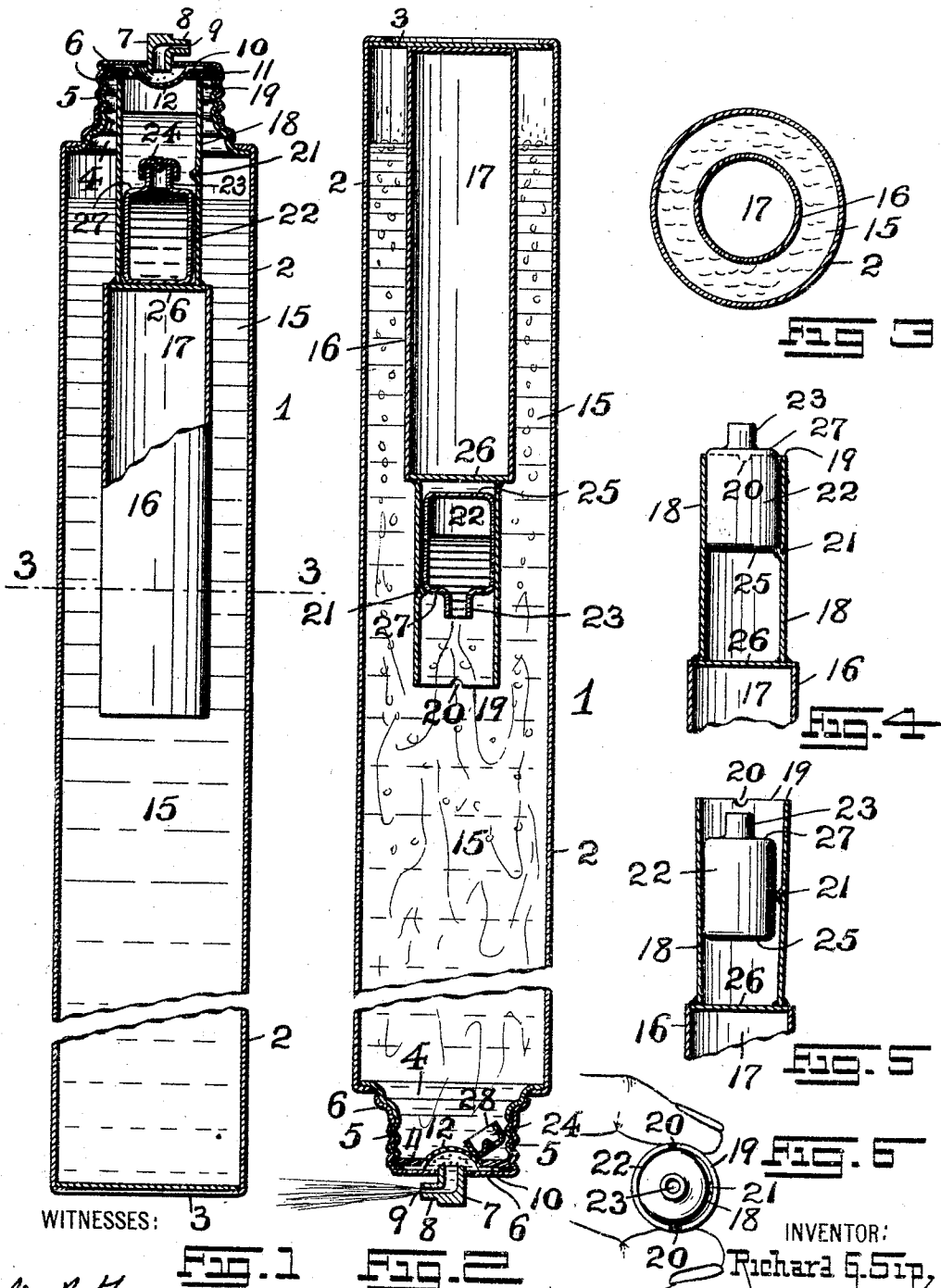


No. 782,880.

PATENTED FEB. 21, 1905.

R. G. SIP.  
FIRE EXTINGUISHER.  
APPLICATION FILED JAN. 26, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

*M. B. Fraentzel*  
*Geo. D. Richards*

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No. 782,880.

PATENTED FEB. 21, 1905.

R. G. SIP.  
FIRE EXTINGUISHER.  
APPLICATION FILED JAN. 25, 1904.

2 SHEETS—SHEET 2.

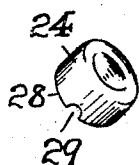


FIG. 7

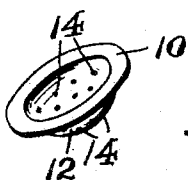


FIG. 8

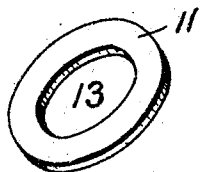


FIG. 9

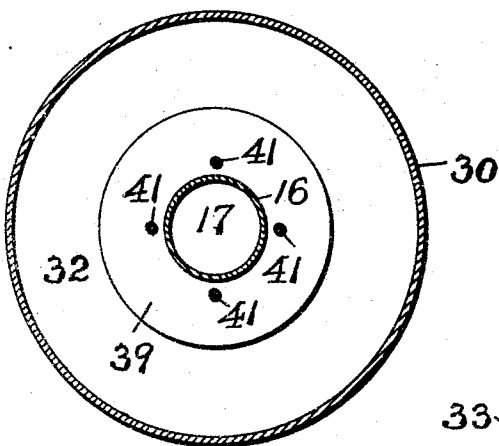


FIG. 10

WITNESSES:

*M. B. Graunfel*  
*Geo. D. Richards*

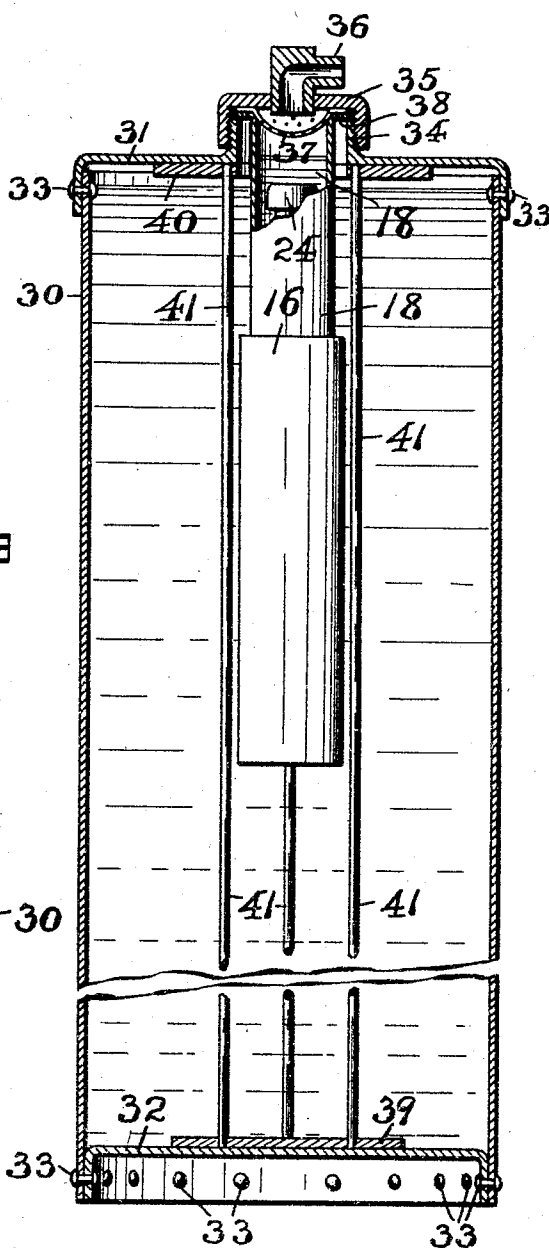


FIG. 11

INVENTOR:

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BY *Frederic Graunfel*,  
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## UNITED STATES PATENT OFFICE.

RICHARD G. SIP, OF HALSEY ISLAND, LAKE HOPATCONG, NEW JERSEY.

## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 782,880, dated February 21, 1905.

Application filed January 25, 1904. Serial No. 190,468.

*To all whom it may concern:*

Be it known that I, RICHARD G. SIP, a citizen of the United States, residing at Halsey Island, Lake Hopatcong, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention has reference generally to improvements in that class of fire-extinguishers which are to be carried about and are reversed when used to extinguish a blaze; and my present invention relates more particularly to a novel form and construction of apparatus or device adapted to contain bicarbonate of soda or other similar material dissolved in water and a float serving as a holder for a bottle, vial, or other suitable receptacle adapted to contain sulfuric acid or other suitable chemical, the mouth of the bottle, vial, or other receptacle in its normal position being preferably sealed with a removable sealing-cap; but when the entire apparatus or device is reversed the said combined float and holder passing in its reversed position through the carbonated liquid and the mouth of the bottle, vial, or other receptacle becoming unsealed, whereby the sulfuric acid or other chemical flows into the carbonated liquid in the main casing or receptacle of the apparatus and thoroughly mixes with the same, the chemical action producing carbonic-acid gas, which forces its way from an outlet or discharge nozzle connected with the said main casing of the extinguisher.

The principal object of my invention is to provide a novel and simply-constructed apparatus or device which is especially designed for use as a fire-extinguisher which can be conveniently handled and in which the carbonic-acid gas which is required is produced as soon as the apparatus or device is turned into its reversed position and the gas is produced under a practically-constant pressure,

which is maintained as long as there is any bicarbonate-of-soda liquid or other carbonated liquid in the main receptacle or generator of the device.

A further object of the present invention is to provide a novel arrangement of means connected with a float for the ready and quick reception of a bottle, vial, or other suitable receptacle adapted to contain sulfuric acid or other chemical and which bottle, vial, or other receptacle after the apparatus or device has been put in operation can be easily removed from the main receptacle of the extinguisher to be refilled and then quickly returned into its position within the said combined float and holder, the latter then being returned into the main receptacle, which has been replenished with a fresh supply of the carbonated liquid, as bicarbonate of soda and water.

Other objects of the present invention not at this time more particularly mentioned will be clearly understood from the following detailed description of the same.

With these various objects of my invention in view the present invention consists in the novel construction of fire-extinguisher to be hereinafter fully described in the following specification, the several combinations of the parts thereof being arranged and constructed with a view to reduce to a minimum the number of parts and to minimize the personal attention of the operator.

The invention consists, furthermore, in the novel arrangements and combinations of the several parts more fully described hereinafter; and, furthermore, the invention consists in the novel arrangement of securing the bottle, vial, or other receptacle which contains the sulfuric acid or other chemical in its operative position in a holding portion or neck of the said float, all of which comprises a complete device, as will hereinafter more fully appear, and as pointed out in the clauses of the claim, which are appended to this specification and which form an essential part of the same.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional representation of a fire-extinguisher embodying the prin-

ciples of the present invention, the combined float and bottle-holder being represented partly in vertical section and partly in elevation and all the said parts being represented in their normally inoperative positions when the apparatus or device is not in use. Fig. 2 is a similar section of the device in its reversed position when in use and when generating the carbonic-acid gas, the said view illustrating the position of the combined float and bottle-holder and the unsealed relation of the bottle, vial, or other receptacle which contains the sulfuric acid or other chemical. Fig. 3 is a horizontal section taken on line 3-3 in said Fig. 1 looking in a downward direction. Figs. 4 and 5 are vertical sectional representations of the upper portions of the neck of the combined float and bottle-holder, with side elevations of the bottle, vial, or other receptacle containing the sulfuric acid or the like; and Fig. 6 is a top view of Fig. 5, all of the said Figs. 4, 5, and 6 illustrating the manner of inserting the bottle, vial, or other receptacle in its operative position in a receiving neck or chamber of the said combined float and bottle-holder. Fig. 7 is a perspective view of a detachable seal to be used upon the neck and mouth of the said bottle, vial, or other receptacle; and Figs. 8 and 9 are similar views of a strainer and washer, respectively, which are used with the discharge member of the main body or casing of the apparatus or device. Fig. 10 is a horizontal section, and Fig. 11 a vertical section, of a larger size fire-extinguisher provided with guides for the combined float and bottle-holder, all made according to the principles of my present invention.

Similar characters of reference are employed in all of the above-described views to indicate corresponding parts.

In the said drawings the reference character 1 indicates the complete apparatus or fire-extinguisher which is to be employed for the production of carbonic-acid gas in the manner to be presently described. The said apparatus consists, essentially, of a main cylinder or casing 2, which is made from sheet metal, glass, or any other suitable metal or other material, the same being provided with a closed bottom 3 and an upwardly-extending mouth portion or member 4, formed with a screw-thread 5 for the reception of a suitable screw-cap 6, substantially as illustrated in Figs. 1 and 2 of the drawings. The said bottom 3 and the mouth portion or member 4 are securely united with the respective ends of the cylinder or casing 2 in any suitable manner to provide a strong and pressure-proof connection. Suitably connected with the upper portion of the screw-cap 6 is a discharge member 7, having an outlet 8 extending from one side thereof, preferably at right angles to the said member 7, the said member 7 and the outlet or discharge member 8 being provided

with a correspondingly-formed duct 9, as clearly illustrated. Suitably arranged against the under and inner face of the screw-cap 6 is a suitably-constructed strainer 10, which is partially surrounded and is held in place by means of a washer 11, made of any desirable and suitable material for the purposes for which it is intended, the said washer being securely tightened down upon the upper marginal edge of the mouth portion 4 of the cylinder or casing 2, substantially as shown, when the screw-cap 6 is screwed down, and the strainer 10 being made with a downwardly-extending and curved portion 12, which projects through the open part 13 of the washer 11 and is provided with suitably-disposed perforations or holes 14. The said washer 11 also serves the purpose of rendering the joint between the mouth portion 4 and the screw-cap 6 gas-proof, as will be clearly evident. The said cylinder or casing 2, as will be seen from an inspection of Fig. 1 of the drawings, is filled to a suitable height with a carbonated liquid, such as bicarbonate of soda in water, the same being indicated by the reference character 15, and arranged within this liquid 15 is a float or holder 16, made from suitable sheet metal or other suitable material. The lower portion of this float or holder is made in the manner of a closed chamber 17 filled with air, that the device will float when placed in the carbonated liquid within the cylinder or casing 2, as will be clearly evident. Extending from the upper portion or head of that part of the device 16 which forms the chamber 17 is an upwardly-extending and preferably cylindrically-shaped neck 18, provided with an open part, which is surrounded by the marginal edge 19, as clearly illustrated. Under normal conditions this marginal edge 19, as will be seen from an inspection of Fig. 1, rests directly against the under surface of the washer 11 with the curved and perforated portion 12 of the strainer 10 extending into the open neck 18. The said neck 18 is formed upon opposite sides at or near the marginal edge 19 with cut-away portions 20 or other suitable indicating means, for the purposes to be presently described, and at a suitable point between the said marginal edge 19 and the lowest point of said neck and in a vertical plane at right angles diametrically to a vertical plane passing through the said indicating means 20 is a small and inwardly-extending projection 21, preferably forced out from the metal of said neck 18, but which may be made in a separate piece and may be suitably secured in place by means of solder or any other fastening means. Within this neck 18 there is removably arranged a receptacle 22, preferably in the form of a glass bottle or vial, having a suitable neck 23, preferably made as shown, the said receptacle, bottle, or vial containing a sufficient quantity of sulfuric acid, and when in position in the said neck 18 the

said bottle, vial, or receptacle having its neck 23 closed with a sealing-cap 24 of lead or any other suitable material, the said cap resting lightly upon the upper marginal edge of the neck 23 of said bottle, vial, or receptacle 22.

In Figs. 4, 5, and 6 I have illustrated the manner of inserting the said receptacle, bottle, or vial 22 in its operative position in the neck 18 of the float or holder 16. This is accomplished as follows: The bottle, vial, or receptacle 22, which is filled with the sulfuric acid, is inserted in the open portion of the neck 18 until the marginal edge 25 of the bottom of the receptacle, bottle, or vial 22 rests upon the projection 21, in which position the said receptacle, bottle, or vial will be retained, as indicated in Fig. 4 of the drawings. A slight pressure upon the opposite sides of the marginal edge 19 of the neck 18 directly upon the indicating means 20, as illustrated in Fig. 6, causes the neck to become sufficiently distorted from its cylindrical shape to force the projection 21 beyond the lower marginal edge 25 of the receptacle, bottle, or vial, and the latter is permitted to slip or slide past the said projection 21, as indicated in Fig. 5 of the drawings, until the said receptacle, bottle, or vial rests upon the upper and closed portion 26 of the float or holder 16 in the manner represented in Fig. 1 of the drawings. After the pressure has been removed from the indicating means 20 the neck 18 assumes its normally cylindrical shape, with the projection 21 now extending above the marginal edge 27 of the said receptacle, bottle, or vial 22. The float or holder 16, with the said receptacle, bottle, or vial 22 and its sealing-cap 24, is now placed in the liquid within the said cylinder or casing 2, previously supplied with the said carbonated liquid. As an extra precaution a quantity of water may also be poured into the neck 18 of the float or holder 16, as indicated in Fig. 1 of the drawings, to provide an extra seal above the said receptacle, bottle, or vial 22 and its removable sealing-cap 24. After the said float or holder has been arranged within the cylinder or casing 2 the screw-cap 6 is screwed down upon the mouthpiece or member 4 of the said cylinder or casing 2, with the upper marginal edge of the neck 18 of the float or holder 16 resting against the under face of the washer 11 in the manner illustrated in said Fig. 1 and as has been previously described.

The device or apparatus is now ready for use as a fire-extinguisher. All that is necessary is to reverse the position of the device from that indicated in Fig. 1 of the drawings to the position represented in Fig. 2, and the float or holder will pass through the bicarbonate-of-soda liquid in the cylinder or casing 2 to the upturned bottom portion of said cylinder or casing 2, as illustrated in Fig. 2, the receptacle, bottle, or vial 22 being retained in its

reversed position in the neck 18 of the float or holder 16 by the supporting engagement of the projection 21 with the marginal edge 27 of the said receptacle, bottle, or vial 22, as illustrated, the sealing-cap 24 becoming dislodged from the marginal edge of the neck of said receptacle, bottle, or vial 22 and resting upon the screen or strainer 10, as illustrated in said Fig. 2 of the drawings. The sulfuric acid in the receptacle, bottle, or vial 22 is emitted into and throughout the entire solution of bicarbonate of soda and water or the like, and a chemical action takes place which produces carbonic-acid gas. This gas is at once forced from the outlet 8 of the member 7 and can be easily directed by holding the cylinder 2 at the proper angle upon the blaze which is to be extinguished.

If for some reason the sealing-cap 24 should rest with its marginal edge 28 upon the perforated portion of the strainer or screen 10, that there may be no obstruction to the passage of the carbonic-acid gas to the outlet 8 the said sealing-cap 24 may be made in its said edge 28 with an open part 29, as indicated in Fig. 7 of the drawings, which permits the gas to pass into the cap and thence through the strainer and from the outlet 8, as will be clearly evident.

From the above description of my invention and from an inspection of the drawings of the same it will be evident that as soon as the device or apparatus is reversed carbonic-acid gas will be immediately generated by the thorough mixture of the chemicals during the floating of the float or holder 16 and the receptacle, bottle, or vial 22 in their reversed relation through the carbonated liquid, as bicarbonate of soda and water, and a safe, simple, cheap, and efficient fire-extinguisher has been produced, which can be easily handled by any person.

After the device has been put in operation by unscrewing the screw-cap 6 the float or holder can be removed from the cylinder or casing 2 and the latter cleansed and provided with a fresh supply of bicarbonate of soda and water or the like. The empty receptacle, bottle, or vial 22 is removed from the neck 18 of the float or holder 16 by pressing upon the indicating means 20, and another receptacle, bottle, or vial containing a fresh supply of sulfuric acid can be substituted therefor. Then by sealing the receptacle, bottle, or vial in the manner previously described with the sealing-cap 24 and returning the float or holder into the cylinder or casing 2 and screwing the cap 6 in place the device or apparatus is once more ready for use.

In Figs. 10 and 11 of the drawings I have represented a large size of cylinder or casing of a fire-extinguisher provided with a combined float and holder and a guiding means within said cylinder or casing in which the said float and holder can be made to move up

or down. Referring now to the said figures, the reference character 30 indicates the casing or cylinder which is provided with a top 31 and bottom 32, suitably secured in place by means of rivets 33 or other suitable fastening means. The said top is provided with a screw-threaded mouth portion 34 and a screw-cap 35, having a discharge nozzle or outlet 36. The said cap 35 is suitably screwed over the said mouth portion 34, and secured in place between these parts is a strainer 37 and washer 38, similar to those described in connection with the extinguisher represented in Fig. 1 of the drawings. Suitably arranged between the bottom 31 and top 32 of the cylinder 30 by means of suitable holding-plates 39 and 40 or other holding means are guide-rods 41, between which the combined float and bottle-holder 16 and its parts is placed and can move up or down between said guide-rods in the liquid contained in the said cylinder or casing 30, as will be clearly understood. In all respects the action of the sealing-cap of the receptacle, bottle, or vial 22 and the discharging of the sulfuric acid from the said receptacle, bottle, or vial into the bicarbonate of soda and water in the cylinder or casing 30 is precisely that described herein above in connection with the construction of fire-extinguisher represented in Figs. 1 and 2 of the drawings, and hence need not be further described.

Of course I am aware that changes may be made in the arrangements and combinations of the devices and their parts, as well as in the details of the construction thereof, without departing from the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the parts as described in the foregoing specification and as illustrated in the accompanying drawings, nor do I confine myself to the exact details of the construction of the same.

Having thus described my invention, what I claim is—

1. A fire-extinguisher comprising a main casing having an opening for filling the same with a carbonated liquid, and a combined float and holder loosely and movably arranged in said casing having a receiving and holding neck having spring-like properties adapted to receive a receptacle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid to the opposite end of the main casing, and the chemical in said receptacle will be discharged into said liquid, and means connected with said neck for retaining the said receptacle in its operative position in said neck, but permitting its insertion and removal from said neck, substantially as and for the purposes set forth.

2. A fire-extinguisher comprising a main casing having an opening for filling the same with a carbonated liquid, and a combined float and holder loosely and movably arranged in

said casing having a receiving and holding neck having spring-like properties adapted to receive a receptacle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid to the opposite end of the main casing, and the chemical in said receptacle will be discharged into said liquid, and means connected with said neck for retaining the said receptacle in its operative position in said neck, but permitting its insertion and removal from said neck, consisting, essentially, of an inwardly-extending projection upon the inner face of said neck in removable holding engagement with a portion of the said receptacle, substantially as and for the purposes set forth.

3. A fire-extinguisher comprising a main casing having an opening for filling the same with a carbonated liquid, and a combined float and holder loosely and movably arranged in said casing having a receiving and holding neck having spring-like properties adapted to receive a receptacle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid to the opposite end of the main casing, and the chemical in said receptacle will be discharged into said liquid, and means connected with said neck for retaining the said receptacle in its operative position in said neck, but permitting its insertion and removal from said neck, and an indicating means connected with the said neck for the application of pressure upon said neck, substantially as and for the purposes set forth.

4. A fire-extinguisher comprising a main casing having an opening for filling the same with a carbonated liquid, and a combined float and holder in said casing having a receiving and holding neck adapted to receive a receptacle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid and the chemical in said receptacle will be discharged into said liquid, means connected with said neck for retaining the said receptacle in its operative position in said neck, but permitting its insertion and removal from said neck, consisting, essentially, of an inwardly-extending projection upon the inner face of said neck in removable holding engagement with a portion of said receptacle, and an indicating means connected with the said neck for the application of pressure upon said neck, substantially as and for the purposes set forth.

5. A fire-extinguisher comprising a main casing having a screw-threaded opening for filling the same with a carbonated liquid, a screw-cap arranged over said opening, a discharge-nozzle connected with said cap, a strainer and washer in said opening, and a combined float and bottle-holder loosely and movably arranged in said casing having a bottle receiving and holding neck having spring-like

properties adapted to receive a bottle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid to the  
 5 opposite end of the main casing, and the chemical in the bottle will be discharged into said liquid, and means connected with said neck for retaining the bottle in its operative position in said neck, but permitting of its insertion and removal from said neck, substantially  
 10 as and for the purposes set forth.

6. A fire-extinguisher comprising a main casing having a screw-threaded opening for filling the same with a carbonated liquid, a  
 15 screw-cap arranged over said opening, a discharge-nozzle connected with said cap, a strainer and washer in said opening, and a combined float and bottle-holder loosely and movably arranged in said casing having a bottle  
 20 receiving and holding neck adapted to receive a bottle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid and the chemical in the bottle  
 25 will be discharged into said liquid, to the opposite end of the main casing, and means connected with said neck for retaining the bottle in its operative position in said neck, but permitting of its insertion and removal from  
 30 said neck, consisting, essentially, of an inwardly-extending projection upon the inner face of said neck in removable holding engagement with a portion of the bottle, substantially as and for the purposes set forth.

7. A fire-extinguisher comprising a main casing having a screw-threaded opening for filling the same with a carbonated liquid, a  
 35 screw-cap arranged over said opening, a discharge-nozzle connected with said cap, a strainer and washer in said opening, and a combined float and bottle-holder loosely and movably arranged in said casing having a bottle  
 40 receiving and holding neck having spring-like properties adapted to receive a bottle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid  
 45 and the chemical in the bottle will be discharged into said liquid, at the opposite end of the main casing, and means connected with said neck for retaining the bottle in its operative position in said neck, but permitting of its insertion or removal from said neck, and  
 50 an indicating means connected with the said neck for the application of pressure upon said neck, substantially as and for the purposes set forth.

8. A fire-extinguisher comprising a main casing having a screw-threaded opening for filling the same with a carbonated liquid, a  
 60 screw-cap arranged over said opening, a discharge-nozzle connected with said cap, a strainer and washer in said opening, and a combined float and bottle-holder in said casing having a bottle receiving and holding neck

adapted to receive a bottle containing a chemical and so arranged that when the said casing is reversed said float and its neck will pass through the carbonated liquid and the chemical  
 70 in the bottle will be discharged into said liquid, means connected with said neck for retaining the bottle in its operative position in said neck, but permitting of its insertion and removal from said neck, consisting, essentially, of an inwardly-extending projection  
 75 upon the inner face of said neck in removable holding engagement with a portion of the bottle, and an indicating means connected with the said neck for the application of pressure upon said neck, substantially as and for the  
 80 purposes set forth.

9. In a fire-extinguisher, the combination, with a casing having an opening for filling the same with a carbonated liquid, of a float loosely  
 85 and movably arranged in said casing, said float being capable of passing through the liquid to the opposite end of the casing when the casing is reversed, and a compressible neck having spring-like properties connected with said float for removably and separably retaining a  
 90 receptacle containing a chemical in said neck, substantially as and for the purposes set forth.

10. In a fire-extinguisher, the combination, with a casing having an opening for filling the same with a carbonated liquid, of a float loosely  
 95 and movably arranged in said casing, said float being capable of passing through the liquid to the opposite end of the casing when the casing is reversed, a compressible neck having spring-like properties connected with said float, and  
 100 a projection upon the inner surface of said neck in removable holding engagement with a portion of a receptacle containing a chemical, substantially as and for the purposes set forth.

11. In a fire-extinguisher, the combination, with a casing having an opening for filling the same with a carbonated liquid, of a float in said  
 105 casing, a compressible neck connected with said float for retaining a receptacle containing a chemical in said neck, a projection upon the inner surface of said neck in removable engagement with a portion of said receptacle, and an indicating means connected with the said neck for the application of pressure upon  
 110 said neck, substantially as and for the purposes set forth.

12. In a fire-extinguisher, the combination, with a casing having an opening for filling the same with a carbonated liquid, of a float in said  
 120 casing provided with a compressible neck, a bottle containing a chemical arranged in said neck, a projection upon the inner surface of said neck in removable holding engagement with a portion of said bottle, an indicating means connected with the said neck for the application of pressure upon said neck, and a detachable sealing-cap connected with said  
 125 bottle, substantially as and for the purposes set forth.

13. In a fire-extinguisher, the combination, 130

with a casing adapted to contain a carbonated liquid, of a float 16 loosely and movably arranged in said casing, said float being capable of passing through the liquid to the opposite  
5 end of the casing when the casing is reversed, the said float comprising an inclosed and hollow main body, a compressible neck having a spring-like action on said body, and a projection upon the inner surface of said neck in removable holding engagement with a bottle in  
10 said neck, substantially as and for the purposes set forth.

14. In a fire-extinguisher, the combination, with a casing adapted to contain a carbonated  
15 liquid, of a float 16 in said casing comprising an inclosed and hollow main body, and a com-

pressible neck on said body for removably retaining a bottle containing a chemical in said neck, a projection upon the inner surface of said neck in holding engagement with a portion of the said bottle, and an indicating means  
20 connected with said neck for the application of pressure upon said neck, substantially as and for the purposes set forth.

In testimony that I claim the invention set  
25 forth above I have hereunto set my hand this 18th day of January, 1904.

RICHARD G. SIP.

Witnesses:

FREDK. C. FRAENTZEL,  
GEO. D. RICHARDS.