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J. E. DORWARD  
INFLATABLE SPORT BALL

1,756,056

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*Fig. 1*

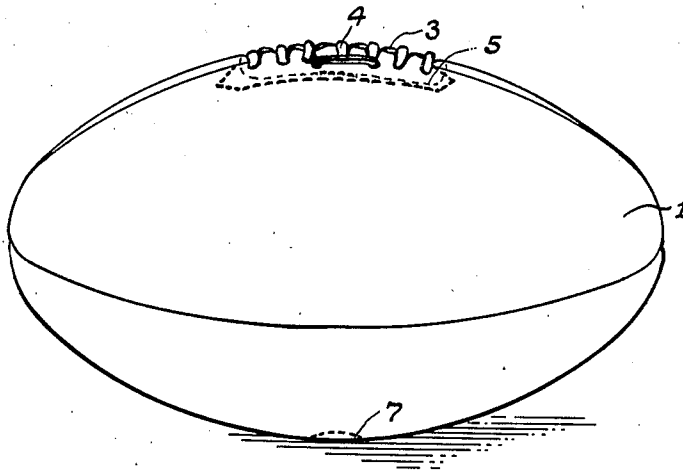


*Fig. 2*

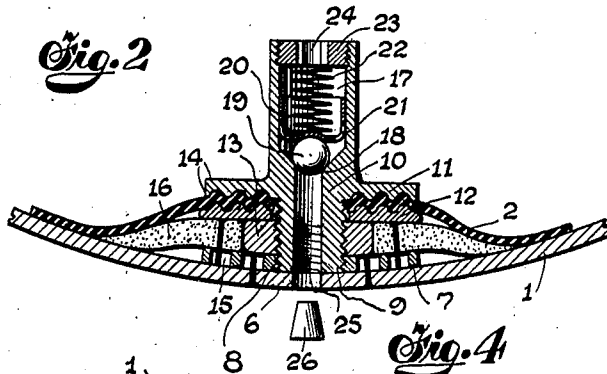


*Fig. 3*

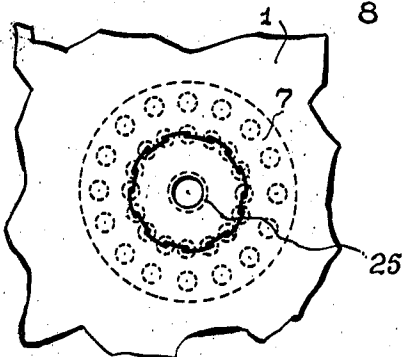
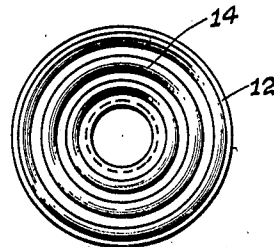


*Fig. 4*



Inventor  
Joseph E. Doward  
By his Attorneys  
Emery, Booth, Janney & Vanney

## UNITED STATES PATENT OFFICE

JOSEPH E. DORWARD, OF NEW YORK, N. Y.

## INFLATABLE SPORT BALL

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This invention relates to inflatable sport balls and pertains more particularly to a valve for controlling the entrance and egress of air thereto.

5 It is an object of this invention to improve the usual construction of inflatable balls and to provide a simple and convenient valve device within the ball in order that inflation may be accomplished without the necessity  
10 of unlacing the outer casing.

A preferred embodiment of the invention is illustrated in the accompanying drawings, and therein,

15 Figure 1 is a perspective view of a football embodying the invention,

Figure 2 is a section on an enlarged scale through the valve device,

Figures 3 and 4 are detail views.

Referring to the drawings, the outer casing 1 may be conveniently made of leather or other suitable wear resisting material and may be formed in any desired shape, as for instance an ellipsoid or sphere or various other shapes, a football being shown for purposes of illustration.

25 Within the casing is an air-tight bladder 2 which may be conveniently inserted and withdrawn from the outer casing through an opening 3 which may be closed by a lacing 4. If desired, a flap 5 may be secured to the inside of the outer casing and may extend under the opening to protect the bladder.

At the opposite side of the ball from the opening and lacing the casing may be provided with a small opening 6 beneath which may be secured a disk 7 having a series of perforations therein through which it may be conveniently sewed to the casing. The disk may be provided with an opening 8 to register with the opening in the casing and may be cupped to conform to the shape of the outer casing when in inflated condition. The opening 8 in the disk may conveniently be internally threaded to receive the threaded  
45 end 9 of a valve tube 10.

The valve tube 10 may be provided with a flange disk 11 preferably formed integrally therewith, which cooperates with another disk 12 loosely mounted on the threaded  
50 of the tube, the disks forming an air-tight

connection between the bladder and valve tube. For this purpose a suitable opening may be formed in the bladder to surround the threaded end of the valve tube. The disk 12 may then be placed over the bladder and secured firmly thereto by a nut 13 internally threaded to mesh with the threaded end of the valve tube.

If desired, the flange disk 11 and the additional disk 12 may be provided with a series of matching annular grooves or corrugations 14 which serve to establish a more effective contact with the bladder. In assembling, cement, shellac or other adhesive may be used to further improve the contact.

Between the disk 7 and the disk 11, and sewed to the former through a series of perforations 15 formed therein, may be placed a felt pad 16 to better protect the bladder. This pad may be tapered around its edges, if desired, in order to prevent ridges being formed between the bladder and the outer casing.

A passage 17 is provided through the valve tube, one portion of which is constricted at 18 to form a seat for a valve 19. The valve may be conveniently carried on a plunger 20 provided with openings 21 through which air may pass. The valve is urged toward its seat by a coil spring 22, one end of which bears against the plunger 20 and the other end of which bears against a screw threaded plug 23 which may mesh with an internal thread in the valve tube. An opening 24 is provided in the plug through which air may pass.

The opposite end of the valve tube may also be internally threaded at 25 to receive a pump or other means by which the ball may be inflated. This opening may be closed by a suitable plug 26 of leather, rubber, rawhide or other non-metallic material when the ball has been inflated and is ready for use.

When the valve tube has been secured to the bladder in the manner described above and the disk 7 has been sewed to the casing, the bladder 2 may be inserted in the casing through the opening. The valve tube and the disk may then be engaged by screwing the threaded end of the tube into the threaded

opening of the disk. The opening 3 may then be laced and the ball is ready to be inflated. This may be accomplished in the usual manner through the threaded opening  
5 of the valve tube.

It will be observed in the preferred embodiment illustrated that the valve tube is placed opposite the opening and lacing. This may be advantageous in order that the weight  
10 of the lacing may counter-balance that of the valve, thereby retaining the balance of the ball.

In order that the weight of the ball may not be unduly increased, the valve tube, disks  
15 and other metal parts may preferably be made from some aluminum or other light alloy. The perforations formed in the disk 7 will also reduce the weight of the device to a minimum.

It is understood that the invention is not limited to the embodiment herein illustrated but that on the contrary it may be variously modified and embodied within the scope of the subjoined claims.

25 I claim as my invention:

1. In an inflatable ball having an outer casing and a bladder, a valve tube connected to said bladder, a valve therein, a plate permanently stitched to said casing, said plate  
30 being provided with a threaded opening, and means including a screw thread on said valve tube whereby said valve tube may be secured in said opening.

2. In an inflatable ball having an outer casing and a bladder, a valve tube opening  
35 into said bladder, a flange and disk thereon between which said bladder is secured, said flange and disk being provided with matching corrugations to grip the bladder, and an additional disk secured to said casing and  
40 adapted to be removably connected to said tube.

3. In an inflatable ball having an outer casing and a bladder, a valve tube opening  
45 into said bladder, a flange and disk thereon between which said bladder is secured, said flange and disk being provided with matching corrugations to grip the bladder, an additional disk secured to said casing adapted  
50 to be removably connected to said tube, and a felt pad also secured to said second disk and lying between said casing and bladder.

In testimony whereof, I have signed my name to this specification this 22d day of  
55 July, 1923.

JOSEPH E. DORWARD.