F. W. STOCKTON.

APPARATUS FOR PRESERVING OBJECTS CONTAINING FLUID UNDER PRESSURE.

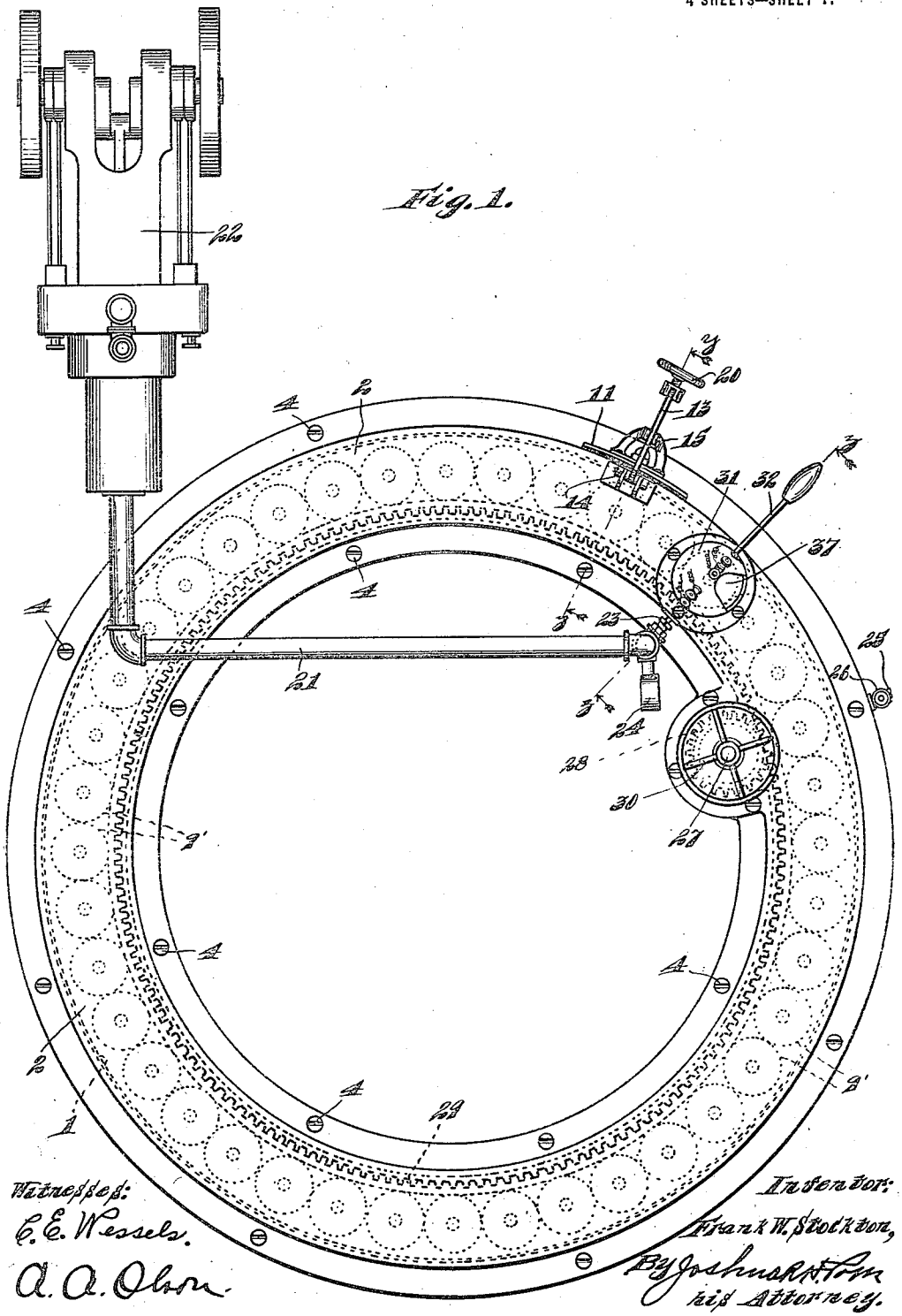
APPLICATION FILED MAR. 6, 1915.

1,276,987.

Patented Aug. 27, 1918.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

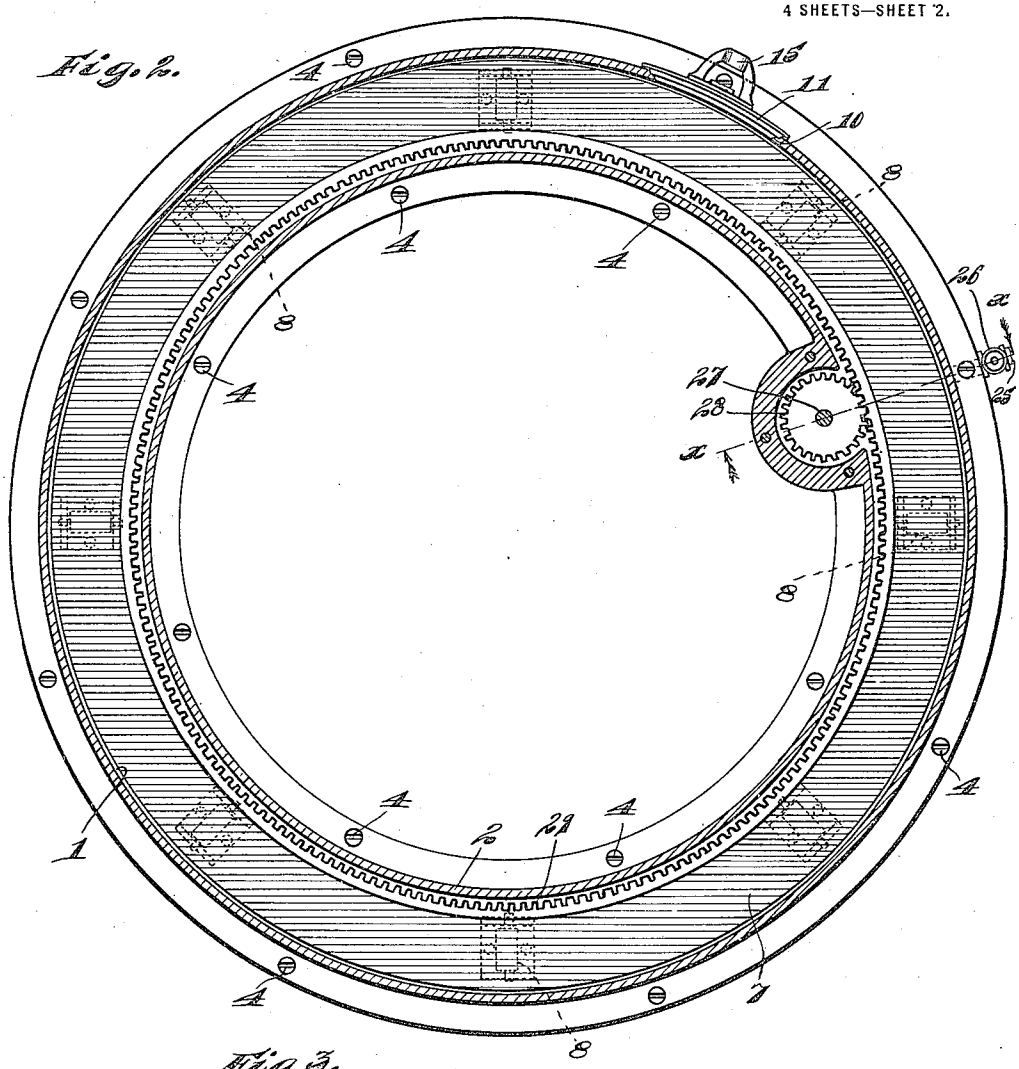
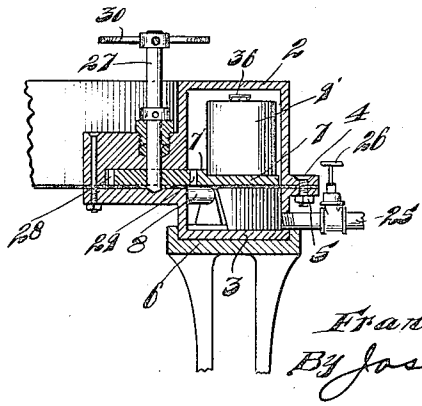


Fig. 3.



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4 SHEETS—SHEET 3.

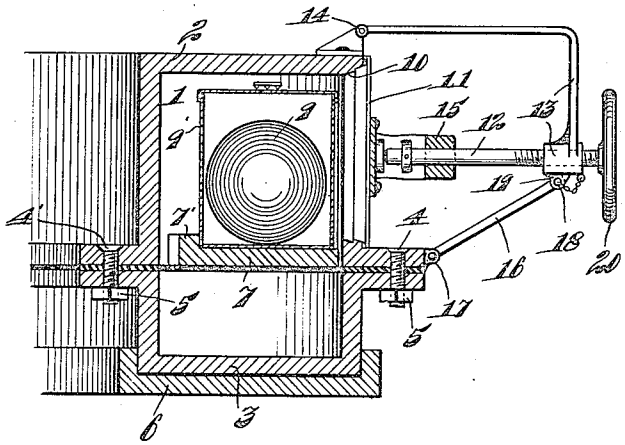


Fig. 4.

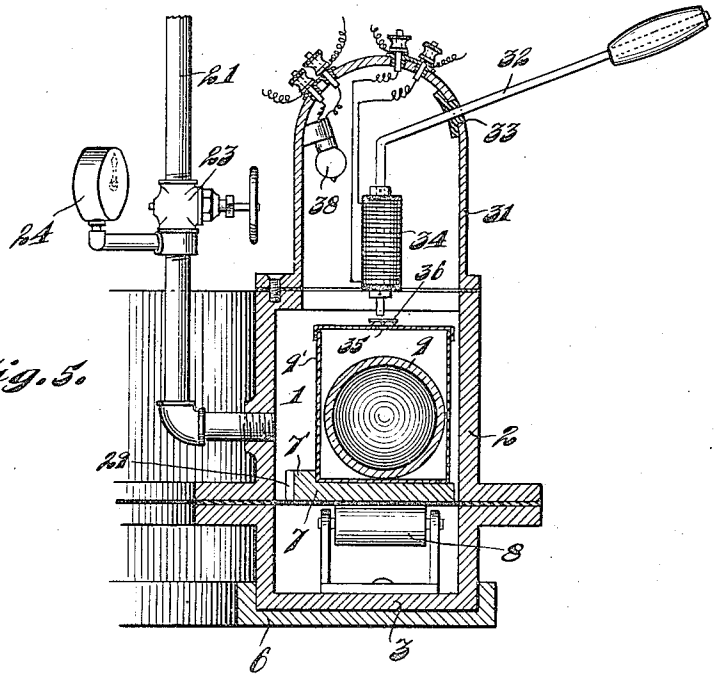


Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 6.

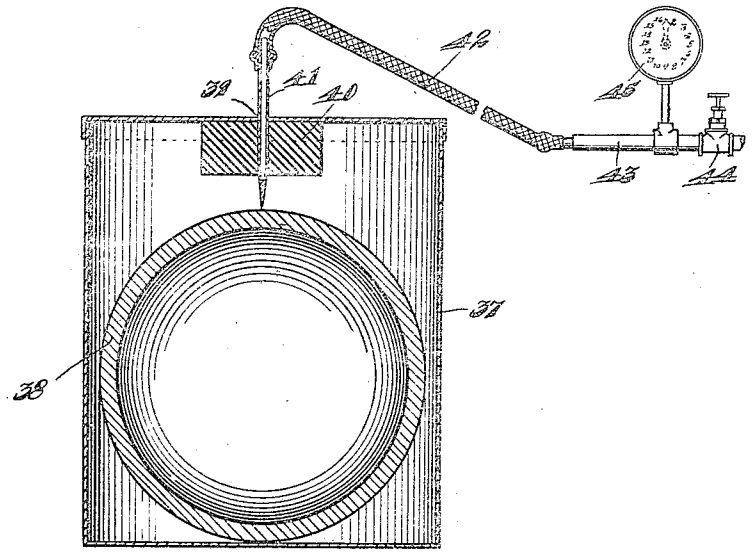
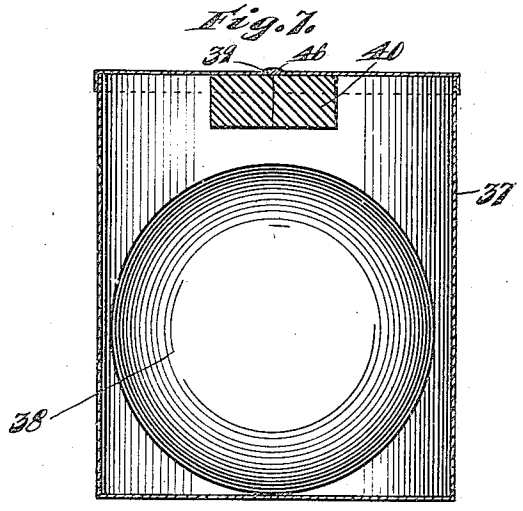


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK W. STOCKTON, OF CHICAGO, ILLINOIS.

APPARATUS FOR PRESERVING OBJECTS CONTAINING FLUID UNDER PRESSURE.

1,276,987. Specification of Letters Patent. Patented Aug. 27, 1918.

Application filed March 6, 1915. Serial No. 12,653.

To all whom it may concern:

Be it known that I, FRANK W. STOCKTON, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Apparatus for Preserving Objects Containing Fluid under Pressure, of which the following is a specification.

My invention relates to a new and useful apparatus for preserving tennis balls or other balls or objects containing fluid under pressure.

The object of my invention is the production of apparatus of the character and for the purpose mentioned whereby the pressure in a tennis ball or other object may be preserved notwithstanding that the object may be unused or stored away for a great length of time.

A further object is the production of apparatus as mentioned whereby the internal pressure of an object of the character referred to may be preserved at a low cost.

Other objects will appear hereinafter.

With these objects in view, my invention consists in the apparatus hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a top plan view of one form of an apparatus embodying my invention,

Fig. 2, a horizontal section through the apparatus shown in Fig. 1,

Fig. 3, a detail vertical section taken on line *x*—*x* of Fig. 2,

Figs. 4 and 5 are enlarged detail sections taken on lines *y*—*y* and *z*—*z* respectively of Fig. 1,

Fig. 6 illustrates another form of apparatus embodying my invention, and

Fig. 7, a central section through a receptacle containing a ball, the same having been sealed through the method illustrated in Fig. 6.

The apparatus illustrated in Figs. 1 to 5 inclusive comprises an annular chamber 1 which is formed of two annular superimposed sections 2 and 3 which are rigidly connected together by bolts 4 passing through outwardly projecting flanges provided at the adjoining edges of the parts 2 and 3 and nuts 5 coöperating with said bolts. The chamber thus formed is mounted upon a suitable support 6. Arranged in the chamber 1 is an annular platform 7 mounted for rotary movement upon supporting rollers 8 spaced upon the bottom of said chamber as clearly shown in Figs. 2 and 5.

The balls 9 which it is desired to preserve are first arranged in receptacles 9′ in the form of sheet metal cans which are adapted to be placed upon the platform 7 in upright position. An upwardly extending flange 7′ provided at the inner edge of the said platform serves as a stop to hold the receptacles 9′ in proper position upon the platform. The chamber 1 is accessible for the insertion or removal of the receptacles 9′ through an opening 10 formed in the outer side of the part 2. The opening 10 is closed by means of a removable door 11. Said door 11 is carried at the inner end of a screw 12 which is threaded in the outer end of an arm 13 pivotally secured as at 14 at its opposite end to the member 2. The inner end of the screw 12 is loosely rotatable in a bearing 15 secured to and projecting from the front side of the door 11. Coöperating with the lower or outer end of the arm 13 is a brace arm 16 pivotally secured at its inner end as at 17 to the lower edge of member 2. The outer end of the arm 16 is detachably connected with the outer end of arm 13 by means of a removable pin 18 which is adapted to pass through alining perforations provided in ears 19 formed upon the end of the arm 13 and in the outer end of said arm 16. With this arrangement it will be seen that a rigid bearing is effected for the screw 12 so that upon positive rotation thereof by engagement with a hand wheel 20 provided upon the outer end thereof, the door 11 may be securely pressed into place so as to positively prevent any leakage through the opening 10. Upon release of the arm 16 through removal of pin 18, the outer end of arm 13 may be rocked upwardly carrying the door 11 therewith so as to permit of access to the chamber 1 when desired.

Communicating with the chamber 1 is a compressed fluid pipe 21 which leads from a suitable compressor 22 as shown in Fig. 1. The passage through pipe 21 is controlled by a suitable manually operable valve 23. Also interposed in the pipe 21 below the valve 23 is a pressure gage 24 which is adapted to indicate the pressure of the fluid contained in the chamber 1 when the apparatus is in use. Leading from the chamber

1 is also an exhaust pipe 25, passage through which is controlled by a suitable manually operable valve 26.

Mounted adjacent the inner side of chamber 1, as clearly shown in Figs. 2 and 3, is a vertically disposed shaft 27 the lower end of which carries a pinion 28 which meshes with an internal gear 29 formed at the inner edge of platform 7. At the upper end of shaft 27 is provided a hand wheel 30 whereby said shaft may be rotated in order to effect movement or travel of the platform 7 as will be readily understood.

Arranged upon the upper side of the chamber member 2 adjacent the hand wheel 30 is a dome 31 which communicates with the chamber 1 as clearly shown in Fig. 5. Coöperating with the dome 31 is an electric soldering iron 32 the handle of which projects through a resilient washer or gasket 33 mounted in said dome, the arrangement being such that universal pivotal movement is permitted said soldering iron but at the same time leakage around the same will be effectually prevented. The lower or inner end of said soldering iron is surrounded by a heating coil 34 of usual design for effecting heating of the point of the soldering iron as will be readily understood.

Each receptacle 9′ is provided with a cover, as clearly shown in Fig. 5, which is sealed in position after the ball has been arranged in the receptacle. The cover of each receptacle is provided with an opening 35 of comparatively small size which permits of the entrance of compressed fluid into the interior of the receptacle. Upon the upper side of each receptacle, before the insertion of the latter into the chamber 1, is arranged a small disk 36 of solder, said disk of solder being adapted, in the travel of the receptacle past the dome 31, to be engaged by the point of the soldering iron 32 in order to close and hermetically seal the corresponding opening 35. In order to permit of proper manipulation of the soldering iron as mentioned, one side of the dome 31 is formed with a window 37 as clearly shown in Fig. 1 and an electric light 38 is provided within the dome as clearly shown in Fig. 5 for illumination. With this arrangement it is a comparatively easy matter for an operator to successively engage the disks of solder 36 provided upon the receptacles 9′ as the latter pass the dome 31 and thus successively solder or seal the openings 35 of said receptacles.

With the apparatus as set forth then in the preserving operation, the balls 9, which it is desired to preserve, are first arranged in the receptacles 9′. The covers of said receptacles are then applied and hermetically sealed in any suitable manner at their peripheries. Said receptacles are then inserted into the chamber 1 through the opening 10 and placed upon the platform 7, each receptacle being provided at its top with a disk of solder 36. After the chamber 1 has been filled the door 11 is swung to closed position and securely fastened in the manner above described. This having been done the valve 23 is opened permitting of the introduction of compressed fluid into the chamber 1 as supplied from the compressor 22. When the pressure, as indicated by the gage 24, reaches a point corresponding with the pressure of the fluid contained in the balls 9, the internal pressure of the latter having been previously ascertained, the valve 23 is closed in order to maintain this pressure.

The compressed fluid thus supplied to the chamber 1 passes into the receptacles 9′ through the openings 35 and through manipulation of the soldering iron and the platform-moving wheel 30, the openings 35 of said receptacles are successively sealed through melting of the solder disks 36 and thus said receptacles are hermetically sealed with an internal pressure corresponding with that of the pressure of the fluid contained in the balls. After the sealing operation, the exhaust valve 26 is opened, the door 11 is swung to open position, and the receptacles removed. Thus the sealing operation is completed.

It will be seen that with the pressure in each receptacle the same as that of the interior of the ball, the possibility of leakage from the ball is prevented and thus reduction of pressure of the ball prevented. The possibility of leakage from the balls being precluded, the same may be kept indefinitely without deterioration through softening such as results at the present time where a ball, such as a tennis ball, is kept from one season to another or for a considerable period of time.

If desired the fluid injected into the receptacles may be of the same composition as the gas or fluid in the ball. Where this is done the pressure in the ball will be maintained notwithstanding diffusion of the fluid through the walls of the ball.

In Figs. 6 and 7 is shown another apparatus for injecting compressed fluid into the ball receptacles. In this apparatus each of the receptacles 37 containing a ball 38 is provided in its upper end or cover with a small opening 39. Secured to the under side of each cover below the opening 39 is a block 40 of rubber or other suitable resilient material. In this arrangement a tubular needle 41 is employed which is connected at its rearward end by means of a flexible tube 42 with the supply pipe 43 which leads to the compressor. In the pipe 43 is provided a controlling valve 44 and also a pressure gage 45. In injecting the compressed fluid into the receptacle the needle 41 is thrust through the opening 39 and the block 40 in

the manner shown in Fig. 6, so that the inner end of the passage with said needle communicates through the interior of the receptacle. The needle is permitted to remain in this position until the pressure gage indicates a pressure corresponding with that of the interior of the ball, when the needle is withdrawn. The member 40, upon withdrawal of the needle, serves as a valve, the same being adapted, because of the resiliency thereof, to automatically close the incision made by the needle and thus prevent leakage therethrough. In order to insure against leakage a drop of cement, solder or other suitable sealing material 46 may be fused over the opening 39 as clearly shown in Fig. 7.

While I have illustrated and described the preferred forms of apparatus for carrying my invention into effect these are capable of variation and modification without departing from the spirit of the invention. And, although I have described my apparatus as used in connection with the preservation of the pressure in tennis balls, it is understood that I do not limit myself to this employment but desire to protect the invention in connection with the preservation of the pressure in any object to which it is applicable. I, therefore, do not wish to be limited to the precise details of construction set forth but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles, comprising fluid compressing means; means for introducing the compressed fluid into the receptacles containing the objects to be preserved; a pressure gage for determining the pressure of the fluid introduced into said receptacles; and means for hermetically sealing the receptacles after the introduction of the compressed fluid thereinto.

2. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles, comprising fluid compressing means; means for introducing the compressed fluid into said receptacles through an opening provided in the wall of each of said receptacles; a gage for determining the pressure of the fluid introduced into said receptacles; and means for hermetically sealing said openings in said receptacles after the introduction of the compressed fluid thereinto.

3. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles each having a fluid inlet opening, comprising a chamber for the reception of said receptacles; means for introducing compressed fluid into said chamber for passage into said receptacles; and means for hermetically sealing said receptacles while positioned in said chamber.

4. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles each having a fluid inlet opening, comprising a chamber for the reception of said receptacles; means for introducing compressed fluid into said chamber for passage into said receptacles; a pressure gage connected with said chamber; and means for hermetically sealing said receptacles while positioned in said chamber.

5. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles each having a fluid inlet opening, comprising a chamber for the reception of said receptacles; means for introducing compressed fluid into said chamber for passage into said receptacles; and manually operable means for hermetically sealing said receptacles while positioned in said chamber.

6. Apparatus for preserving objects containing compressed fluid, said objects being arranged in receptacles, comprising a compressed fluid supply pipe; means for introducing the compressed fluid supplied into said receptacles; a pressure gage connected with said supply pipe; and means for hermetically sealing said receptacles after the introduction of the compressed fluid thereinto.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK W. STOCKTON.

Witnesses:

JOSHUA R. H. POTTS,

ARTHUR A. OLSON.