked with a follower, consisting of a plate or weight E′ which may be caused to descend by its own weight or by equivalent impelling devices, as a spring, and which weight is raised, when the apparatus is charged, to the position desired. The casing head is now fastened to the cylinder, upon which the apparatus is ready for use, and by turning the crank arm C′, the soap and cutting device become engaged with an abrading or scraping action in practically a plane surface, and the lowest cake of soap becomes gradually worn away by reason of its contact with the cutting blades, the said disintegrated particles of soap falling through the contracted discharge nozzle of the casing head. As described and shown, the soap may be rotated against the stationary cutting blades, or the soap may be held stationary, and the cutting blades may be caused to revolve, and as the soap is preferably fed by gravity, the action of the apparatus will be uniform until the soap is practically entirely worn away, or, if preferred, upon the lowest cake of soap becoming nearly ground away, it may be detached from the weight E′, and a new series of cakes of soap inserted between the partially used cake and the said weight, thus avoiding any waste of soap whatsoever. By arranging the serrations or cutting blades so as to be of different sizes, the face of the soap becomes evenly ground off without leaving any very marked ridges or grooves in the same.

It will be observed that the blades G, G², 130

and G^{20}, G^{21}, have a serrated cutting edge which extends from the body slightly upwardly and is then curved forwardly relative to the vertical casing of the soap shaving machine, the serrations each having ordinarily one cutting edge, as g^{25}, Fig. 10, approximately circumferentially disposed, or lying practically parallel to the circumference of the casing of the machine, the other edge, as g^{23}, extending approximately in a radial plane, or in one parallel therewith.

In respect to the blades named above, it will be seen that the actual cutting lines of the edges of the teeth are those of the individual serrations, and that as some of these lines are non-radial, they give a shear cut. One series of edged teeth, as G or G^{21} are preferably staggered in relation to the corresponding series, as G^2 or G^{20}, so that their circles of rotation will not coincide. We prefer to locate the blades at a distance from the axis of the cutter and to form the teeth so that their pointed ends will all face the same way, in order that, no matter in which direction the cutter is turned, some of the teeth will present a cutting edge to the soap.

We use the term "advancing cutting edge" to denote the presentation of one of the edges of each one of the serrations to the surface of the soap to be cut, whether the cutter is moved with relation to the cake of soap, as in Fig. 6, or the cake of soap is moved over a stationary cutter, as in Fig. 2, in either of which cases, each of the cutter points acts on the soap with a self burrowing cut. And inasmuch as the practically circumferentially parallel edge of a tooth limits or determines the width of the narrow shaving cut by the approximately radial or radially parallel edge, we denote the said former named edge by the term "offset," as by the said construction, each cutting edge cuts its own distinct shaving.

The blade G^{20} in Fig. 10 has the teeth formed, as stated, so as to cut when rotated in either direction. When the said blade is rotated clockwise, for example, the width of the shaving will be limited by the width of the radial or radially parallel edges g^{23} located on the left hand side of the cutter. If, however, the cutter is rotated in the opposite direction, or anti-clockwise, the width of the shaving will be determined by the width of the radial or radially parallel edges g^{25}.

The cutter blades we prefer to use are formed with a suitable supporting member, as a hub, or a ring with or without the use of a hub, and have, as stated, non-radially disposed blades, as G^{20} and G^{21}. In Fig. 9, a plurality of blades, G^{10}, G^{11}, G^{12} extend from a central supporting member or hub.

In machines of this class it sometimes happens that cakes of soap that have been recently made are used in the same, which are then in a somewhat plastic condition. Again, it may happen that soap is used in the apparatus which has been kept for so long a period as to become dry and hard, or cakes in these different conditions may be used in the same machine. It has been found by us in practical experience that, under these different conditions, a positive, unvarying and unyielding feed for the rotating soap cakes is not practicable to produce satisfactory results in the even granulation of the soap, for in case a cutter is used so formed as to freely cut into a plastic cake of soap, it will cut so deeply into a dry and hard cake, fed down with the same unvarying positive feed as before, as to break the same. And, on the other hand, if a cutter is used suitable to lightly scrape or abrade a hard cake of soap, it will not satisfactorily granulate a softer or more plastic one if it is fed down with the same unvarying speed as before. In order to overcome this difficulty, we have provided a yieldable feed device that will accommodate itself to the particular circumstances of the case, that is to say, when the resistance of the soap becomes too great to produce the proper abrasive action of the cutter, the follower will yield somewhat, and will maintain only such pressure upon the cake of soap as will be sufficient to effect the proper biting into the face of the cake by the cutter.

Manifestly the casing or cylinder may be held in various positions as regards the support thereof, as, for example, it may be placed in a slanting position, if preferred, by means of a supporting arm J, J′ adapted to be attached to a wall or sustaining body J^2, as shown in Figs. 2 and 2^a, the axes of the upper part of the arm J and the driving shaft C being located at angles to the axis of the casing A. If desired, the soap may be propelled by means of other and equivalent soap feeding means, as a spring, placed on the rod between the cross piece or partition A′ and the upper face of the weight or plate E′, in which case the mouth A^2 would be at the side of the cylinder or casing A.

The advantage gained by constructing the cakes of soap with uneven interlocking or intermeshing faces is a material saving of the soap, for the reason that as the body of the lower cake of soap gets worn down to a thin disk it will not break or crumble as it is supported by its upwardly extending part f and the parts surrounding the recess f' of the superimposed cake, but will retain its entirety until the engaging or intermeshing portions of the depending projections f of the lower uneven face of the cake above it are presented for abrasion. Then for a period of time the abrasive action is on both cakes of

soap, by which construction an even and uniform surface is always presented to the serrated face of the cutter, and all liability of breakage and wastage of the soap cakes—such as occurs when non-interlocking or non-intermeshing cakes of soap are used—is overcome.

This application refers particularly to the class of structures shown principally in Fig. 2, which embodies the crank shaft C supported in a bearing located above the discharge opening of the casing, and positioned at an angle to the longitudinal axis of the casing A which has an open lower end, in combination with the cutter G′, means consisting of the gears D, D′ and spindle E to positively rotate the body or mass of the material F around the axis of the casing upon the rotation of the crank shaft, the two said parts being rotated at a different rate of speed, the disk E′ having a plurality of projecting angular points to engage the soap cake to produce the rotatory movement thereof, and means consisting of the massive upper part of the disk E′ to force the mass or body F in the direction of the longitudinal axis of the casing as it becomes gradually worn away by the abrading or cutting action set up upon the cake of soap on account of the rotatory movement thereof by the cutting teeth G′, which have suitable means of support.

As it will be evident to those skilled in the art that many changes in the construction, form, proportion and relative arrangement of parts might be resorted to without departing from the spirit and scope of our invention, we would have it understood that we do not restrict ourselves to the particular construction and arrangement of parts shown and described.

An advantage in not placing the manually actuating means directly above the outlet of the soap dispensing machine is that in case a person is washing his hands, and desires to get more of the granulated soap, the drippings will not fall into the fresh charge of soap, as would be the case were the crank to be located directly above the discharge orifice of the machine.

What we claim as our invention is:—

1. A soap dispenser comprising a receptacle, a follower provided with a shank located in the receptacle, a hollow spindle embracing said shank and having a longitudinal slot, a pin carried by the shank for movement in the said slot and a non-rotatable cutter in the receptacle.

2. A soap dispenser comprising a receptacle, a tubular extension located at the top thereof to form a chamber communicating with the receptacle and having an opening at its upper part, a slotted tube closed at one end and having the other extremity located adjacent to the top of the receptacle, a gravity device to work within the said tube, and a pin carried by the said gravity device for movement in the slot of the slotted tube.

3. In a dispensing machine, a receptacle, a tubular extension located at the top thereof to form a chamber communicating with the receptacle and having at the top thereof an opening, a slotted tube within the tubular extension to contain a gravity device, one extremity being located adjacent to the top of the receptacle, and a gravity device to work in the said tube.

4. In a dispensing machine, a receptacle, a tubular extension located at the top thereof, a tube within the tubular extension to contain a gravity device, one end being located adjacent to the top of the receptacle, and a gravity device to work in the said tube.

5. In a dispensing machine, a receptacle to contain a body or mass of material, a supporting means therefor, an opening at the lower end of the casing, an abrading means located adjacent to said opening, a bearing for a shaft located above the said opening, a manually actuated shaft located at an angle to the longitudinal axis of the casing, means intermediate the shaft and the said body to rotate the latter, and self-acting yieldable means connected with the rotating means to continuously force the material downward with a positive impelling movement to cause the material and the abrading means to become continuously engaged with a yielding action to produce a steady and uniform abrading action on materials of different resistances until the same become practically entirely ground away by the use of the manually actuated shaft solely.

6. In a dispensing machine, a receptacle to contain a body or mass of material, a supporting means therefor, an opening at the lower end of the casing, an abrading means located adjacent to said opening, a bearing for a shaft located above the said opening, a manually actuated shaft located at an angle to the longitudinal axis of the casing, means intermediate the shaft and the said body to rotate the latter at a rate of speed different from that of said shaft, and self acting yieldable means connected with the rotating means to continuously force the material downward with a positive impelling movement to cause the material and the abrading means to become continuously engaged with a yielding action to produce a steady and uniform action on materials of different resistances until the same become practically entirely ground away by the use of the manually actuated shaft solely.

7. In a dispensing machine, a receptacle to contain a body or mass of material, a supporting means therefor, the part thereof located adjacent to the side of the casing be-

ing located at an angle to the longitudinal axis of the casing and the plane of the bottom face of the supporting means and the outer face of the primary supporting body to which it is attached being located in a plane at another angle to the said longitudinal axis to hold the receptacle in an inclined position, an opening at the lower end of the casing, an abrading means located adjacent to said opening, a bearing for a shaft located above the said opening, a manually actuated shaft located at an angle to the longitudinal axis of the casing, means intermediate the shaft and the said body to rotate the latter, and self-acting yieldable means connected with the rotating means to continuously force the material downward with a positive impelling movement to cause the material and the abrading means to be continuously engaged with a yielding action to produce a steady and uniform abrading action on materials of different resistances until the same become practically entirely ground away by the use of the manually actuated shaft solely.

In testimony of the foregoing specification, we do hereby sign the same in the city of New York, county and State of New York, this 19th day of January, 1909.

CHARLES H. J. DILG.
JONATHAN O. FOWLER.

Witnesses:
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M. RISENBERG.