

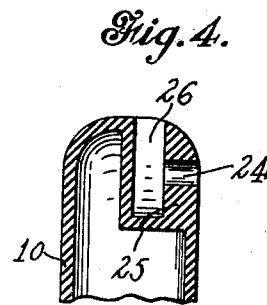
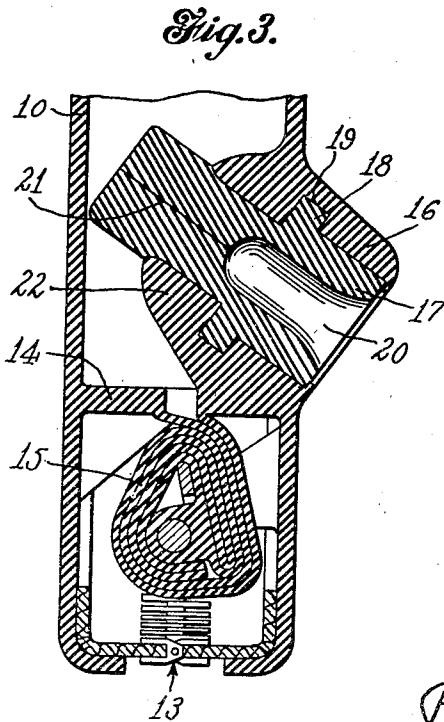
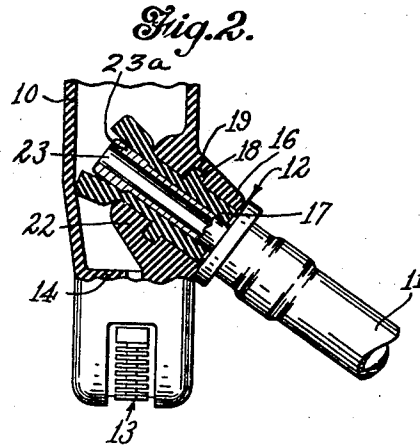
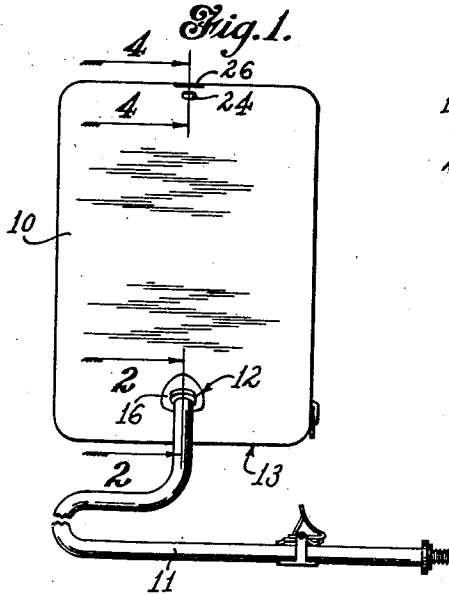
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P. S. MADSEN ET AL

2,317,545

COUPLING

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## UNITED STATES PATENT OFFICE

2,317,545

## COUPLING

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Original application October 7, 1937, Serial No.  
167,772, now Patent No. 2,273,128, dated Febru-  
ary 17, 1942. Divided and this application July  
28, 1941, Serial No. 404,382

4 Claims. (Cl. 284—14)

This invention relates to syringes, and is especially applicable to fountain syringes of the general type described in our Patent No. 2,273,128, dated February 17, 1942, of which the present application is a division. However, our improvements are also applicable to syringes and like devices of other types.

One of the objects of the invention is the provision of a syringe in which the syringe tube can be readily applied to and detached from the water receptacle so that the water receptacle is adapted to serve in other capacities than as a part of a fountain syringe, the device having an improved form of connection between the syringe tube and the receptacle, which greatly facilitates manipulation and use.

Another object is to provide in a device of this character an assembly or appliance serving as a coupling between the receptacle and the tube and serving additionally as an effective means for controlling the discharge of liquid from the receptacle.

To these and other ends the invention consists in the novel features and combination of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a face view of a device embodying our improvements, showing the same in position for use as a fountain syringe;

Fig. 2 is an enlarged section on line 2—2 of Fig. 1;

Fig. 3 is a sectional view of a portion of the receptacle with the syringe tube detached and the valve closed; and

Fig. 4 is an enlarged section on line 4—4 of Fig. 1.

In the drawing, we have shown at 10 a receptacle adapted to be supported from its upper end on a suitable supporting wall or the like. At 11 is shown a syringe tube adapted to be plugged into or removed from the receptacle, the connection between the tube and the receptacle being generally indicated at 12.

The receptacle 10 in this particular instance is a flat rectangular bag of rubber, adapted to serve under certain conditions as a water bag or ice bag, and provided with a special end closure, as described in our Patent No. 2,273,128, dated February 17, 1942. This special end closure is generally indicated at 13 in Fig. 3, and it will be seen that when used for fountain syringe purposes this end closure is at the lower end of the bag, with the connection 12, previously mentioned, located slightly above the end closure. The connection 12 enables the rubber syringe

tube 11 to communicate with a water chamber in the bag, the bottom wall of the water chamber being constituted in part by a partition 14, from which extends a rollable neck 15, as described in the application above mentioned.

The connection 12 comprises as a part thereof a valve housing 16, formed integrally with the walls of the rubber bag, a part of this housing preferably merging into the partition 14, as shown. Within the valve housing 16 is a valve plug 17. This valve plug 17, which is made of rubber, is provided with a laterally extending flange 18 adapted to seat in an annular recess 19 formed in the bore of the valve housing. In this manner the valve plug is removably held in place. The valve plug is provided with an opening or socket 20 extending inwardly from the outer end thereof part way through the valve body. From the inner end of this opening 20 to the inner end of the valve plug the plug is split longitudinally at 21 so as to divide it into two separable parts. In the normal position, however, these parts are held together under strong compression by an inner ring-like integral rubber part of the valve housing, indicated at 22.

The syringe tube 11 is provided at its free end with a nipple member 23, having a body of reduced diameter compared to the syringe tube, which body is adapted to be inserted into the valve plug in the manner shown in Fig. 2. The nipple is inserted through the opening in the plug and between those portions of the plug at opposite sides of the slit. This causes the inner end portions of the valve plug or member to be spread apart against the yielding action of the surrounding elastic valve housing so that the nipple will be in free communication with the interior of the receptacle. It will also be apparent from Fig. 3 that when the nipple is withdrawn the elastic portions of the valve member on opposite sides of the slit will be returned to the tightly abutting relation so as to seal the valve opening effectively against leakage.

As the valve is a self-closing valve, no screw stopper or similar closing device is required, which may become loose in the use of the article. It is only necessary to insert the nipple into the valve socketed body to establish connection of the tube 11 with the liquid receptacle so as to adapt the device for use as a fountain syringe, and it is only necessary to withdraw the nipple used with the self-closing valve, in order to convert the device into a water bag or ice bag. In the use of the coupling for connecting the syringe tube detachably to the bag, the enlarged

portion 23<sup>a</sup> adjacent the free end of the nipple member will normally hold the tube in the coupled position by engagement with the surrounding elastic valve plug portion in the manner shown in Fig. 2, the enlargement 23<sup>a</sup> presenting a limiting shoulder disposed within the valve plug in the coupled position of the parts.

When the bag is suspended on a supporting wall, it may be engaged with a nail, hook or the like, entering a small opening 24 near the upper edge of the bag. This opening 24 is provided in a thick wall portion 25, having a slot 26 open to the edge of the bag. In case a hook is used, the free end thereof may be accommodated in the slot 26. This obviates the necessity of providing a projecting tab on the bag.

It will be noted that the connection between the syringe tube and the bag body is located at one of the side faces of the bag, and that the axis of the valve member is arranged on a slight upward and inward inclination, there being an acute angle between this axis and the lower part of the bag face at that side in which the tube is entered. This enables the tube to be inserted in an upward and inward direction, which is a matter of convenience in assembling the parts, and by this arrangement, also, a larger, more effective valve and coupling structure may be employed than would otherwise be the case. The valve and coupling structure projects only slightly from the bag face, as shown in the drawing, and this does not detract materially from the generally stream-lined appearance which the bag may have. Other forms of receptacles may, however, be used.

While we have shown a preferred embodiment of our invention, it will be noted that it is capable of being embodied in many different forms, and that various modifications and changes can be made without departure from the principles of the invention or the scope of the claims.

We do not claim herein a fountain syringe having a liquid receptacle and a syringe tube, said receptacle having associated with its wall a valve, said valve comprising means normally closing the receptacle movable to open position by the impingement of the syringe tube, or other

features claimed in our application Serial No. 447,032, filed June 15, 1942.

What we claim is:

1. A coupling for a nipple of a syringe tube or the like, the nipple being provided adjacent the free end with an enlarged holding portion, said coupling comprising an outer elastic wall, and an elastic plug compressed by said wall, said plug having a socketed entrance portion and a split inner portion adapted to be spread by the insertion of the nipple, the holding portion of the nipple being engaged in the interior of the plug.

2. In a coupling, the combination of an elastic outer member, an elastic plug held under compression thereby and having a through opening which is normally closed and sealed but is adapted to be opened by a nipple inserted therein, a nipple inserted into said plug and holding it open with the plug in external gripping engagement with the nipple, and means for preventing relative axial displacement of the nipple and plug.

3. In a coupling, the combination of a nipple having means of connection at one end for a tubing element, an elastic plug having a through opening in which said nipple is gripped for coupling purposes so as to prevent relative longitudinal movement of the nipple and plug, and an external elastic wall by which the plug is compressed and by which it is held in gripping engagement with the nipple.

4. In a coupling, the combination of a nipple having means of connection at one end for a tubing element, an elastic plug having a through opening in which said nipple is gripped for coupling purposes so as to prevent relative longitudinal movement of the nipple and plug, and an external elastic wall by which the plug is compressed and by which it is held in gripping engagement with the nipple, said plug having a split portion spread apart by the nipple, and the nipple having external means engaging the plug interiorly adjacent the split portion to hold the nipple against inadvertent withdrawal.

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