

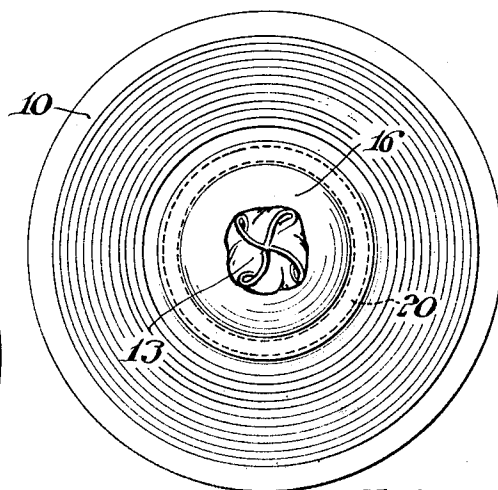
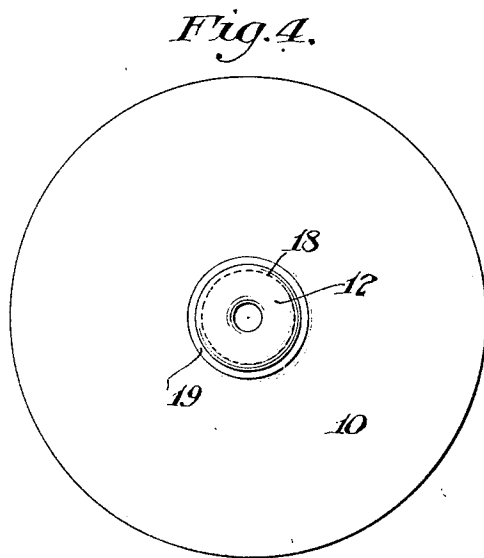
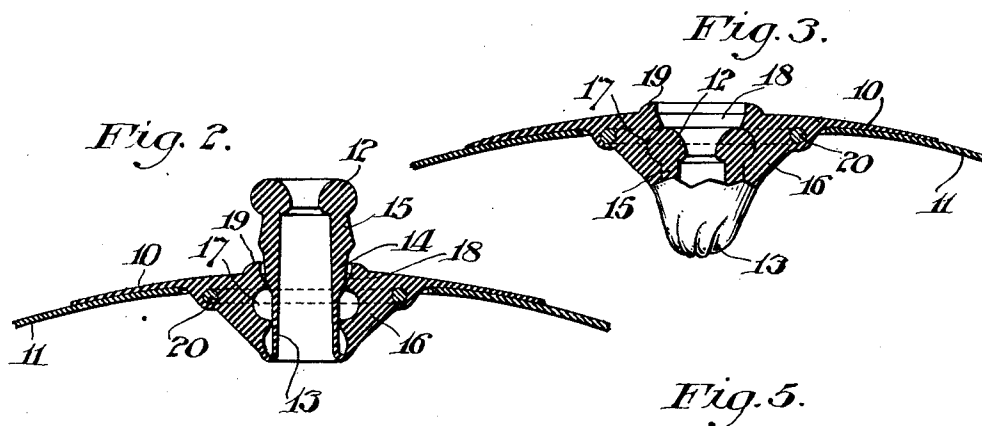
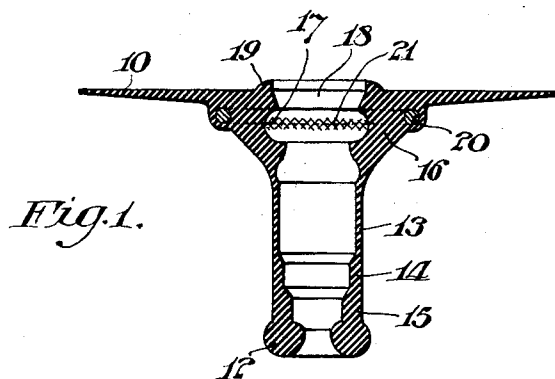
Sept. 19, 1933.

E. E. TOMPKINS

1,927,725

VALVE FOR PNEUMATIC DEVICES

Filed Feb. 16, 1932



Inventor;
Ernest E. Tompkins,
By Jas. C. Hobusmith
Attorney.

UNITED STATES PATENT OFFICE

1,927,725

VALVE FOR PNEUMATIC DEVICES

Ernest E. Tompkins, Haverford, Pa., assignor to
J. Kearsley Mitchell, Villa Nova, Pa.

Application February 16, 1932. Serial No. 593,244

5 Claims. (Cl. 273—65)

My invention relates to a valve for pneumatic devices such as play balls, air cushions, life preservers, and other devices made of rubber or the like, which may be inflated and deflated at the will of the user.

The principal object of my present invention is to provide a simple and relatively inexpensive form of valve for inflatable devices.

A further object of my invention is to provide a valve which may be quickly and easily brought to the sealing condition, and which when so arranged will effectively prevent the escape of air from the interior of the device to which it is attached.

A further object of my invention is to provide a valve which will be characterized by the absence of objectionable protruding parts when the device to which it is attached is inflated.

My invention will be more readily understood from the following description, taken in connection with the accompanying drawing forming part hereof, in which:

Figure 1 is a vertical, central, sectional view, showing a preferred form of valve embodying the main features of my present invention, as the same is initially molded;

Fig. 2 is a similar view illustrating the valve in connection with a portion of the pneumatic device to which it is attached, the valve being shown in the "open" condition, that is, when the device to which it is attached is deflated;

Fig. 3 is a view similar to Fig. 2, but with the valve shown in the "closed" condition, that is, when the device to which it is attached is inflated, the lower part of the structure being shown in side elevation;

Fig. 4 is a top or plan view of the valve in the condition shown in Fig. 2; and

Fig. 5 is an underneath plan view of the valve in the condition shown in Fig. 3, the portion of the device to which the valve is attached being omitted.

It will, of course, be understood that the drawing and description herein contained are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

The valve is preferably made of soft rubber, or other material having suitable characteristics of resiliency, and while the same may be made integral with the pneumatic device in connection with which it is used, it is, however, for convenience of manufacture, preferably made separate, and provided with a disk portion 10,

which may be secured by cementing or vulcanizing to the wall of the pneumatic device 11 in connection with which the valve is used. The disk portion 10 tapers to a thin edge, thereby obviating any ridge or shoulder at its periphery.

The valve as it is initially molded is shown in Fig. 1 of the drawing. The same consists essentially of a tube initially extending downwardly from the central portion of the disk 10. The free end of the tube terminates in a thickened annular bead 12. The central portion of the tube has a comparatively thin wall, as at 13. Between the thin walled portion 13 and the beaded end 12 of the tube, the wall of the tube is progressively thickened, as at 14 and 15.

At the central part of the disk 10 there is provided a relatively heavy body of material 16, in which is located an annular recess 17. Extending from the annular recess 17 to the exterior is a flaring opening 18. Surrounding the flaring opening 18 there may be a slight ridge 19, although the outer surface of the disk 10 may be made flush, if desired. Surrounding the annular recess 17, and embedded in the body of the material, is a substantially rigid metal reinforcing ring 20, which is provided for a purpose to be presently explained. The surface of the annular recess 17 is preferably provided with ridges or knurling 21, for a purpose to be presently explained.

The valve being molded as above described, is secured to the wall of the pneumatic device in connection with which it is to be used. The end of the tube, however, is reversed (that is to say, turned inside out), and pushed through the central opening in the body portion of the valve structure, assuming the position shown in Fig. 2 of the drawing.

It will be noted that when the valve is in this condition the thin walled portion 13 of the tube is located at the bottom of the thickened body portion of the valve, and the beaded end 12 of the tube protrudes outwardly beyond the outer surface.

When the device to which the valve is attached is to be inflated, the protruding end of the tube may be engaged by the lips of the user, and the device thereby inflated by being blown into, through the tube. Of course, it will be understood that a suitable pump, or other means for inflating the device, may be employed if desired.

After the device to which the valve is attached is sufficiently inflated, and while the end of the tube is still engaged by the inflating means, the

protruding end of the tube is rotated with respect to the disk 10, thereby twisting the thin walled portion 13 of the tube about its longitudinal axis, and effectively closing the tube.

5 The end of the tube is then pushed inwardly with respect to the body portion of the valve, until the beaded end 12 of said tube snaps into the annular recess 17 in the body portion of the valve.

10 The resiliency of the body portion will permit the insertion of the beaded end 12 of the tube into said recess, and will serve to retain the same to maintain the sealing effect. The reinforcing ring 20, located in the body portion of the valve, will materially assist in the gripping and holding of the end of the tube in the sealing position, and also the ribbed or knurled surface 21 of the recess 17, will assist in preventing any turning or untwisting movement of the beaded end 12 of the tube when the same is positioned in the recess.

When it is desired to deflate the device in connection with which the valve is used, the same is so manipulated by the user as to force the beaded end 12 of the tube out of the recess 17 in which the same is seated. After the same passes beyond the outer surface of the disk 10, it will automatically untwist itself, thus opening the passageway through the tube, and permitting the air to escape from the interior of the device.

It will be noted that the valve in its "closed" or sealing condition is characterized by the absence of objectionable protruding parts, such as flap laces and the like, which are particularly undesirable in connection with valves for playballs, and for such devices as air cushions and the like.

The valve is inexpensive in its construction, and has been found to be very practical for its intended purpose.

I claim:

1. A valve for pneumatic devices, said valve being made of flexible material and comprising a body portion and a tube extending there-
45 through from the inner part thereof, the end of said tube having a relatively heavy annular bead, the tube having a thin walled portion between the body portion of the valve and the beaded end of said tube, said thin walled portion being adapted to be twisted about the longitudinal axis of the tube to seal the valve, and means for holding the beaded end of the tube in the body portion of the valve to maintain the valve in the sealing condition.

55 2. A valve for pneumatic devices, said valve being made of flexible material and compris-

ing a body portion and a tube extending there-
through from the inner part thereof, the end of said tube having a relatively heavy annular bead, the tube having a thin walled portion between the body portion of the valve and the beaded end of said tube, said thin walled portion being adapted to be twisted about the longitudinal axis of the tube to seal the valve, and the body portion of the device having a recess adapted to receive and hold the beaded end of the tube to maintain the valve in the sealing condition.

3. A valve for pneumatic devices, said valve being made of flexible material and comprising a body portion and a tube extending there-
90 through from the inner part thereof, the end of said tube having a relatively heavy annular bead, the tube having a thin walled portion between the body portion of the valve and the beaded end of said tube, said thin walled portion being adapted to be twisted about the longitudinal axis of the tube to seal the valve, and the body portion of the device having a recess adapted to receive and hold the beaded end of the tube to maintain the valve in the sealing condition, the surface of said recess being knurled.

4. A valve for pneumatic devices, said valve being made of flexible material and comprising a body portion and a tube extending there-
105 through from the inner part thereof, the end of said tube having a relatively heavy annular bead, the tube having a thin walled portion between the body portion of the valve and the beaded end of said tube, said thin walled portion being adapted to be twisted about the longitudinal axis of the tube to seal the valve, the body portion of the device having a recess adapted to receive and hold the beaded end of the tube to maintain the valve in the sealing condition, and a substantially rigid reinforcing ring in the body portion of the valve surrounding the annular recess therein.

5. A valve for pneumatic devices, said valve being made of flexible material and comprising
120 a body portion, a tube extending therefrom having a thick walled end portion, and a thin walled portion between the body portion of the valve and the thick walled end portion of the tube, said thin walled portion being adapted to be twisted about the longitudinal axis of the tube to seal the valve, and means for holding the thick walled end portion of the tube in the body portion of the valve to maintain the valve in the sealing condition.

ERNEST E. TOMPKINS.

60

135

65

140

70

145

75

150