March 7, 1933. S. M. SAGER 1,900,201

EYE CUP

Filed Jan. 10, 1930 3 Sheets-Sheet 1

Fig. 1

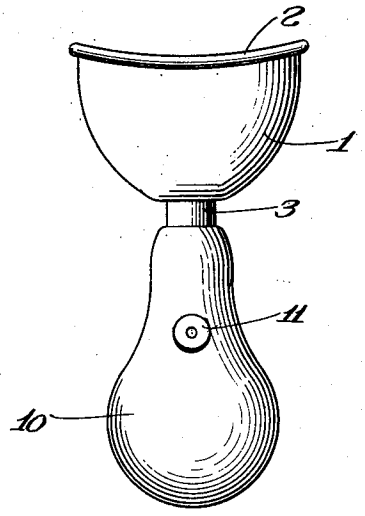

Fig. 2

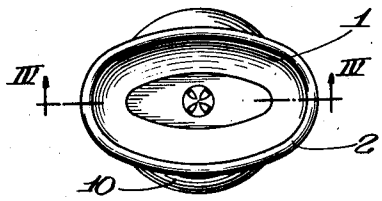

Fig. 3

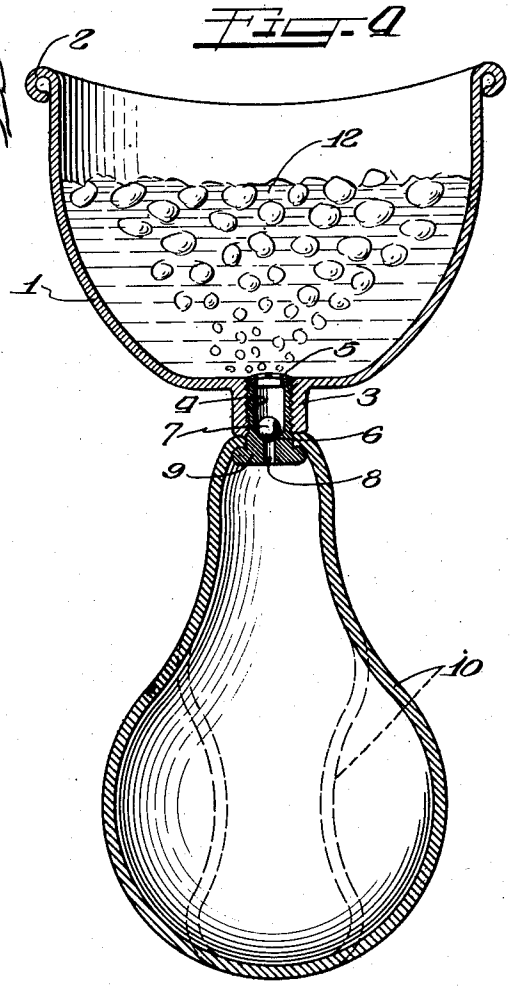

Fig. 4

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EYE CUP

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Fig. 7

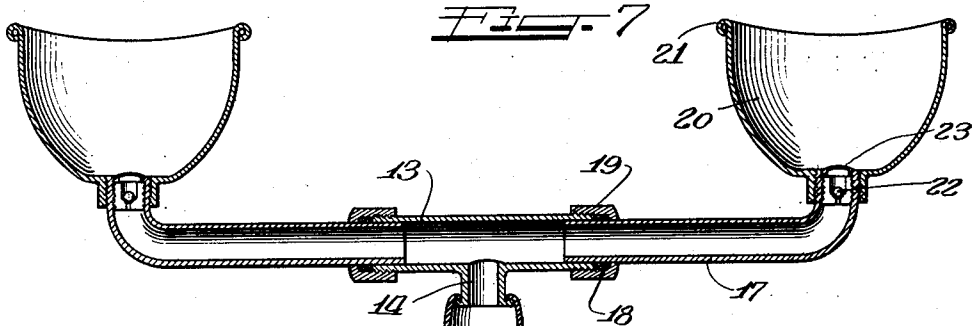

Fig. 6

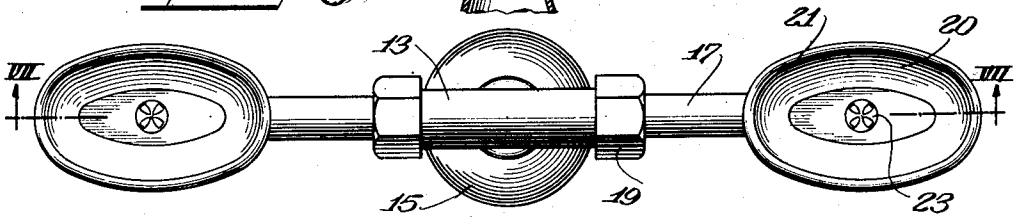

Fig. 5

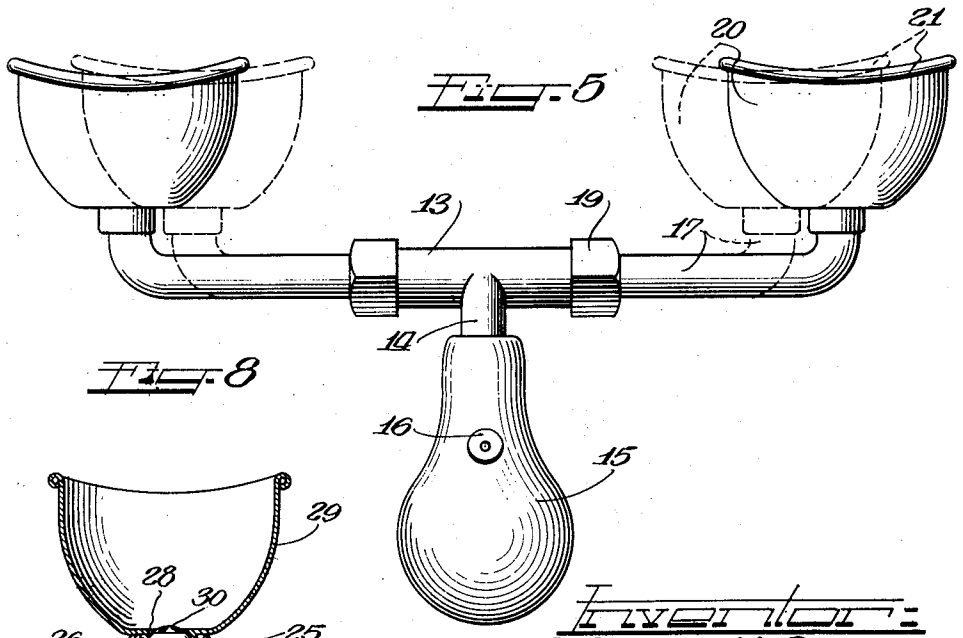

Fig. 8

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EYE CUP

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Fig. 10

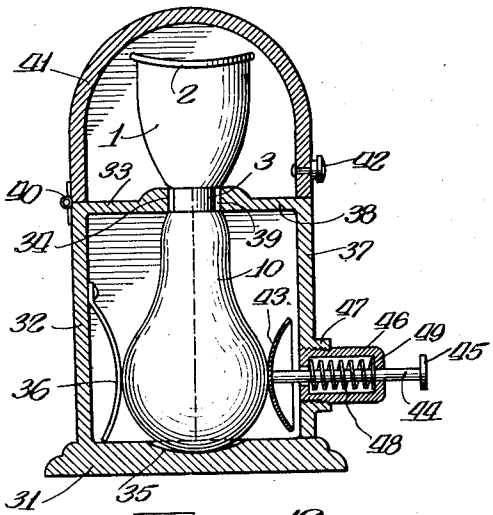


Fig. 12

Fig. 9

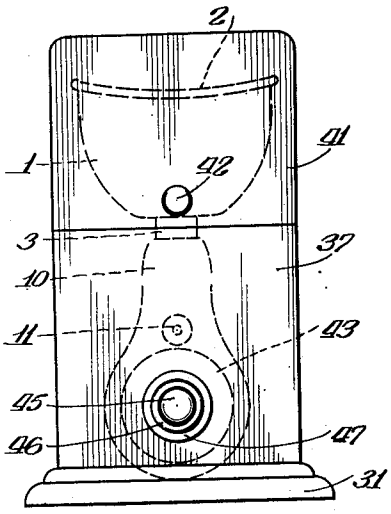
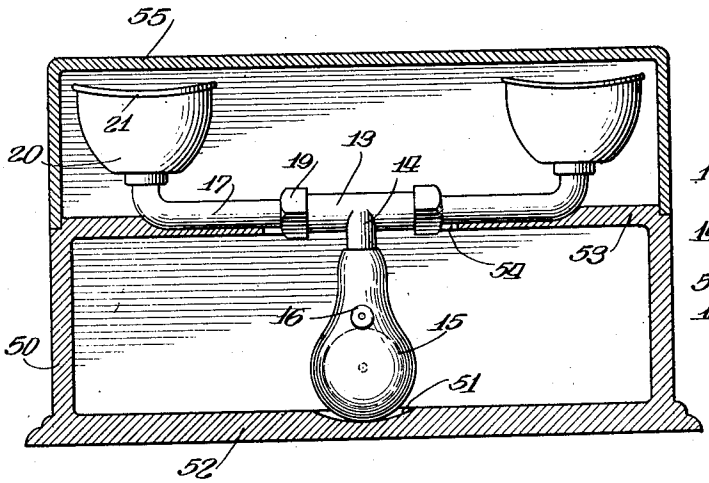
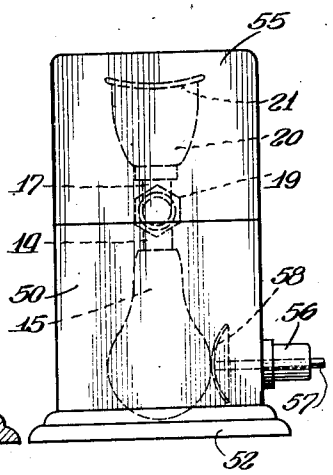


Fig. 11





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Patented Mar. 7, 1933 1,900,201

UNITED STATES PATENT OFFICE

SOLOMON M. SAGER, OF EVANSTON, ILLINOIS

EYE CUP

Application filed January 10, 1930. Serial No. 419,772.

This invention relates to an improved eye cup for treating eyes, and embraces a container or cup adapted to carry an eye treating solution which, when the eye cup is applied to a person's eye, may be agitated by means of air controlled by an air bulb connected with the container whereby air may be forced through an air valve outwardly through the solution to circulate or agitate the same to wash or clean a person's eye without necessitating throwing back of the head or straining of a person's neck during the time that the eye is being treated.

It is an object of this invention to provide an improved, simplified type of eye treating device consisting of one or more containers or cups having connected therewith means whereby the liquid contained in the containers or cups is adapted to be agitated.

It is also an object of this invention to provide an eye cup with an air bulb mechanism to facilitate agitation of an eye wash solution contained within the eye cup when the cup is applied to a person's eye.

It is a further object of this invention to provide an improved, simplified form of eye cup adapted to hold an eye treating solution, which is adapted to be operated by pneumatic means to agitate the solution within the cap without requiring the exercise or movement of the muscles or parts of the eye which is being treated.

It is furthermore an object of this invention to provide an encased eye cup of either the single or multiple type constructed to permit the same to be readily applied over a person's eye or eyes and having means for containing an eye treating solution adapted to be circulated or agitated by forcing air through the solution by means of a bulb mechanism attached to the device and operable by means carried by the casing.

It is an important object of this invention to provide an improved and simplified form of inexpensive eye cup adapted to be constructed of light-weight material and adapted to be conveniently applied to a person's eye to permit a treating solution carried in the cup to be agitated by means of air supplied or admitted through the solution by means of a bulb connected with the cup and operable by the hand of a person holding the device or by a mechanism in a casing enclosing the device; said casing adapted to hold the cup in a convenient position to permit a person's head preferably to be held in a bent-over position over the cup, thereby obviating any strain of the muscles of the person's neck and furthermore relieving the person of the inconveniences which usually accompany the treatment of eyes with the ordinary type of eye cup.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a person's head bent over in a convenient position and having an improved eye cup applied to one of the eyes.

Figure 2 is a side elevation of an eye cup embodying the principles of this invention.

Figure 3 is a top plan view of the eye cup illustrated in Figure 2.

Figure 4 is an enlarged longitudinal section of the eye cup taken on line IV—IV of Figure 3 and indicating the compressed position of the air bulb in dotted lines.

Figure 5 is a side elevation of a multiple type of eye cup illustrating the adjustment of the cups toward or away from one another in dotted lines.

Figure 6 is a top plan view of the modified form of multiple type of eye cup illustrated in Figure 5.

Figure 7 is a fragmentary sectional view of the modified form of eye cup taken on line VII—VII of Figure 6, with part of the air bulb broken away.

Figure 8 illustrates a fragmentary sectional view of another modified form of eye cup which is adjustable on its support.

Figure 9 is a front elevation of a modified form of eye cup device of the unitary type illustrated in Figure 2 and enclosed in a supporting sanitary case.

Figure 10 is a vertical section taken on line X—X of Figure 9 with parts in elevation.

Figure 11 is an end elevation of a sanitary case for enclosing a multiple type eye cup device of the kind illustrated in Figure 5.

Figure 12 is a sectional view taken on line XII—XII of Figure 11 with the eye treating device in elevation.

As shown on the drawings:

Figures 1 to 4, inclusive, illustrate an improved single type of eye cup comprising a container, receptacle or cup 1 adapted to be constructed of light-weight metal, composition material or rubber, having a rounded bead or cushion 2 formed on the rim portion thereof to facilitate application of the container or cup over the eye of a person's face similar to the arrangement illustrated in Figure 1.

The container and its cushion rim or bead are adapted to be shaped to permit the convenient application and use thereof.

Integrally formed on the bottom of the container 1 is a passaged sleeve or collar 3 which is internally threaded for the reception of an externally threaded valve housing 4, the inner end of which is recessed to receive an apertured air outlet cap or screen 5. Formed in the lower portion of the valve housing 4 is a valve seat 6 upon which a ball valve 7 is normally adapted to seat to close an air intake passage 8 provided in the lower head end 9 of the valve housing 4.

Engaged on the head 9 of the valve housing 4 is a rubber air bulb 10 having an air intake valve 11 secured in the side thereof for the purpose of admitting air into the bulb 10 after the air contained therein has been forced out of the bulb into the solution contained within the container 1.

The improved unitary type of eye cup illustrated in Figures 1 to 4, inclusive, is adapted to have a quantity of an eye treating solution 12 deposited in the container or receptacle 1, as illustrated in Figure 4, and said solution is prevented from flowing downwardly through the valve housing 4 into the air bulb 10 by the closure ball valve 7, which closes the passage 8 leading into the air bulb.

The single type of eye treating device is of simplified form and may be conveniently used and operated in the treatment of a person's eye. The solution contained within the receptacle or container 1 may be of a selected or of a prescribed nature. The eye cup may be held in a vertical or slightly inclined position, as illustrated in Figure 1, with the bead or margin 2 in contact with a person's face so that the cup covers the eye which is to be treated. The device may be held by means of the container 1 or by holding the bulb 10 as illustrated, and the person using the device has merely to bend the head forwardly against the open end of the container 1, thereby obviating the necessity of any straining or craning of the neck which usually has been necessary in using the ordinary type of eye cup requiring the head to be thrown back.

With the eye cup applied in the convenient position just explained, the person using the eye cup has merely to squeeze the bulb 10, permitting air from the bulb to pass upwardly through the air valve in the neck of the container, so that the air passing upwardly through the liquid or solution 12 tends to circulate or agitate the same, as clearly illustrated in Figure 4. It will thus be noted that the solution is adapted to be applied to the eye which is to be treated and that the liquid is agitated or circulated to gently treat the eye with the solution without requiring movement or exercise of the parts of the eye and without requiring straining of the person's neck or facial muscles during an eye treatment.

In the use of the eye cup device, the bulb 10 may be used as a handle and may be compressed and released repeatedly to cause air from the bulb to pass through the ball valve and into the container or receptacle, so that the air will pass upwardly through the solution 12 to thoroughly circulate or agitate the same, so that the solution will act against the eye to thoroughly cleanse or treat the same.

Figures 5, 6 and 7 illustrate a modified form of eye treating device of the multiple cup type adapted to permit both eyes of a person to be treated at the same time. The modified form of eye treating device comprises a T-yoke or bridge piece 13 having a middle arm 14 on the end of which an air bulb 15 is engaged. The air bulb 15 is provided with an air intake valve device 16. Slidably engaged in each of the side arms of the bridge piece or yoke 13 is a pipe arm or stem 17, the inner ends of which slidably telescope into one of the arms of the yoke 13 and has engaged therearound a packing 18 which is positioned within a retaining cap 19 threaded or otherwise secured on the threaded end of the yoke arm, as clearly illustrated in Figure 7. This arrangement permits the two pipe arms 17 to be pushed into or pulled out of the yoke member 13 to vary the width of the eye treating device so that the same may be readily fitted to the eyes of a person upon which the device is to be used. The outer end of each of the slidable arms 17 is bent at an angle and has an eye solution container or cup 20 mounted thereon. The eye cups or containers 20 may be constructed of light-weight metal, composition matter, or even of rubber, with the margins of the cups or containers rolled or constructed with a bead 21 to afford a smooth cushion adapted to be applied directly to the portion of a person's head surrounding an eye. Mounted in the outer end of each of the adjustable arms 17 is an air

control valve device 22 which is provided with an apertured cap or screen 23 to permit air to be admitted into the eye cup.

The multiple cup eye treating device illustrated in Figures 5, 6 and 7 is provided for treating a pair of eyes at the same time. The containers or cups 20 are filled with a quantity of an eye wash of eye treating solution, and the solution is prevented from running down into the supporting arms for the cups by the ball valves 22 provided in the ends of the adjustable arms 17. The arms 17 are adapted to be slidably adjusted with respect to the yoke member 13 so that the two cups forming a part of the device are adapted to be positioned to cover both of the eyes of a person using the device. The eye treating device may be held by means of the yoke or bridge piece 13 or by means of the air bulb 15, which may serve as a handle. To use the device, the same is held in a substantially vertical position or may be slightly inclined, similar to the arrangement illustrated in Figure 1, and a person has merely to lower the head over the cups 20 to permit the portions of the head immediately surrounding the eyes to rest upon the beads or cushions 21 of the cups 20. This convenient positioning of the multiple type eye cup treating device obviates stretching or straining of the neck and facial muscles, so that the eyes may be treated with ease by the solution within the cups 20 by merely repeatedly compressing and releasing the air bulb 15 so that air from said bulb is forced upwardly through the hollow arms of the bridge piece through the valves 22 and into the bottom of the cups or containers 20 so that the air passing upwardly through the solution will circulate or agitate the same to treat the person's eyes in a convenient and easy manner.

Figure 8 illustrates another modified form of eye treating device of the multiple cup type wherein the bridge piece or yoke arms 24 communicate at their inner ends with an air bulb similar to the arrangement illustrated in Figure 5. Formed on the outer end of each of the bridge arms 24 is a hollow ball member 25 over which a socket member is movably engaged. The socket member comprises a ring or sleeve 26, the lower end of which is provided with a tapered recess 27 to permit movement of the socket member with respect to the ball 25. Threaded or otherwise secured in the socket member 26 is a boss 28 which is formed on the bottom of an eye cup or container 29. An apertured cap or cover 30 is provided on the open end of the ball member 25 and is positioned within the container or cup 29.

In the modified type of eye treating device illustrated in Figure 8, the eye solution containers or cups 29 are mounted on the ends of the bridge arms 24 by means of ball and socket joints, permitting the cups to have a universal movement, so that the cups may be moved toward or away from one another or at any desired angle necessary to permit the cups to be fitted to the eyes of a person who is to use the device.

If desired, the pivotally mounted cup of the type illustrated in Figure 8 may be used in combination with the adjustable arms 17 illustrated in Figures 5, 6 and 7, so that an eye treating device may be provided permitting any required adjustment of the cups to fit the eye settings of any individual.

While ball type air control valves are described in connection with the eye cups or containers for controlling the admittance of air into the solution contained within the containers, it will, of course, be understood that any desired type of control valve may be provided in the device.

It should also be understood that, while an air bulb is used and described for causing air to be admitted into the containers, any other suitable type of means may be connected with the cup or cups to permit the contents of the cups to be agitated to facilitate eye treatment.

Figures 9 and 10 illustrate a modified form of eye cup device involving the use of the unitary type of eye cup illustrated in Figures 1 to 4, inclusive. In this form of the device, a sanitary housing or casing is provided for the eye cup to completely enclose the same when the eye cup is not in use and adapted to afford ready access to the cup member when the casing is opened.

In this form of the device, the reference numeral 31 indicates a housing base or bottom plate having rigidly secured or integrally formed thereon a half housing section or casing 32 provided with a top plate 33 having a half round notch or recess 34 provided therein to provide a recess for the reception of the collar or neck portion 3 of the eye cup. The base 31 has the top surface thereof provided with a pocket or recess 35 to afford a seat or pocket in which the lower end of the bulb 10 is adapted to seat when the eye cup is mounted in position. Secured on the back wall of the housing or casing section 32 is a stop plate or member 36 against which one side of the bulb 10 is adapted to seat or contact, as illustrated in Figure 10.

Hinged or otherwise movably connected to the back housing or casing section 32 is a front housing or casing section 37 which is also provided with a top wall 38 having a notch or recess 39 provided therein and adapted to fit around the collar or neck piece 3 of the eye cup device when the movable casing section 37 is in closed position opposite the rear housing section 32 as illustrated in Figure 10.

Pivotally supported on the top of the rear housing section 32 by means of hinges 40 or other suitable means is a cover 41 provided

with a handle or knob 42 to facilitate opening and closing of the same. In the closed position of the cover 41, the eye cup 1 is completely enclosed to permit the same to be kept in a clean and sanitary condition when not in use.

For the purpose of permitting the bulb to be operated when the bulb is mounted within the housing or casing, a concavo-convex disc or plate 43 is positioned within the casing section 32—37 adjacent the bulb 10, as illustrated in Figure 10. The disc or plate 43 is in the form of a plunger and is supported on the inner end of a plunger rod or steam 44 having a head or button 45 mounted on the outer end thereof to permit actuation of the plunger. The plunger rod 44 is slidably supported in a sleeve or auxiliary housing 46, one end of which is externally threaded and engaged in an internally threaded sleeve or boss 47 formed on the front wall of the front casing section 37. Engaged around the plunger rod 44 within the auxiliary housing 46 is a coiled control spring 48, one end of which seats against the inner end of the auxiliary housing 46 while the outer end is positioned to seat against a plunger disc 49 secured on the plunger rod 44 within the auxiliary housing 46. The spring 48 is provided for the purpose of returning the plunger and the plunger rod outwardly to normal position after the same have been pushed inwardly to cause compression of the bulb 10 to of the eye cup device.

It will thus be noted that, in the modified form of enclosed eye cup device illustrated in Figures 9 and 10, the unitary type of eye cup illustrated in Figures 1 to 4 may be conveniently enclosed in a supporting housing provided with a cover. The housing is provided with a mechanism whereby the bulb encased within the housing and supported thereby may be conveniently compressed and released for the purpose of causing air from the bulb 10 to pass upwardly through the solution contained within the eye cup or container 1 to agitate or circulate the solution. When it is desired to use the device, the cover 41 is thrown into an open position behind the housing, thereby exposing the eye cup 1 to permit convenient use of the same. The eye cup is supported by means of the housing or casing within which the bulb 10 of the eye cup is enclosed and supported between the baffle or stop member 36 and the plunger head 43.

With the casing cover open and an eye treating solution deposited in the container or cup 1, a person who is to use the device has merely to bend the head downwardly to position the eye over the container or cup 1 against the cushioning rim 2 thereof. By actuating the plunger rod 44, the plunger 43 is adapted to be moved inwardly against the bulb 10 to compress the same and cause air therein to be forced upwardly and outwardly through the valve mechanism in the collar 3 and then through the solution contained within the container or cup 1 to agitate or circulate the solution so that a person's eye may be properly treated or cleaned in a convenient and easy manner without necessitating straining of the neck or face muscles.

Figures 11 and 12 illustrated an enclosure means within which the multiple type eye cup device is adapted to be supported and enclosed. In this form of the device, the multiple type eye treating mechanism illustrated in Figures 5 to 7 is adapted to be supported and enclosed. The enclosing means illustrated in Figures 11 and 12 comprises a supporting housing or casing 50 having a pocket or recess 51 provided in the top or inner surface of the housing or casing base 52. The recess or pocket 51 affords a seat for the lower end of the air bulb 15, while the adjustable arms 17 of the eye cup device are adapted to seat in grooves or pockets provided in a top wall 53 of the housing. The top wall 53 of the housing is provided with a central opening 54 to permit the bulb to be inserted into the housing or casing as illustrated in Figure 12. Removably seated upon the top of the casing or housing 50 is a cover 55 adapted, when in position, to enclose the eye cups 20 to keep the same in a clean, sanitary condition when the multiple type eye cup device is not in use.

Mounted on either the front or rear wall of the housing or casing 50 is an auxiliary housing or sleeve 56 through which a spring-controlled plunger rod or stem 57 is slidably mounted. Engaged on the inner end of the plunger rod or stem 57 is a plunger head 58 which is positioned adjacent the bulb 15 within the housing to permit the bulb to be compressed to expel air therefrom when the plunger rod or stem 57 is actuated.

To use the multiple type eye cup device of the type illustrated in Figures 11 and 12, it is only necessary to remove the cover 57 and deposit a required quantity of an eye treating solution in the cups or containers 20. With the eye treating device supported in the housing or casing 50 as illustrated and described, a person has merely to bend the head downwardly to position the eyes over the cups 20 with the face resting against the cushions or rims 21 of the cups. In this convenient position, a person has merely to operate the plunger rod or stem 57 to cause the plunger head 58 to repeatedly actuate the air bulb 15 to cause air to pass upwardly through the arms 17 and the valve mechanisms contained therein, through the screens and through the solution contained within the cups or containers to agitate or circulate the solution against the eyes of the person using the device.

It will thus be seen that either the unitary

or multiple type of eye treating device illustrated in Figures 1 to 8, inclusive, may be used in combination with a supporting housing which is provided with actuating means for operating the air bulb to cause agitation of the solution or liquid contained within the cup or cups of the eye treating device.

It will, of course, be understood that many details of construction may be varied through a wide range without departing from the principles of this invention, and it is, therefore, not purposed to limit the patent granted hereon otherwise than necessitated by the scope of the appended claim.

I claim as my invention:

An eye treating device comprising a cup for carrying an eye treating solution, a check valve mechanism connected with the cup and opening to an upward stream of air and stopping any downward flow of the solution, and an air bulb connected with the check valve mechanism adapted to be compressed to open the check valve mechanism and cause air to pass upwardly through the solution to agitate the same.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

SOLOMON M. SAGER.