Nov. 2, 1965 M. NISON ETAL 3,215,311

DISPENSER CAPSULE

Original Filed July 2, 1957 3 Sheets-Sheet 1

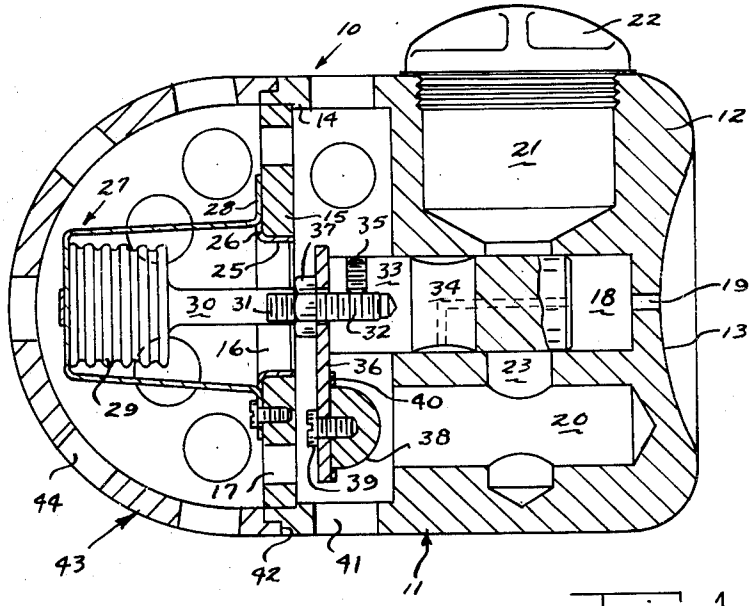


Fig-1

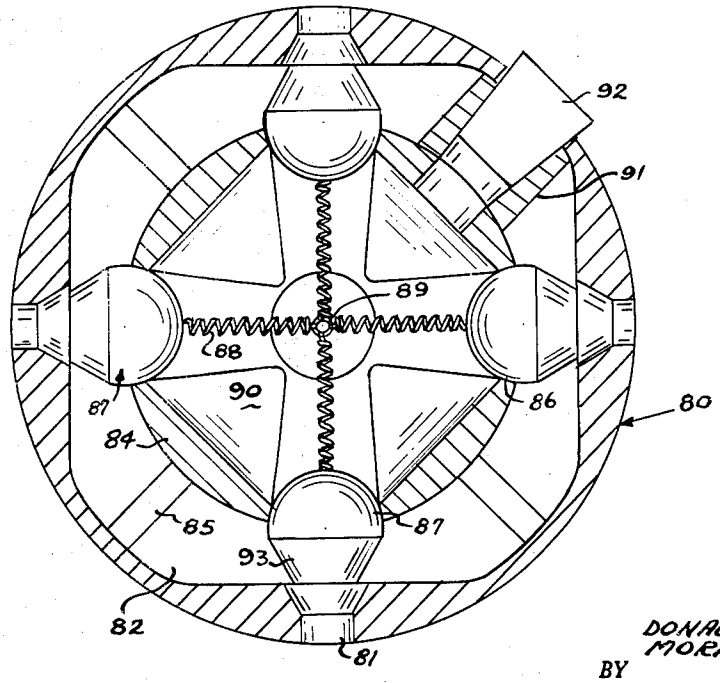


Fig-6

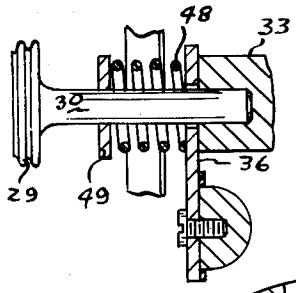
INVENTORS
DONALD A. LUDWIG
MORRIS NISON
BY
Jerome P. Bloom
ATTORNEY

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DISPENSER CAPSULE

Original Filed July 2, 1957 3 Sheets-Sheet 2

Fig-3



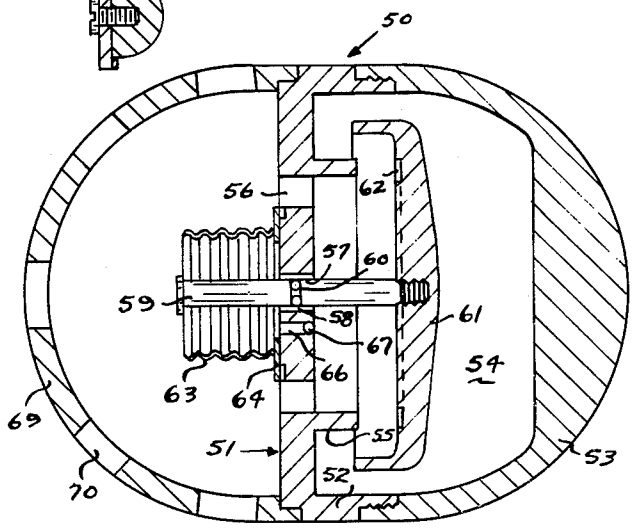


Fig-2

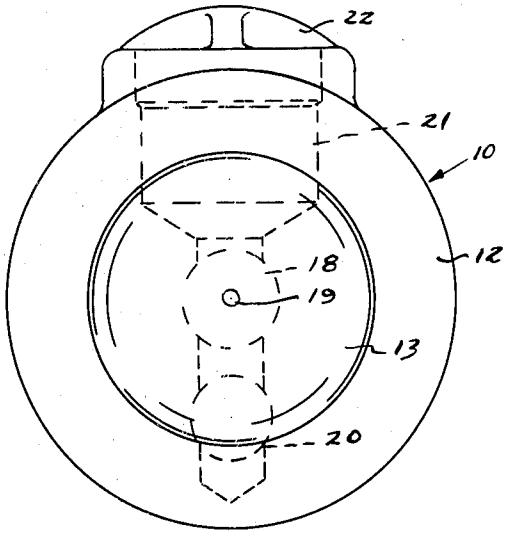


Fig-4

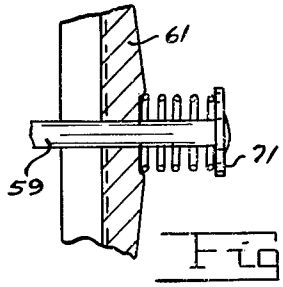


Fig-5

INVENTORS
DONALD A. LUDWIG
MORRIS NISON

BY
Jerome P. Bloom
ATTORNEY

Nov. 2, 1965 M. NISON ETAL 3,215,311

DISPENSER CAPSULE

Original Filed July 2, 1957 3 Sheets-Sheet 3

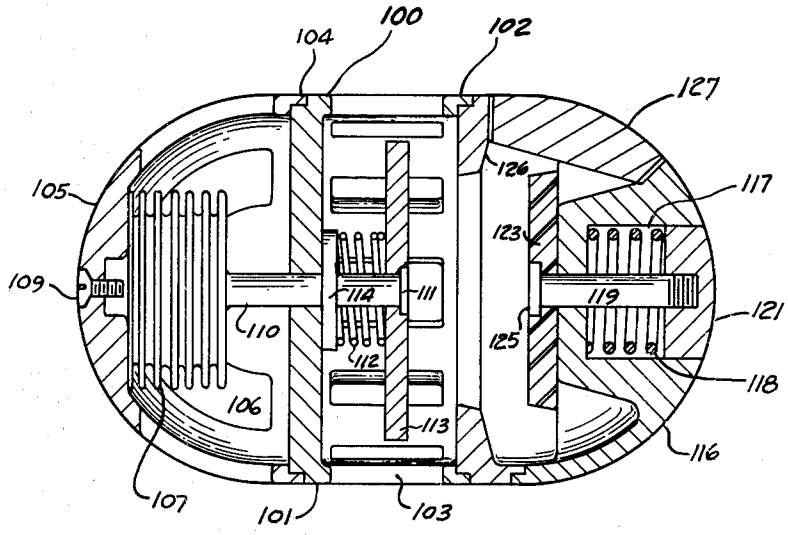


Fig - 7

INVENTORS
DONALD A. LUDWIG
MORRIS NISON

BY
Jerome P. Bloom
ATTORNEY

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3,215,311

DISPENSER CAPSULE

Morris Nison, 602 Cambridge Ave., Dayton, Ohio, and Donald A. Ludwig, Dayton, Ohio; said Ludwig assignor to said Nison

Continuation of abandoned application Ser. No. 669,675, July 2, 1957. This application June 20, 1962, Ser. No. 205,179

18 Claims. (Cl. 222—52)

This is a continuation of our former application, Serial No. 669,675, filed July 2, 1957, now abandoned.

This invention relates to dispensers and more particularly to a novel capsule type dispenser particularly adapted for use in automatic washing machines. The invention was primarily developed as a means for automatically dispensing water or fabric softeners during a predetermined portion of an automatic washing cycle and will be particularly described with reference thereto. However, it will be readily obvious that its application is not so limited, nor is such intended.

Though water and fabric softeners have been available for a considerable period of time, housewives with automatic washers have found it difficult to take advantage of their beneficial properties. Softener products generally must be introduced during the cold rinse period of the washing cycle to be effective. This means that the housewife with the automatic washer must carefully watch her washer in order to introduce the softener product at the proper time. This, in effect, nullifies the primary advantage of the automatic washer, which would otherwise require no attention once the washing cycle has started.

Dispensers have been previously proposed for incorporation in automatic washers to enable the use of water and fabric softeners but these have proven relatively unsatisfactory. Each of the prior art devices requires a structural connection to the washer and is generally complex as to structure and expensive to produce and maintain. Moreover, the prior art devices are limited in scope and application.

The subject invention provides a capsule type dispenser which may be filled with a softener product and thrown into the automatic washer at the beginning of the washing cycle. The capsule is condition responsive, and automatically functions at the required interval in the cycle to dispense the softener into the water. The invention embodiment is structurally simple, economical, and requires no connection whatsoever to the washer structure. The housewife merely introduces the filled capsule when she puts here clothes in the washer and no further attention is necessary.

A primary object of the invention is to provide improvements in dispensers, particularly of the type used to dispense powders and liquids, whereby such devices may be more simply and economically fabricated, more efficient and satisfactory in use, and be unlikely to get out of repair.

An object of the invention is to provide a simple economical dispenser unit.

A further object of the invention is to provide a capsule type dispenser unit which is particularly applicable for use in automatic washing machines to automatically dispense its contents at a predetermined interval in the washing cycle.

Another object of the invention is to provide a free body type dispenser unit which may be introduced into a body of fluid or the like, the fluid being successively modified and the dispenser unit being capable of effecting a dispensing action at any predetermined interval.

An additional object of the invention is to provide an improved and simplified free body type dispenser which is condition responsive.

A further object of the invention is to provide an agitatable free body, capsule type dispenser having means for automatically governing the time at which it will operate.

Another object of the invention is to provide a dispenser assembly possessing the advantageous structural features, the inherent meritorious characteristics, and the mode of operation inherent therein.

With these and other objects in view, which will become more apparent from the following specification and claims, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and their means and mode of operation as hereinafter described or illustrated in the accompanying drawings or their equivalents.

Referring to the drawings, wherein are shown illustrative but obviously not necessarily the only forms of embodiment of the invention:

FIG. 1 is a longitudinal cross-sectional view of a preferred embodiment of the invention;

FIG. 2 is an end view of the embodiment of FIG. 1;

FIG. 3 is a fragmentary detail view, partly in cross-section, of modified control means which can be employed in the device of FIG. 1;

FIG. 4 is a longitudinal cross-sectional view illustrating a further embodiment of the invention; and

FIG. 5 is a fragmentary detail view, partly in cross-section, showing a modification of the device of FIG. 4; and

FIG. 6 is a partially schematic cross-sectional view of a further embodiment of the invention; and

FIG. 7 is a longitudinal cross-sectional view of a further embodiment of the invention.

The invention can be best described with respect to the illustrative embodiments shown in the drawings.

FIG. 1 of the drawings shows a cross-section of a free body capsule type dispenser **10** employing the novel concepts of the invention. The capsule **10** includes a cylindrical, generally cup-shaped section **11** which has a relatively thick base **12** forming one end of the capsule. The base **12** is provided with a central concavity **13** in its outer face. The wall defining the open end of the cup-shaped section **11** is cylindrical and internally expanded at its lip to provide an annular shoulder **14**. A valve plate **15** having a central aperture **16** is seated over the open end of the section **11** and to the annular shoulder **14** in fixed relation thereto. The central aperture **16** is coaxial with the section **11** for purposes to be further described herein. The valve plate **15** is provided with further apertures **17** which are disposed in circularly spaced relation adjacent its periphery and concentric with the central aperture **16**.

A cylindrical recess **18** is provided in the inner face of the base of the cup-shaped section **11** in axial alignment with the central aperture **16** in the valve plate **15**. An air vent **19** is provided centrally of the base **12** which respectively opens into the inner extremity of the cylindrical recess **18** and the central concavity **13** in the outer face of the base.

A second cylindrical recess **20** is provided in the inner face of the base **12** to extend parallel to the recess **18** in radially spaced relation thereto. A charging chamber **21** is radially disposed in the side wall of the base **12**. This chamber **21** is cylindrically formed and conically reduced at its inner end to open to the recess **18** while its outer end is normally closed by a cap **22** threadedly engaged in the side wall of the base. A further passage **23** is provided between the recess **18** and the recess **20**. This passage **23** is radially directed to axially align with the open inner end of the chamber **21**. The relative disposition of the chamber **21** and the parallel recesses **18** and **20** in the base of the cup-shaped section **11** may be clearly seen with reference to FIGS. 1 and 2 of the drawings.

This section 11 is preferably formed of a lightweight plastic material of a relatively floatable nature.

A metal ring 25 having an external flange 26 to one end lines the aperture 16 and has its external flange abutting the outermost face of the plate 15. A generally U-shaped metal strap 27 provided with laterally projecting portions 28 at its open end is applied to the outer face of the valve plate 15 to bridge the aperture 16 and have its laterally projecting end portions 28 abutting and fixed to the valve plate at diametrically opposite sides of the aperture 16. A bellows 29 of metallic composition having one end suitably connected centrally of the bridging portion of the strap 27 projects coaxially of the section 11 and towards the valve plate 15. A metal rod 30 is connected centrally of the other end of the bellows 29 to extend through the aperture 16 and within the open end of the capsule section 11. The projected end of the rod 30 is centrally recessed and internally threaded at 31. A screw 32 has one end threadedly engaged in the threaded recess in the rod 30 while its other end is threadedly engaged in one end of a valve rod 33. The valve rod 33 is bearingly supported in the central recess 18 in the inner face of the base 12 and is necked at 34 intermediate its extremities for purposes to be described. A set screw 35 radially engaged in the rod 33 locks it to the screw 32.

A bar 36 is mounted to the screw 32 by means of an aperture through one end through which the screw extends. A lock nut 37 about the screw 32 intermediate the bar 34 and the projected end of the rod 30 is adjusted to clamp the bar 36 to the outermost end of the valving rod 33. The bar 36 is thus fixed to project radially of the section 11 with its outermost end in relatively overlying relation to the cylindrical recess 20 in the inner face of the base 12. A hemispherical element 38 is connected to the outer end of the bar 36 by a screw 39 opposite and normally in alignment with the open end of the recess 20. A ring 40 of rubber or the like is fixed against the face of the bar 36 about the base of the element 38 so that on movement of the bar relative the inner face of the base 12 the hemispherical element 38 will seat in sealing relation to the recess 20, the ring 40 assisting and maintaining the effectiveness of the seal by abutting the inner face of the base about the recess 20.

Spaced apertures 41 are provided in the wall of the section 11 intermediate the inner face of the base 12 and the valve plate 15.

The lip of the wall defining the open end of the section 11 is reduced in external diameter to provide a peripheral shoulder 42. A generally hemispherical cap 43 is seated over the open end of the section 11 in containing relation to the strap 27 and bellows unit 29. The mating end of the cap is stepped so that it will firmly and positively seat to the shoulder 42 and form a continuous surface with the wall defining the open end of the section 11. The connection between the section 11 and the cap 43 may be made permanent by cementing the two together. Spaced apertures 44 are provided about the cap 43 which is also preferably of plastic.

There is thus provided a free body capsule unit of a generally floatable nature which is particularly applicable for the dispensing of material such as water and fabric softeners in automatic washers. To clearly define the advantages of the dispenser so formed, its use in an automatic washer will now be described.

The bellows 29 is formed of temperature responsive material and gas filled to suit the application. In this instance it is normally contracted to dispose the valve rod 33 so as to seal the openings from the chamber 21 and the passage 23 to the recess 18. At this time the recess 20 is open as will be readily apparent from FIG. 1 of the drawings.

The chamber 21 is filled with a selected softener material, capped, and the capsule is thrown into the automatic washer at the beginning of its washing cycle. Hot water, introduced in the initial phase of the washing cycle, enters

the capsule body through the apertures 41 and 44. The bellows substantially immediately responds to the heat of the water to axially expand and shift the bar 36 and valve 33 to respectively seal the open end of the recess 20 by means of the hemispherical element 38 and dispose the necked portion 34 of the valve 33 opposite the openings from recess 18 to chamber 21 and passage 23. Some water will enter the recess 20 prior to the expansion of the bellows 29 sufficiently to cause a seal of this recess. This serves a useful purpose as will become apparent. With the recess 20 sealed, the capsule will be agitated with the clothes in the washer. This causes the charge of softener in the chamber 21 to naturally flow by the necked portion 34 of the valve 33 and through the passage 23 to the recess 20. Here the softener will be pre-mixed with the small amount of water initially admitted therein.

The softener must be introduced during the rinse cycle. In this application the bellows 29 is so fabricated that when the relatively cold rinse water is introduced and reaches a temperature in a range from 110° to 140° F., it automatically contracts to draw the bar 36 and the valve 33 outwardly from the inner face of the base 12 in the capsule 10. This opens the recess 20 and places its contents in communication with water flowing through the capsule through apertures 41 and 44. The water which is agitated naturally enters the recess 20 and assists in dispensing the softener from the tumbling capsule body through the apertures 41 and 44. The dispensing action is natural and certain. As soon as the temperature of the water in the washer rises above the specified range, the bellows operates once more to expand and effect a seal of the charge chamber and the recess 20.

It is thus readily apparent that the free body capsule provides a dispenser which functions with natural simplicity. The controls in the device are condition responsive and may be readily modified to enable the application of the capsule to varied automatic dispensing applications. Though the dispenser has been detailed solely with relation to its application to an automatic washer for dispensing softener, it will be readily obvious that its application and use is not so limited. In the illustrated application, the housewife need merely fill the capsule and introduce it to the automatic washer at the beginning of its cycle and the capsule will function automatically in and of itself and with maximum efficiency at the specific and appropriate interval in the washing cycle.

A modification of the embodiment illustrated in FIGS. 1 and 2 of the drawings is shown in FIG. 3. In this instance the rod 30 connected to the bellows 29 is solid and its projecting extremity is press-fit in a recess in the outermost end of the valving rod 33. The bar 36 is similarly disposed about the rod 30 as in the first described embodiment of the invention but in this instance it is biased in engagement with outer end of the valving rod 33 by a coil spring 48 disposed about the rod and respectively engaging the outermost face of the bar 36 and a collar 49 fixed to the rod 30 adjacent the bellows 29. This structure provides an overload safety feature. On expansion of the bellows 29 to cause the hemispherical element 38 to seal the recess 20 in the base of the section 11, the spring 48 accommodates a shifting of the bar 36 relative to the rod 30 in the event of over travel thereof. This insures that damage will not result to the bar 36 in the sealing operation.

A further embodiment of the invention is illustrated in FIG. 4 of the drawings. The capsule body 50 shown includes a central transverse valve plate 51 having a peripheral, generally cylindrical projection 52 axially extending from one face. The outer extremity of the projection 52 is externally reduced in diameter and threaded. A dome-shaped cap 53, provided with a mating internally threaded extremity at its open end, engages with the externally threaded portion of the cylindrical projection 52 to define a charge chamber 54 with the plate 51.

A smaller cylindrical projection **55** extends from the same face of the valve plate **51** as the projection **52** and is arranged concentrically therewith. Circularly spaced apertures **56** are provided in the valve plate immediately within the inner wall of projection **55**.

A central aperture **57** in plate **51** is lined by a bronze sleeve **58** which provides a bearing for a plunger **59** which extends through the valve plate. An O ring seal is provided in an annular groove in the plunger **59** to maintain the seal of the bellows shown. One end of the plunger **59** is externally threaded and extends into the charge chamber **54**. A cap element **61** is threadedly engaged to the threaded end of the plunger to dispose its open end in concentric relatively capping relation to the cylindrical projection **55**. A nylon ring seal **62** is seated in the inner face of the cap in alignment with the outer extremity of the cylindrical projection **55** for purposes to be further described.

The other end of the plunger **59** projects outwardly of the valve plate **51** and is provided with a bellows **63** thereabout, the outer end of which is connected to the outermost extremity of the plunger. The inner end of the bellows is connected by a metal ring **64** to the valve plate **51** and within the boundary defined by apertures **56**. The bellows is a temperature responsive unit which under normal conditions will dispose the plunger **59**, as shown, to maintain the cap **61** normally in spaced relation to the open end of the projection **55** so as to provide communication between the discharge chamber **54** and the outer side of the plate **51**. It is noted that a nylon washer is seated in the outer face of the valve plate **51** to abut the periphery of the ring **64** applied thereto and provide a positive seal of the bellows at its inner end thereby. In fabrication, an appropriate gas is introduced to the bellows unit through an aperture **66** in the plate **51**. The aperture **66** is plugged by a spherical element **67** after introduction of the gas.

A dome-shaped cap **69** having apertures **70** seats over the outer face of the valve plate **51** in containing relation to the bellows unit projecting therefrom. As will be apparent from FIG. 4 of the drawings, a male-female connection is established therebetween and the joint is made permanent by cement or other suitable means.

The use of the capsule in this form is similar to that described with respect to the first embodiment presented. In this case the cap portion **53** forming the charge chamber with the valve plate **51** is unscrewed to receive the softener material. Then the remainder of the assembly **50** is merely screwed to the cap to effect a body having a continuous smooth outer surface. The capsule is introduced into the automatic washer at the beginning of the washing cycle as previously described and again a small amount of the hot water initially entering the apertures **70** in the dome-shaped cap **69** will enter the discharge chamber **54**. The hot water substantially immediately induces expansion of the bellows to cause the cap **61** to seal across the openings in the valve plate within the cylindrical projection **55**, the nylon ring seal **62** insuring a tight seal. The operation of the plunger **59** is smooth and sure. At the appropriate time when the water introduced in the washing cycle is in the range to contract bellows **63**, the bellows contracts to move the plunger **59** to carry the cap **61** inwardly of the charge chamber **54** to provide communication between the discharge chamber and the apertures **70** in the capsule. As the capsule is tossed, the water coming in through the apertures **70** will enter the charge chamber though apertures **56** and assist in the dispensing of the softener out through the cylindrical projection **55**, apertures **56** and apertures **70** into the water in the washer. Again, the function is simple and the structure is simple and efficient. A positive dispensing action takes place in a natural manner and at the precise interval desired. The agitated water assists the natural dispensing action induced by the tumbling of the capsule. Here, also, an overload safety feature may be incorporated, as indicated in FIG. 5 of the drawings. The plunger **59**, as shown, extends through an aperture in the cap **61** and a spring **72** is connected about the plunger respectively to the outer surface of the cap **61** and to a ring **71** fixed to the outer end of the plunger so that, on capping of the projection **55** on expansion of the bellows, an over travel is provided for the plunger **59** to prevent damage to the capsule components.

An additional modification is shown in schematic fashion in FIG. 6 of the drawings. A hollow sphere **80** is provided with equi-distantly spaced apertures **81** about its periphery. These apertures are generally cylindrical at their outer ends while their innermost ends are conically expanded. The inner surface **82** of the sphere **80** is contoured to effect flats that generally form channels to the respective apertures **81**. A second hollow sphere **84** formed similarly and disposed concentrically within the sphere **80** is spaced therefrom by partitions or ribs **85**. The inner sphere **84** has openings **86** aligned with the openings in the outer sphere.

Valve elements **87** normally close the openings in the inner sphere. These valve elements are generally spherical in shape at their inner ends to nest in the apertures in the inner sphere which are formed to have mating contour. A spring **88** is connected to the inner extremity of each of the valve elements **87**. This provides six separate spring elements, the inner ends of which are mutually connected at the geometric center **89** of the inner sphere **84**. These springs normally mutually effect a sealing of the apertures in the inner sphere by an inward bias of valves **87**. The inner surface **90** of the inner sphere is also formed with flats to provide channelled outlets directed to each of the apertures **86**. A cylindrical element **91** is connected between the inner and the outer spheres to define aligned apertures therein and form an inlet for introducing a charge of softener or the like to the inner sphere. A plug **92** normally seals this inlet. The outermost portions of the valve elements **87** are conically reduced at **93** to provide male portions adapted to mate with the female conically expanded portions of the apertures **81** in the outer sphere.

As seen from FIG. 6 of the drawings, the charge is introduced to the inner sphere through the inlet **91** which is then plugged. The valving elements **87** normally seal the charge in the inner sphere by seating their spherical portions in the apertures **86** therein. This provides clearance between the conical portions **93** of the valve elements **87** and the means defining the apertures **81** in the outer sphere.

For example, when utilizing this dispensing capsule or ball in an automatic washer for dispensing softener or the like during the automatic washing cycle, the capsule or ball may be thrown in at the beginning of the washing cycle, as the other described embodiments, to toss therein until a predetermined condition results. In the use of this particular form of the invention, the dispensing condition is established by a predetermined agitation or spin of the clothes and water during the washing cycle. As will be apparent from observation, as the agitation or pin reaches a specific r.p.m., the valve elements **87** will all or in part dependent on disposition of the capsule move outwardly to open the apertures **86** in the inner sphere, providing access between the inner sphere and the space between the spheres. Since the apertures **81** in the sphere **80** are normally open, there may be water left in the intermediate space between the spheres at this point. Also, when valving elements **87** move outwardly as the washer spins or agitates at a predetermined rate, the aligned aperture **81** in the outer sphere is sealed and the charge in the inner sphere will be caused to exit under the centrifugal force conditions to enter the space between the spheres. Then, when the spin or agitation is reduced, the inner sphere will once more be sealed by the valving elements **87** and the charge of softener or the like will

be mixed with water as it enters intermediate the spheres and under predetermined agitating conditions will be expelled through the apertures **81** in the outer sphere under the effects of centrifugal force. The provision for valving elements in the six outlets in each of the spheres provides that, irrespective of the position of the ball or sphere in the washer, at all times at least some of the apertures will serve to function in the intended manner. This insures the proper dispensing of the softener at the predetermined period desired.

A further embodiment of the invention is illustrated in FIG. 7 of the drawings. The capsule shown includes a central section **100** consisting of a centrally apertured plate **101** which is circular in nature and provided with a peripheral cylindrical extension **102** from one face having circumferentially spaced slots **103** therein. The face of the plate **101** opposite its cylindrical projection is reduced in diameter to provide a peripheral shoulder **104**. A dome-shaped cap **105** seats over the outer face of plate **101** to have the wall defining its open end abut the shoulder **104** and be suitably connected to form a smooth continuous outer surface therewith. The cap **105** is provided with arcuate slots **106**.

A temperature responsive bellows unit **107** is connected at one end centrally of the inner face of cap **105** by a screw **109**. This disposes the other end of the bellows in spaced adjacent relation to the plate **101**. A rod **110** connected to the free end of bellows **107** extends through the central aperture in plate **101** in bearing relation thereto to project coaxially of the cylindrical extension **102**. Fixed to the projecting end of rod **110** is a collar **111**. A valve plate **113** mounts in floating relation about the rod **110** adjacent the collar **111**. The plate **113** is recessed to accommodate the collar **111** on bias thereto. A coil spring **112** is mounted about the rod **110** between the plate **113** and a second collar **114** fixed to rod **110** within the cylindrical projection **102** to normally bias the valve plate **113** to seat to and about the collar **111**.

A hollow generally hemispherical body **116** seats over the outermost end of the cylindrical projection **102** and is suitably connected thereto to complete a generally ovular capsule type end closure. A cylindrical recess **117** is externally provided in the wall of the body **116** coaxial with rod **110** to accommodate a coil spring **118**. The spring **118** is disposed about a rod **119** which extends coaxially of the recess **117** and through the wall section forming the base thereof to the interior of the body **116**. Threadedly engaged to the outermost extremity of the rod **119** is a cap element **121** bearing on the wall defining the recess **117**, in sliding relation thereto. The element **121** is so formed to normally cap recess **117**, biased to this position by spring **118** which respectively abuts the inner face of the cap and the wall section forming the base of recess **117**. The outer contour of cap **121** forms a continuously smooth outer surface with the body **116** in this normally disposed position. The inner end of the rod **119** projects within the interior of body **116** and has a circular valve plate **123** fixed thereto having a peripheral surface converging and projecting beyond the extremity thereof. A circular recess **125** is defined in the outer face of the plate **123** aligned with and of the size to accommodate the collar **111** on rod **110** which is fixed to the bellows **107** and operates as will be described. In the normal position of the rod **119**, the plate **123** is biased to the inner face of the outer end of body **116**. The inner extremity of body **116** is formed with an annular flange **126** directed radially inwardly from its peripheral wall and having its inner peripheral surface beveled and adapted to seat the valve plate **123** in frictional engagement therewith as will be described. The plate **123** is preferably of a rubber or plastic to afford the proper frictional coefficient.

A cap **127** is threadedly engaged to close an aperture in the wall of body **116** and provides for introduction of a charge to be dispensed to the interior of the body **116**.

In the use of this form of the invention to dispense softener in an automatic washer, the housewife pushes the cap **121** in with her thumb causing the valve plate **123** to frictionally lock to the flange **126** and seal the body **116** forming a charge chamber. The charge chamber so formed is filled on removal of the cap **127** which is then replaced to once more seal the chamber. The filled capsule is then thrown in the washer with the dirty clothes at the beginning of the automatic washing cycle. As the hot water enters the washer, it enters slots **106** to pass about the temperature responsive bellows **107** and cause it to expand, pushing rod **110** and bias plate **113** thereon until the plate **113** engages the flange **126** at the inner extremity of the charge chamber. As the bellows continues to expand, the collar **114** moves with rod **110** to compress spring **112** and cause it to bias the valve plate **113** to seal across the flange **126** and seal the charge chamber thereby, the rod **110** advancing to engage in recess **125** in plate **123** to disengage the plate **123** from the flange **126**. The plate **123** is then automatically displaced to its normal position to the inner face of body **116** under the influence of the spring **118**. The bellows **107** is operative as the hot water leaves the washer to start to contract and as the cold water enters to commense the rinse cycle, the bellows contracts sufficiently to draw rod **110** rearwardly so the collar **111** re-engages plate **113** and uncaps the aperture defined by the flange **126** on body **116**. As this occurs, the softener will flow from the charge chamber to mix with the water and exit through apertures **103** and cylindrical section **102**. Again, the dispensing action is automatic, smooth, and positive in nature.

As has been noted previously, the application presented herein is merely illustrative and it will be obvious that the beneficial aspects of the free body capsule type dispenser are particularly advantageous in relation to the use described. However, the scope of application of the invention apparatus is substantial as will be recognized by those versed in the art.

To summarize, the capsule type dispenser is simple in structure, economical to fabricate, and positive to operate at a predetermined interval. The application to which it may be applied is not limited and will be controlled only by the degree of foresight of those particularly interested in the art of automatically dispensing liquids and powders or the like.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprises an illustrative form of several modes of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. A dispenser including, a free body shell of a floatable nature having plate partition means therein defining spaced chambers, apertures in said plate partition means, one of said chambers accommodating a charge of material to be dispensed, another of said chambers having outlets therefrom, a temperature responsive bellows means having a plunger element connected thereto and bearing in said partition means, and cap means connected to said plunger and automatically operative in selected temperature ranges to cap or uncap the apertures in said partition means to selectively seal the charge to be dis-

pensed in the charge chamber or provide access between said charge chamber and the outlets in said another chamber for automatic dispensing of the charge.

2. A free body dispenser including, a free body outer shell of a floatable nature, a second shell concentric therewith, aligned apertures in said shells, means for introducing a charge to be dispensed in said inner shell, valve means normally closing the apertures in said inner shell, said valve means being responsive to said shells being subjected to a predetermined environment to seal the outlets in said outer shell and provide access between said shells for discharge of the charge to the space between said shells, said valve means being further responsive to a predetermined change in environment to uncap the outlets in said outer shell for automatic dispensing of the charge through the outlets therein.

3. A dispenser including, a free body capsule, a valve plate forming a partition in said capsule, a relatively thick base in said capsule to one end, apertured to define a charge chamber to receive material to be dispensed, a central recess in the inner face of said base, a second recess in the inner face of said base in parallel relation to said central recess, aligned passages respectively communicating said charge chamber and said second recess with said central recess, a valving rod bearing in said central recess, a control rod connected to said valving rod and extending through said valve plate, a temperature responsive bellows repectively connected to said controlling rod and in fixed relation to said valve plate, cap means for said second recess connected with said valving rod, spaced outlets in said capsule, said bellows being normally operative to dispose said valving rod to seal the passages communicating with said central recess and disposing said cap means in uncapped relation to said second recess, said bellows being responsive to a predetermined temperature to provide communication between said charge chamber and said second recess enabling passage of the charge to said second recess, the second recess being successively simultaneously capped by said cap means in the process, said bellows element being further responsive to a subsequent change in temperature to uncap said second recess for passage of the charge through the outlets in said capsule.

4. A free body dispenser including a housing having a control chamber, a charge chamber and a discharge chamber, control means in said control chamber, said control chamber being sealed from said other chambers and having openings providing access thereto, means normally defining a passage between said charge and discharge chambers, manually operable means to seal said passage, means for introducing a charge of dispensable material to said charge chamber, valve means connected to said control means projecting in said discharge chamber and operative on application of heat to said control means to seal said passage and displace said manual means, said control means being automatically operative in a predetermined temperature range to displace said valve means and open said passage for passage of the dispensable material to said discharge chamber, and outlet means for passage of said material from said discharge chamber.

5. A free body dispenser including a housing having a control chamber, a charge chamber and a discharge chamber, a bellows in said control chamber, said control chamber being sealed from said other chambers and having openings providing access thereto, means normally defining a passage between said charge and discharge chambers, manually operable means to seal said passage, means to introducing a charge of dispensable material to said charge chamber, rod means connected to said bellows projecting in said discharge chamber mounting a biased floating valve plate operative on application of heat to said bellows to seal said passage and displace said manual means, said bellows means being automatically operative in a predetermined temperature range to displace said valve plate and open said passage for passage of the dispensable material to said discharge chamber, and outlet means for passage of said material from said discharge chamber.

6. A dispenser for introduction in a chamber or receptacle for relative free movement in fluid matter which may be introduced therein including a shell-type housing constituting a free body provided with means rendering it buoyant, said housing having a charge and a discharge chamber therein, partition means separating said chambers having apertures therein, valve means for sealing said apertures in response to a predetermined physical condition of the fluid matter within the chamber or receptacle to retain a charge in said charge chamber, control means connected with said valve means conditioning said valve means to selectively automatically open and seal said apertures responsive to predetermined physical change in the fluid matter and means defining an outlet from said housing in communication with said discharge chamber to provide for passage of a charge from said housing.

7. A dispenser for introduction in a chamber or receptacle for relative free movement in fluid matter which may be introduced therein, including a free body of a hollow nature having partition means defining at least a charge and a discharge chamber therein, means defining a passage between said charge and discharge chamber, temperature responsive control means in said body conditioned to seal a charge in the charge chamber on exposure to a predetermined temperature, means providing an outlet from said body in communication with said discharge chamber, said temperature responsive means being conditioned to respond to exposure to a predetermined temperature to provide communication between said discharge and charge chambers for movement of the charge to the discharge chamber through said passage and subsequent movement from the discharge chamber and through said outlet under the influence of fluid matter in the chamber or receptacle thereabout.

8. A dispenser for introduction in a chamber or receptacle for relatively free movement in fluid matter which may be introduced therein, including an apertured valve element, hollow free body means containing said element to define a charge chamber and a discharge chamber thereby, said means defining the discharge chamber having apertures therein, said charge chamber being formed to receive a charge to be dispensed, valve means for capping said apertured valve element and preventing passage of the charge to the discharge chamber, said capping means being automatically responsive to the fluid matter in the chamber or receptacle within which the dispenser is introduced achieving a predetermined physical condition to provide for uncapping said valve element for release of the charge from the charge chamber for movement to said discharge chamber and outwardly therefrom under the influence of fluid matter about said free body means.

9. A dispenser for introduction in a chamber or receptacle for relative free movement in fluid matter which may be introduced therein, including a shell-type housing constituting a free body provided with means rendering it buoyant, said housing having a charge and a discharge chamber therein, means for introducing a charge of dispensable material into said charge chamber, plunger means adapted to seal the charge in said charge chamber, means defining at least one outlet from said housing and means connected to said plunger means conditioned to automatically operate to selectively displace said plunger means in response to the fluid matter into which the housing is introduced attaining a predetermined physical condition to provide for movement of the charge to the discharge chamber for the dispensing of the charge through said outlet and into the fluid matter, under the influence thereof.

10. A capsule dispenser including an outer shell of a floatable nature, a second shell concentrically located

therein and fixed in spaced relation to the inner wall thereof, aligned apertures in said shells, valving elements externally of the apertures in the inner shell, spring means connecting to the inner extremities of said valve elements and commonly joined in the geometric center of said inner shell to normally bias said valve elements to seal the apertures therein, said valve elements being normally biased thereby to be maintained in spaced relation to the inner wall of said outer shell at the apertures therein, means defining an inlet aperture to said inner shell through said outer shell for introduction of a charge to said inner shell, said valve elements being responsive to centrifugal force effects on agitation of said dispenser to radially extend against the bias of said spring elements to seal the apertures in the outer shell and open the apertures in the inner shell for passage of the charge in said inner shell to the space between said shells, the valve elements being further responsive to a change in centrifugal force to once more seal the apertures in said inner shell and open the outer shell apertures for automatically dispensing the charge from the space between said shells, said valve elements being spherically formed at their extremities operative to seat in the apertures in said inner shell and conically formed at their extremities operative to seat in the apertures in said outer shell, the means defining the apertures in the inner and outer shells being formed to mate with the particularly contoured portions of the valves seating thereto under respectively selected centrifugal force effects.

11. A dispenser for introduction in a body of fluid consisting of a shell-like housing which constitutes a free body, said body being buoyant per se, said housing having means therein defining a charge chamber and a discharge chamber, means defining at least one outlet from said housing communicating with said discharge chamber, means defining at least one opening from said charge chamber to said discharge chamber, manually operable means for sealing said opening, means for introducing a fluid charge of material to said charge chamber, control means in said housing conditioned to react to said housing being introduced to a body of fluid having a predetermined physical condition to seal the opening from said charge chamber and simultaneously displace said manually operable means therefrom, said control means being conditioned to respond to a predetermined change in the physical condition of fluid about said housing to clear the opening from said charge chamber for discharge therefrom of the charge therein to flow to said charge chamber and through said outlet.

12. A free body dispenser for use in a fluid medium consisting of a housing constituting a buoyant free body having a continuous exterior surface, means defining a charge chamber, a discharge chamber and an opening therebetween in said housing, said housing have means defining an outlet passage from said discharge chamber, means in said housing for normally preventing movement of the charge therefrom and through said outlet passage to a fluid medium thereabout, said last named means being conditioned to respond to a predetermined centrifugal force being applied to the fluid medium about said free body whereby to provide an automatic discharge of said charge from said charge chamber and a consequent automatic movement thereof to and through said outlet.

13. A dispenser for use in a fluid medium comprising a unit buoyant shell having a continuous exterior surface and constituting a free body, said body having means therein forming a charge chamber and means defining a passage therefrom to its exterior, means for normally preventing the flow of the charge from said chamber and through said passage having temperature responsive means in connection therewith and conditioned thereby to unseal said chamber in automatic response to the shell being subjected to fluid of a predetermined temperature whereby to produce an automatic discharge of the charge from the chamber through said outlet.

14. A dispenser for introduction in a body of fluid consisting of a shell-like structure constituting a free body which is buoyant per se, said housing providing a receptacle for a charge of a medium capable of modifying fluid thereabout, said receptacle having at least two outlets which are relatively opposed and interconnected means for sealing said outlets arranged to selectively respond to said housing and the fluid thereabout being subjected to centrifugal force whereby to selectively open said outlets for flow of the charge from said receptacle.

15. A dispenser unit consisting of a buoyant free body providing a receptacle for a charge of material for modifying a fluid medium thereabout, means normally sealing the charge in said body, and said sealing means being conditioned to operate responsively to predetermined forces being applied to said body governed by the movement of the fluid medium thereabout whereby to selectively open a passage for flow of said charge in a direction outwardly of said body.

16. A dispenser unit consisting of a shell-type body providing a recptacle for a charge of material for modifying a fluid medium and means normally sealing said charge in said body, said means being arranged to respond to the application to said body of a predetermined degree of centrifugal force whereby to open a passage for flow of said charge outwardly of said body and dispersal thereof in the fluid medium.

17. A dispenser unit consisting of a shell-type body providing a receptacle for a charge of material for modifying a fluid medium thereabout, and elements normally sealing the charge in said body, said elements having means so relating them to said body conditioning them to respond to the application to said body of centrifugal force of a predetermined degree whereby to open a passage for flow of said charge outwardly of said body.

18. A dispenser unit consisting of a buoyant free body providing a receptacle for a charge of material to modify a fluid medium thereabout, means for sealing the charge in said body, and temperature responsive means interconnected with and conditioning said sealing means to provide, at a predetermined temperature level, a passage for release of said charge to automatically move outwardly of said body, in the process of which said charge is dispersed under the influence of the fluid thereabout.

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LOUIS J. DEMBO, *Primary Examiner.*

HADD S. LANE, *Examiner.*