Sept. 15, 1931. W. H. HAST 1,823,654

LIQUID DISPENSER

Filed March 18, 1931

Fig. 1

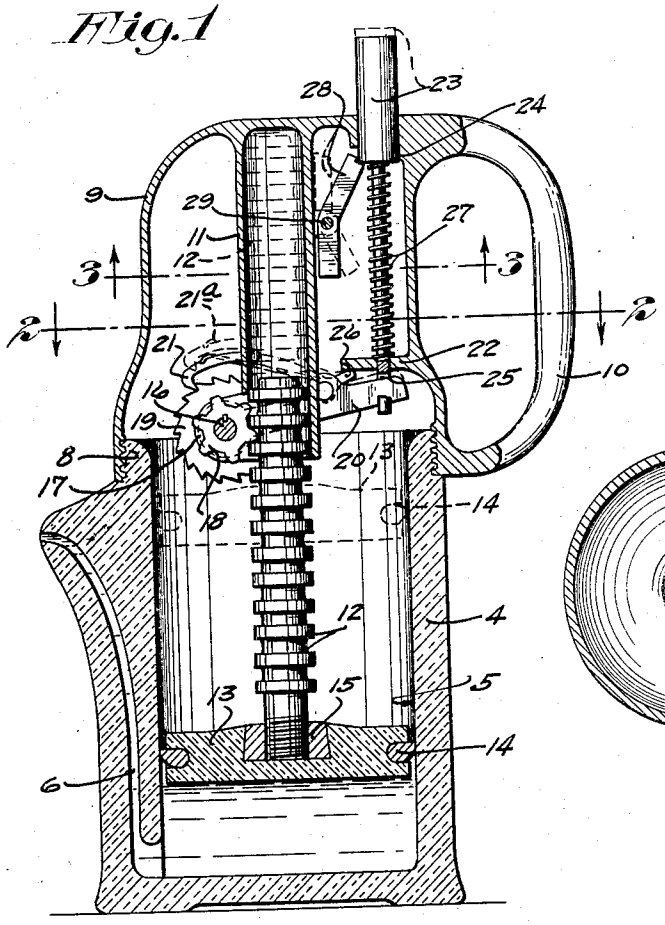


Fig. 3

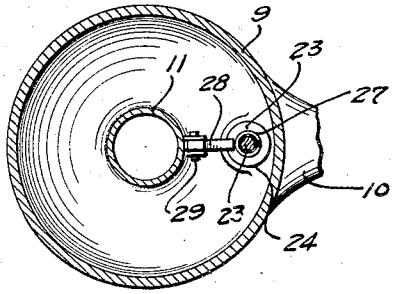


Fig. 4

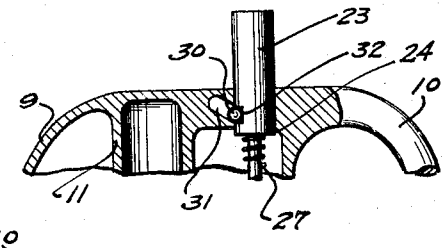
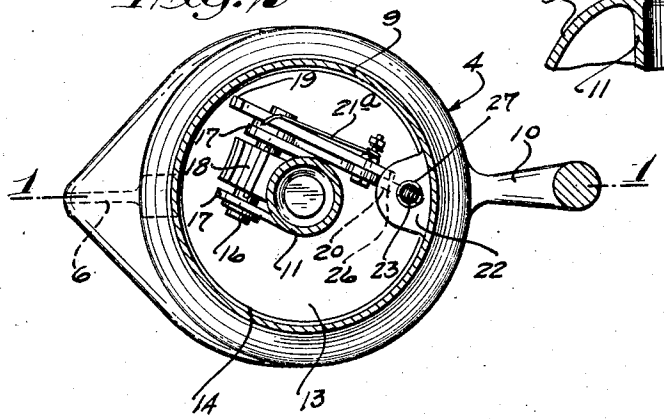


Fig. 2



Inventor
William H. Hast
By his Attorneys
Murchant & Kilgore

Patented Sept. 15, 1931

1,823,654

UNITED STATES PATENT OFFICE

WILLIAM H. HAST, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO HAYDEN MILLER COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA

LIQUID DISPENSER

Application filed March 18, 1931. Serial No. 523,419.

My invention provides a simple, convenient, sanitary and highly efficient device for dispensing liquids, the term "liquids" being used in a liberal sense to include heavy fluid materials such as mustard, salad dressings and the like which are usually designated as semi-liquids, but which will freely flow under pressure. The device here illustrated has been especially designed for use as a table article for the dispensing of condiments such as mustard, salad dressings, and the like. Mustard, for example, is usually served in restaurants and even in homes in open jars, in which knives, forks and spoons are inserted to remove the contents; and in such jars such materials are not only exposed to dust and insects, but rapidly dry up with the resulting condition making the same less palatable and causing dryness and necessitating waste. The specific illustration of the condition applying to mustard also is true in respect to various other condiments and the like.

The improved device, the preferred form of which is here illustrated in the drawings, includes a closed jar from which the desired amount of contents can be ejected simply by pressing on a thumb or finger-piece, the jar being at all times kept closed from the atmosphere and protected from all conditions rendering the same unsanitary or causing the evaporation or drying up of the contents. Aside from the sanitary and other conditions above noted, a desired amount of contents from the jar can always be ejected just at the time and in the proper place and without waste.

As a further and highly important feature, the device is so designed and arranged that when the jar is in an upright or normal position, the contents thereof cannot be ejected but can be readily ejected when the jar has been turned into a proper position for discharge of the material thereform. Also, the improved device includes certain other important features whereby the manner of operation is improved and refilling of the jar is facilitated.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a vertical section taken axially through the complete device on the line 1—1 of Fig. 2, some parts being shown in full elevation;

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 1, some parts being removed; and

Fig. 4 is a fragmentary vertical section taken through the top portion of the jar cap or cover and illustrating a modified form of normally operative plunger-locking device.

Referring to the preferred structure illustrated in Figs. 1, 2 and 3, the numeral 4 indicates a jar of any suitable material assumed, in the present instance, to be made of glass or porcelain and formed with a cylindrical interior 5. At the front side of the jar a discharge conduit 6 extends from the extreme bottom of the jar through a thickened side portion of the jar and terminates at its discharge end at an elevation quite close to the top of the jar. At its upper end, the neck of the jar is externally threaded at 8 for threaded engagement with a metallic cap or cover 9 that extends materially above the top of the jar and at its back is formed with a handle 10.

A guide sleeve 11 is rigidly secured to and depends from the top of the cap in axial alignment with the axis of the cylindrical interior 5 of the jar. In this sleeve 11 is mounted a rack toothed stem 12, which as shown, is cylindrical and formed with ratchet teeth that run completely around the same. A piston head 13 is secured to the lower end of the stem 12, and is provided with a peripheral gasket 14 that closely engages the cylindrical inner surface 5 of the jar. As shown,

the lower end of the stem 12 is threaded and is rigidly secured in the depression of the piston head 13 by a body of metal 15 cast in said depression.

A short countershaft 16 is journaled in ears 17 formed on the lower end portion of sleeve 11 and projecting therefrom. A spur gear 18 secured on shaft 16 meshes with the annular teeth of the stem 12. To one projecting end of shaft 16 a ratchet wheel 19 is secured and on the same end of said shaft is pivotally mounted a small ratchet lever 20. A downwardly spring-pressed pawl or ratchet dog 21 is pivoted to the intermediate portion of lever 20 and as shown, has a hook-like free end that normally engages the teeth of the ratchet wheel 19.

Mounted for vertical movements through the top of the cap 9 and through an interior lug or flange 22 of said cap is an actuating plunger 23, the reduced portion of which is connected or joined to the larger upper end projecting portion of said plunger at a shoulder 24. The extreme lower end of the reduced portion of plunger 23 is formed with an elongated perforation or slot 25 through which the shank or short projecting end of the ratchet lever 20 works quite freely. Here it should be noted that the pawl or ratchet dog 21 has a short projecting end 26, which in the normal position of the parts shown by full lines in Fig. 1, is free enough from engagement with lug 22 to permit the hook-like end of said dog to engage the teeth of the ratchet wheel 19.

Surrounding the reduced portion of the plunger 23 and compressed between the lug 22 and plunger shoulder 24 is a light coiled spring 27, the tension of which is sufficient to move the lever 20 upward until the short end 26 of dog 21 has engaged lug 22 but has not sufficient tension to overcome the spring 21^a of dog 21 and hence will not normally disengage the dog 21 from ratchet wheel 19. The importance of this will appear later on.

The numeral 28 indicates a lock dog shown as intermediately pivoted to a lug 29 on the adjacent side of sleeve 11. Here it will be noted that the center of gravity of this dog 28, when the device is set in an upright position as when set on a table, is at the right-hand side of the pivot of said dog and above said pivot so that the upper end of said dog will, by gravity, normally be held under the shoulder 24 of plunger 23 thereby locking said plunger against downward movement as long as the jar or device is set in its upright position.

The operation and use of the device is substantially as follows: Normally, the jar will be well filled with its contents which may be assumed to be mustard or any other of the materials noted or implied, and the piston head 13 will then be in its raised position indicated by dotted lines in Fig. 1. With the jar standing upright, plunger 23 cannot be depressed and hence no part of the contents of the jar can be ejected as long as the jar stands in its upright or normal position. When it is desired to eject the contents from the jar, it is picked up by the handle 10 and turned into a proper position for discharge, tilting the device much as a pitcher would be tilted to pour the contents therefrom. When the jar has been tilted to such proper position, the center of gravity of the dog 23 will be shifed to the left-hand side of a vertical line drawn through its pivot and then the said dog will, by gravity, be moved into or close to the plunger-releasing position indicated by dotted lines in Fig. 2 and then, of course, plunger 23 can be freely depressed. Each depression of plunger 23 produces a step of downward movement of the piston head 13 and causes the discharge or ejection of a certain limited amount of the contents of the jar.

Of course, as soon as the jar is set back in a vertical position, at rest, dog 24 again locks plunger 23 against movement and prevents material from being ejected from the jar by thoughtless, mischievous or malicious operation.

When the contents of the jar has been all discharged and it is desired to refill the same, the cap 9 will be unscrewed and removed, the jar will be refilled and the cap and piston will be replaced; but before the piston is replaced, it should be moved back to its extreme uppermost position. To facilitate this upward movement of the piston and its stem, pawl 21 must be released from ratchet wheel 19 and this action may be very quickly and easily accomplished simply by pulling the plunger 23 slightly upward, thereby causing lug 22 to press on short end 26 of pawl and thereby disengage said dog from its ratchet wheel, as indidcated by dotted lines in Fig. 1.

In the modified form of the plunger lock illustrated in Fig. 4, the lock element, is shown as in the form of a ball 30 arranged to work in an oblique groove 31 formed in the top of the cap 9 and normally engageable with a notch 32 formed in the large upper end portion of plunger 23.

From the foregoing, it is evident that various modifications of the preferred structure may be made within the scope of the invention herein disclosed and claimed.

The above described arrangement of the relative tension of the springs 21^a and 27 is preferred because it permits the use of very light springs 27 which will not make the depression of plunger 23 a different matter. Nevertheless, the arrangement of the relative strength of said springs might be reversed so that the pawl 21^a would be normally released, but under which arrangement the said pawl would be dropped

into action on ratchet wheel 19 by initial downward movement of plunger 23.

What I claim is:

1. A dispensing device of the kind described comprising a jar or container having a discharge conduit leading therefrom, a cap applied to the top of said jar, a piston-acting member working in said jar and having a stem mounted for axial movements in said cap, actuating means on said cap operative from the exterior thereof to move said piston-acting member, an automatic lock operative when said jar is upright to lock said piston actuating means against operating movement but to release the same when said jar is tilted to discharging position.

2. A dispensing device of the kind described comprising a jar or container having a discharge conduit leading from its lower portion and an opening outward at a point high up on the jar, a cap detachably applied to and normally covering said jar, a piston head working in said jar and having a stem mounted for axial movement in said cap, actuating means mounted on said cap and operable from the exterior thereof to impart step by step movement of said piston head downwardly in said jar to progressively eject the contents from said jar, and a gravity-actuated lock normally operative to lock said actuating means against movement when said jar is upright but to release the same when said jar is tilted to discharging position.

3. A dispensing device of the kind described comprising a jar or container having a discharge conduit leading from its lower portion and an opening outward at a point high up on the jar, a cap detachably applied to and normally covering said jar, a piston head working in said jar and having a stem mounted for axial movement in said cap, actuating means mounted on said cap and operable from the exterior thereof to impart step by step movement of said piston head downwardly in said jar to progressively eject the contents from said jar, said actuating means including a spring-pressed plunger projected through the top of said cap, said cap adjacent said plunger having a handpiece so arranged that said plunger may be reached by a thumb of the hand engaging said handle, and a gravity-actuated lock normally operative on said spring-pressed plunger to lock the same against movement but to release the same when said jar is tilted to a discharging position.

4. A liquid dispensing device comprising a jar having a discharge conduit leading from its lower portion outward and opening at a point above the altitude of its maximum content, a cap detachably applied to the open upper end of said jar and having an axially-depending guide sleeve and an outwardly projected handle, a piston working in said jar and having a stem working in the axial sleeve of said cap, a spur gear and a ratchet wheel mounted on a part carried by said cover and connected for common rotation, a pawl-equipped sleeve operative on said ratchet wheel and also mounted on a part carried by said cover, a depressible plunger projected outward through said cap and connected to and operative on said pawl and ratchet device to impart progressive step by step movement to said piston downward in said jar, and a gravity-actuated lock normally operative on said spring-pressed plunger to lock the same against movement but to release the same when said jar is tilted to a discharging position.

5. A liquid dispensing device comprising a jar having a cylindrical interior and a discharge conduit leading from its lower portion outward and opening at a point high up on said jar, a cap detachably applied to said jar and normally closing same, a sleeve depending axially from the top of said cap and having shaft bearings in its lower portion, a piston working in said jar having a rack toothed stem working in the sleeve of said cap, a short shaft journaled in the bearings of said sleeve, a spur pinion and a ratchet pinion secured to said shaft, the former engaging the teeth of said piston stem, a lever pivoted on said shaft, a pawl pivoted to said lever and normally engaging said ratchet wheel, a spring-retracted plunger working through the top of said cap and connected to and operating said pawl-equipped lever, and a gravity-actuated lock dog pivoted to said sleeve and engageable with said plunger to lock the same against movement when said jar is in an upright position but to release said plunger when said jar is tilted to a discharging position.

6. A liquid dispensing device comprising a jar having a cylindrical interior and a discharge conduit leading from its lower portion outward and opening at a point high up on said jar, a cap detachably applied to said jar and normally closing the same, a sleeve depending axially from the top of said cap and having shaft bearings in its lower portion, a piston working in said jar having a rack toothed stem working in the sleeve of said cap, a short shaft journaled in the bearings of said sleeve, a spur pinion and a ratchet pinion secured to said shaft, the former engaging the teeth of said piston stem, a lever pivoted on said shaft, a pawl pivoted to said lever and normally engaging said ratchet wheel, and a spring-retracted plunger working through the top of said cap and connected to and operating said pawl-equipped lever, said cap having an outwardly projecting lug and said pawl having a short end engageable with said lug to release said dog from

said ratchet wheel under abnormal upward movement of said plunger.

7. The structure defined in claim 6 in which there is a spring applied to said pawl for normally engaging the same with said ratchet wheel and with another spring applied to said plunger for retracting the same, the first noted spring having sufficient strength to prevent the last noted spring from normally disengaging said pawl from said ratchet wheel.

In testimony whereof I affix my signature.

WILLIAM H. HAST.