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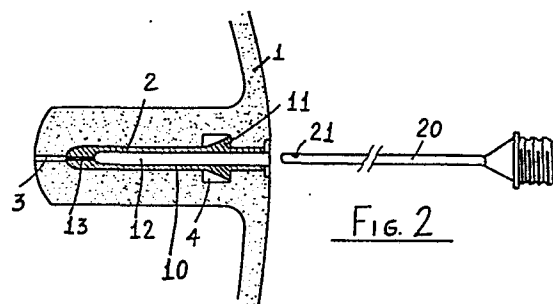
54 **Plastics material ball structure with inflating valve.**

57 The present invention relates to a plastics material ball structure (1) provided with an inflating valve, comprising an outwardly open housing (2) which radially extends inwardly.

The housing (2) is effective to receive a valve body (10) of elongated shape, ending with a capillary hole (13) which may be expanded by the inflating needle (20) and which is adapted for tightly closing as the inflating needle (20) is withdrawn.

The valve body (10) is provided, at a middle portion of its outer surface, with a frustum of cone shaped projection (11), effective to be inserted into an abutment groove (4) as formed on the housing (2) for anchoring the valve body (10) in the inside of the groove (4).

The housing (2) is axially aligned with the valve body (10) and, at the capillary hole (13), defines a through going hole (3) therethrough the inflating needle (20) is able to pass.



COMPLETE DOCUMENT



The present invention relates to a plastics material ball structure, provided with an inflating valve.

5 As it is known, plastics balls are moulded by a spin moulding method and, as they are withdrawn from the mold, they are in a substantially inflated condition.

10 The presently used apparatus for making said balls provides for inflating the balls by such a system which does not afford the possibility of further inflating the ball as, upon use, a air pressure loss occurs inside the ball itself.

15 Presently inflating valves are only applied to expensive types of balls, such as the leather balls provided with bladders, since the presently available inflating valve means would be excessively expensive for application to plastics balls.

20 Accordingly, the task of the present invention is to solve the hereinabove mentioned problem, by providing such a plastics material ball structure, provided with inflating valve, which, while being comparatively simple both construction-wise and in operation, is able of affording the possibility of inflating the ball at any desired time in particular as a pressure loss occurs inside the ball.

25 Within that task, a main object of the present invention is to provide such a plastics material

ball structure, with inflating valve, which, while being very simple construction-wise, is very reliable in operation.

Yet another object of the present invention is to provide such a plastics material ball structure which is effective to be easily made starting from easily available materials and which, moreover, is of a very reduced cost.

According to one aspect of the present invention, the above task and objects, as well as yet other objects which will become more apparent hereinafter, are achieved by a plastics material ball structure, with inflating valve, characterized in that it comprises an outwardly open housing, radially extending inwardly, said housing being effective to house a valve body of elongated shape, ending with a capillary hole, effective to be expanded by an inflating needle and adapted for tightly closing as said inflating needle is withdrawn.

Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed description of a plastics material ball structure with inflating valve, being illustrated, by way of example and not of limitation, in the figures of the accompanying drawing, where:

Fig. 1 is a schematic view illustrating the plastics material ball structure according to the invention;

Fig. 2 is a detail view illustrating the inflating valve associated to the ball structure according to the invention, as the inflating needle is withdrawn therefrom; and

5 Fig. 3 is a detail view illustrating the inflating valve with the inflating needle inserted therein.

With reference to the above Figures, the plastics material ball structure, according to the
10 invention, indicated overally at the reference number 1, is provided with a housing 2, formed as a single body with the ball, during the ball making step, which housing is open outwardly and substantially radially inwardly extends.

15 The housing (2) is provided, at the bottom thereof, with a passage hole 3, whereas at a middle portion of said housing an abutment groove 4 is formed, said groove being of greater width than the housing and having advantageously a substantially
20 cylindrical shape.

Into the housing 2 a valve body may be inserted, indicated overally at the reference number 10, which has a substantially elongated shape and is advantageously made of a resilient material.

25 The mentioned valve body 10 is provided, at the region thereat the abutment groove 4 is formed, with a frustum of cone shaped projection 11, which affords the possibility of inserting the valve body 10 into the housing 2, in a locked engagement re-

lationship therewith, in such a way as to engage with the abutment groove 4 edge.

5 The valve body 10 is provided, in the inside thereof, with a further housing or seat 12, which axially extends from the open end, outwardly facing, as far as the inner end thereof a capillary hole 13 is formed.

10 Into said housing or seat 12 an inflating needle 20 may be pressure inserted, in such a way as to cause said capillary hole 13 to expand: thus the inflating needle will be inserted through the through-going hole 3 in such a way as to bring its air inlet port 21 in the inside of the hole 1, thereby the ball may be accurately and fully inflated.

15 As the inflating needle 20 is withdrawn, by removing it from the seat 12, the valve body 10, being made of a resilient material, will resiliently reclose.

20 More specifically, the capillary hole 13 will resiliently tightly reclose, thereby providing a perfect diaphragm between the outside environment and the ball inside, thereby air is prevented from leaking in such a way as to hold the inflating pressure at a constant value.

25 Advantageously, the inner end portion of the valve body 10 is of rounded shape, correspondingly to the housing 2, thereby the inside pressure practically provides a clamping effect on the capillary hole 13 in such a way as to improve the tightness

characteristics.

From the above disclosure it should be noted that the invention fully achieves the intended task and objects.

5 In particularly the great constructional simplicity of the valve body is to be pointed out, which, in actual practice, consists of a single elongated resilient element which may inserted into the housing 2 and locked therein, the housing 2 being formed during
10 the moulding of the ball.

 Moreover, the provision of a capillary hole affords the possibility of making a valve body - free of any movable elements or springs, which would be susceptible to greatly increase the cost of the
15 valve itself.

 In practicing the invention, the used materials, though the best results have been obtained by using the above mentioned materials, as well as the size and shapes may be any according to the needs.

CLAIMS

1 1. A plastics material ball structure,
2 with inflating valve, characterized in that it com-
3 prises an outwardly open housing (2), radially ex-
4 tending inwardly, said housing (2) being ef-
5 fective to house a valve body (10) of elongated shape,
6 ending with a capillary hole (13), effective to be
7 expanded by an inflating needle (20) and adapted for
8 tightly closing as said inflating needle (20) is
9 withdrawn.

1 2. A plastics material ball structure
2 with inflating valve, according to the preceding Claim,
3 characterized in that said valve body (10) is pro-
4 vided, at a middle portion of its outer surface, with
5 a frustum of cone shaped projection (11) effective
6 to be inserted into an abutment (4) as formed by said
7 housing (2), for anchoring the valve body (10) in
8 the inside of the groove (4).

1 3. A plastics material ball structure
2 with inflating valve, according to the preceding
3 Claims, characterized in that said housing (2) de-
4 fines, axially aligned with said valve body (10) and
5 said capillary hole (13), a throughgoing hole (3)
6 effective to allow for said inflating needle (20) to
7 pass threrethrough.

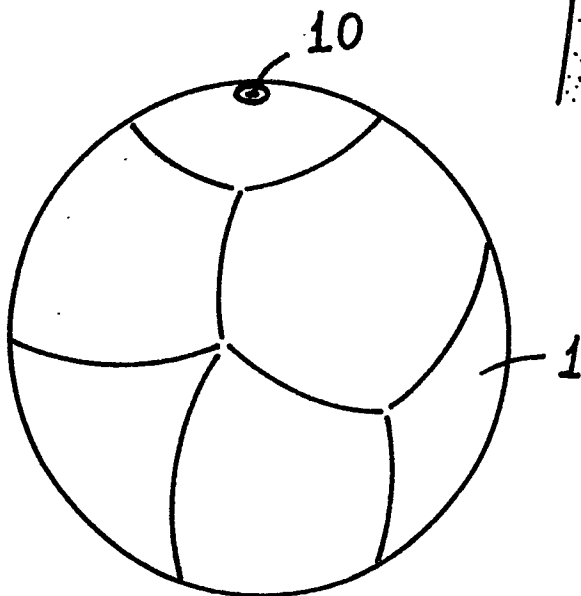
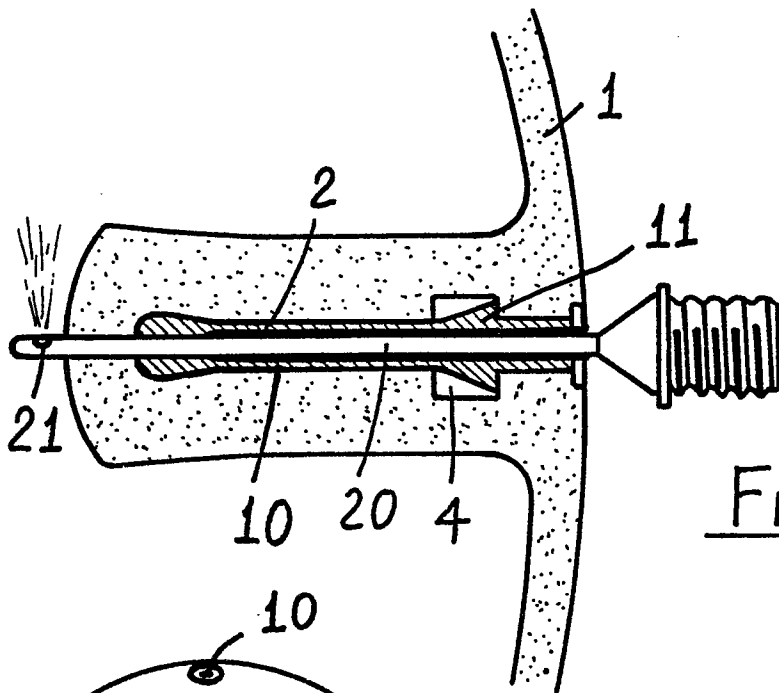
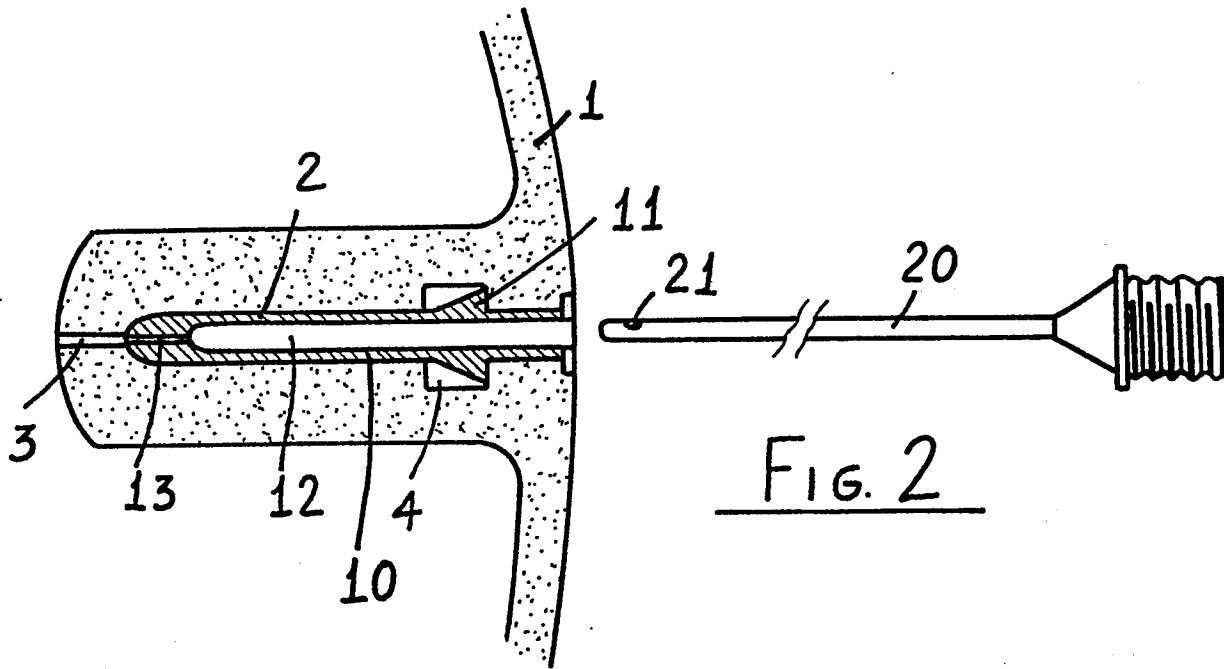
1 4. A plastics material ball structure
2 with inflating valve, according to one or more of
3 the preceding Claims, characterized in that said
4 valve body (10) defines, in its inside, a housing (2)

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5 provided for receiving said inflating needle, said
6 housing (2) axially extending through said valve body
7 (10).

1 5. A plastics material ball structure
2 with inflating valve, according to one or more of
3 the preceding Claims, characterized in that said val-
4 ve body (10) has, at its inner end portion, a rounded
5 shape mating with a corresponding rounded portion as
6 defined by said housing (2).

1 6. A plastics material ball structure
2 with inflating valve, according to one or more of the
3 preceding Claims, characterized in that said housing
4 (2) is made in a single body with the ball (1),
5 during the moulding step of the latter.





European Patent
Office

EUROPEAN SEARCH REPORT

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Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 83830261.0
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
X	<u>DE - A - 2 126 482</u> (SUN PRODUCTS CORP.) * Totality * --	1,4,5	A 63 B 41/12 A 63 B 41/00
A	<u>US - A - 2 295 804</u> (OLSON) * Fig. 5,6 * --	2,6	
A	<u>US - A - 4 341 382</u> (ARNOLD) * Column 1, line 67 - column 2, line 2; fig. 1,2,5 * ----	3,4,5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 7)
			A 63 B 41/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 20-02-1984	Examiner MANLIK
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	