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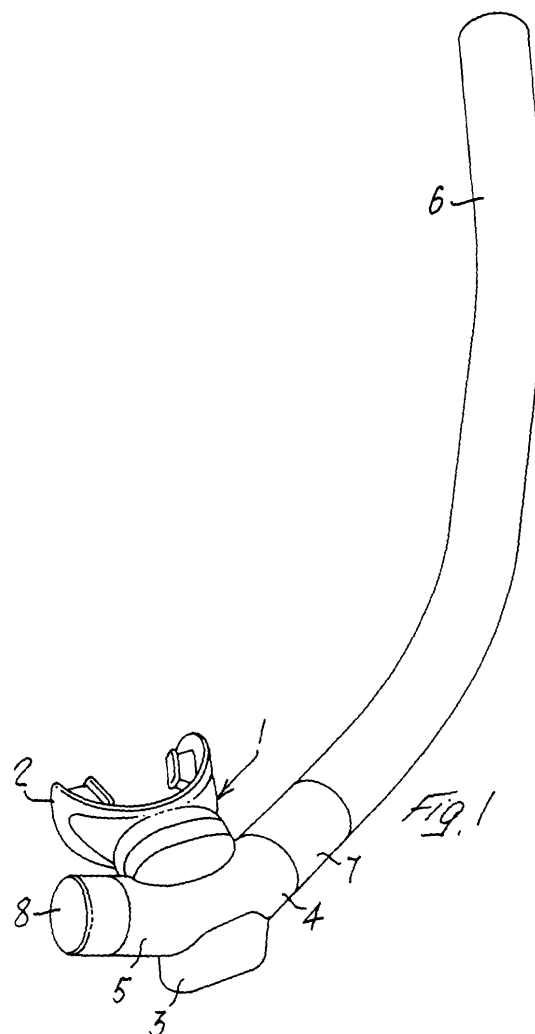
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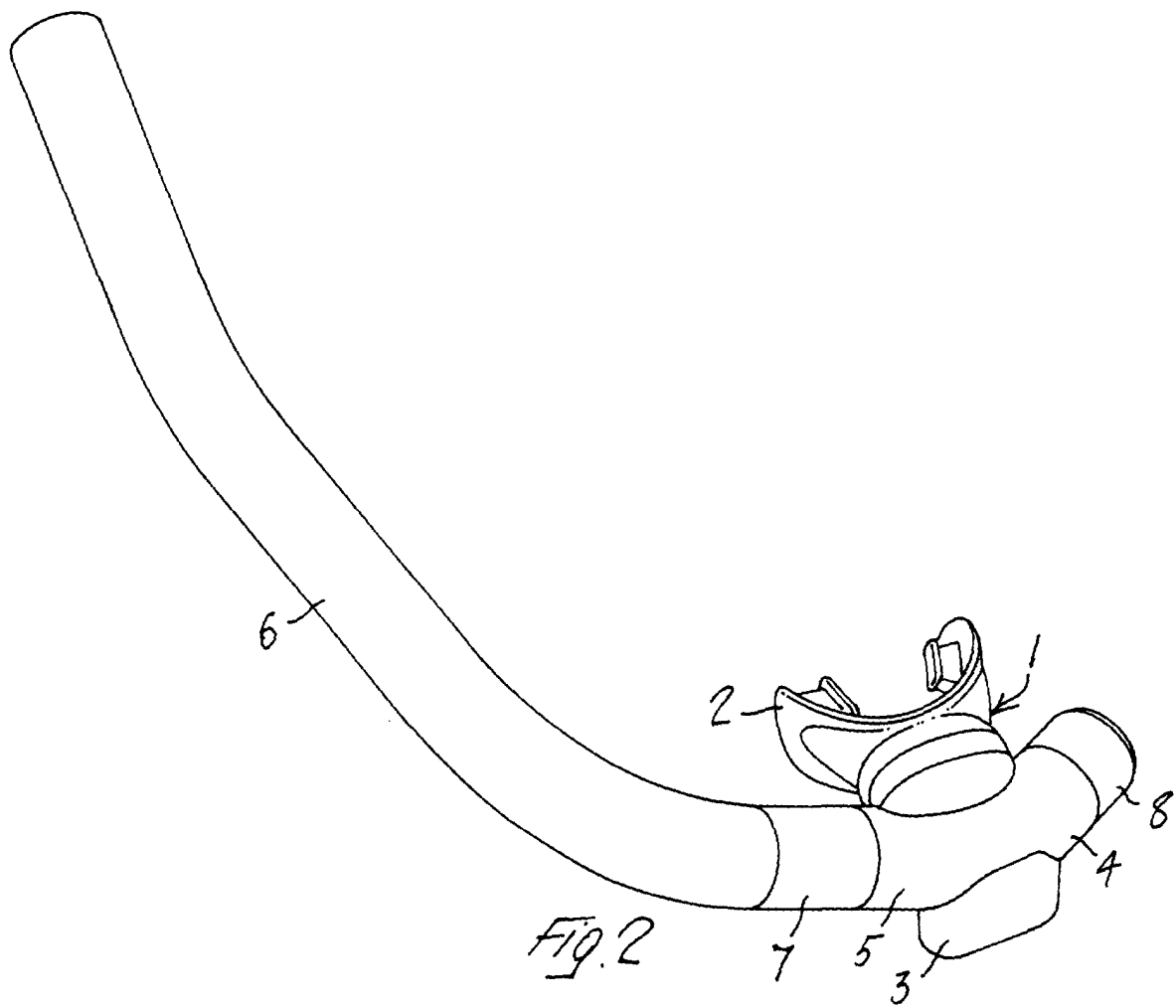
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(54) **Mouthpiece for underwater breathing pipes**

(57) Mouthpiece (1) for underwater breathing pipes, including on its upper part a mouth element (2) and on its lower part at least one water draining valve (3) with a certain downward slope as to a lying plane including the mouth element (2); said mouthpiece (1) includes at least two opposite side parts (4, 5), hollow and provided with the means (41, 51, 7) allowing to connect, removably and watertight, to a side part (5) a breathing pipe (6), and to the opposite side part (4) a closing plug (8); said means (41, 51, 7) allow a total interchangeability of the positioning of the breathing pipe (6) and the closing plug (8) to the right and/or to the left as to the mouthpiece (1) mouth element (2) and water draining valve (3).





Description

[0001] The present invention refers to a mouthpiece for underwater breathing pipes.

[0002] As it is known there are different types of mouthpieces for breathing pipes: normally they include a stiff or semi-stiff body provided on their upper part of a mouth element of soft material and connected, on a side part as said mouth element, to a breathing pipe, normally bent. Moreover there are mouthpieces where, on the side opposite to the one of the mouth element, a water draining valve is provided, which can be obtained on the same lying plane of the mouth element or sloped downward as to that.

[0003] In the mouthpieces without draining valve or with the draining valve obtained on the same lying plane of the mouthpiece, the diver can position the breathing pipe indifferently on the right or on the left as to the head and then the mouth element. In the mouthpieces with valve sloped as to the mouth element plane, on the contrary, this is not possible, since said water draining valve has to be always turned downward and the breathing pipe is firmly connected to the mouthpiece, in a not removable way. The impossibility for the diver to position by his choice the breathing pipe on the right or on the left of the head, is a remarkable limitation, which often makes little practical the use of said mouthpieces.

[0004] The aim of the present invention is to avoid the disadvantages and limitations of the mouthpieces for the known breathing pipes and to embody a mouthpiece to which a breathing pipe can be connected indifferently on the right or on the left of the mouth element with no distinction.

[0005] Said aim is reached by the present invention through a mouthpiece for underwater breathing pipes including on its upper part a mouth element and on its lower part at least one water draining valve with a certain downward slope as to a lying plane including the mouth element; said mouthpiece moreover includes at least two opposite side parts, hollow and provided with means allowing to connect, removably and watertight, to one of said side parts, a breathing pipe, and to the opposite side part a closing plug. Said means allow a total interchangeability of the positioning of the breathing pipe and the closing plug to the right and/or to the left as to the mouth element and the water draining valve of the mouthpiece.

[0006] Further aims and advantages of the present invention will be better understood in the following description to be considered as a not limitative description and referred to the enclosed drawings, where:

- Fig. 1 shows in perspective a view of a mouthpiece according to the present invention with a breathing pipe positioned on the left;
- Fig. 2 shows in perspective a view of a mouthpiece of Fig. 1 with a breathing pipe positioned on the right;

- Fig. 3 shows in perspective an exploded view of the connecting means of the present mouthpiece to the breathing pipe.

[0007] With reference to Fig. 1, with 1 is shown a mouthpiece according to the present invention comprising a body of stiff or semi-stiff material and including on the upper part a mouth element 2 suitably shaped and made of soft material. On the mouthpiece 1 lower part which is opposite as to the one of the mouth element 2 a water draining valve 3 is provided, which, as it can be noticed, is not obtained on the same lying plane of said mouth element 2, but has a certain slope downward as to that. Said mouthpiece has moreover two side parts 4 and 5 hollow and projecting respectively to the left and the right (as to the mouth element 2). The hollow left side part 4 is connected to a breathing pipe 6 through a tubular connecting piece 7 which allows, as it will be later described, to connect and disconnect as one likes said pipe 6 from said side part 4. On the hollow right side part 5 is instead provided the insertion of a closing plug 8, which is as well removable from said side part 5.

[0008] As mentioned above, through the present mouthpiece 1, the breathing pipe 6 can be assembled indifferently to the right or the left as to the mouth element 2. To this regard in Fig. 2 is shown the situation where the breathing pipe 6 is connected to the right side part 5 of the mouthpiece 1 and the plug 8 is inserted into the left side part 4, reversing the positioning of Fig. 1.

[0009] In Fig. 3 are shown in exploded view the connection means allowing to make indifferently the positioning of the breathing pipe 6 to the right or the left of the mouthpiece 1. The mouthpiece hollow right 5 and left 4 side parts include two cylindrical portions 41 and 51 which are hollow too: said portions 41 and 51 have reduced section and within each one are obtained two annular carvings 410 and 510. The left cylindrical portion 41, in the example in figure, is suitable for fitting in with the cylindrical plug 8, which has on the inner surface two annular projections 81 which become engaged by fitting in into the two carvings 410. Two sealing rings 10 are provided to complete the coupling of the plug 8 with the cylindrical portion 4. Said coupling is done by fitting in, setting first the sealing rings 10 into the carvings 410 and then pressing the plug 8 against the portion 41 until the annular projections 81 get completely into their carvings 410.

[0010] The cylindrical portion 51, in the example in figure, is instead connected to the connecting piece 7, which has in its inside part four annular projections 71 (of which in the figure is shown only the one obtained on the right end of the connecting piece 7). Said connecting piece 7 is then fitted in from one side onto the cylindrical portion 51 and from the other side onto a cylindrical end portion 61 of the breathing pipe 6: said portion 61 has a reduced section and on it are obtained two annular carvings 610. The assembly of the connecting piece 7 to the portion 51 of the mouthpiece 1 side part

5 and to the end portion 61 of the breathing pipe 6 is quite the same of the one described for the plug 8, and for it four more sealing rings 10 are provided. To fit in, then, the connecting piece 7 onto the portion 51 is sufficient to set two sealing rings 10 into the carvings 510 and pressing said connecting piece 7 until two of the four annular projections 71 are completely inserted into said annular carvings 510, while, to fit in the end portion 61 of the pipe 6 into the connecting piece 7 so connected to the portion 51, is sufficient to set the other two sealing rings 10 into the carvings 610 and press the pipe 6 until the other two annular projections 71 of the connecting piece 7 are completely fitted into said annular carvings 610.

[0011] When, through the connecting piece 7, the plug 8 and the pipe 6 are fitted in respectively on the side parts 4 and 5, then the mouthpiece 1 and the breathing pipe 6 are assembled according to the setting of Fig. 2. According to what fully described, it will become clear how it is possible to easily change the assembly shown in Fig. 3, it is to say with the plug 8 fitted in on the right side part and the pipe 6 fitted in, through the connecting piece 7, on the left side part 4, so obtaining the setting of the mouthpiece 1 and the breathing pipe 6 shown in Fig. 1.

[0012] Although in the preceding description and in the drawings it is described and shown the connection between the breathing pipe 6 and the side part respectively 4 and 5 of the mouthpiece 1 with the interposition of the connection element 7, it is obvious that said connecting piece 7 can be avoided, and the breathing pipe can be made so to be fitted in directly on the elements 41 and respectively 51 of the mouthpiece 1 side parts 4 and 5.

Claims

1. A mouthpiece (1) for underwater breathing pipes, including on its upper part a mouth element (2) and on its lower part at least one water draining valve (3) with a certain downward slope as to a lying plane including the mouth element (2), characterized in that it includes at least two side parts (4, 5) opposite, hollow and provided with means (41, 51) allowing to connect, removably and watertight, to a side part (5) a breathing pipe (6) and to the opposite side part (4) closing elements (8); said means (41, 51) allowing a total interchangeability of the positioning of the breathing pipe (6) and the closing elements (8) to the right and/or to the left as to the mouth element (2) and the mouthpiece (1) water draining valve (3).
2. A mouthpiece according to claim 1, **characterized in that** said breathing pipe (6) is provided at the end of an insertion element complementary to the insertion element of said means (41, 51) so to allow the direct coupling male and female of said end of the

breathing pipe (6) with said means (41, 51) of said mouthpiece (1), being said closing elements (8) a plug watertight insertable onto said means (41, 51).

3. A mouthpiece (1) according to claim 1, **characterized in that** the coupling between the breathing pipe (6) and the said means (41, 51) of the said mouthpiece is made through the interposition of a substantially cylindrical connecting piece (7).
4. A mouthpiece (1) according to claim 3, **characterized in that** each one of the side parts (4, 5) include a substantially cylindrical portion (41, 51) provided with elements (410, 510) connectable by fitting in, from the side of the breathing pipe (6), into corresponding elements (71) obtained in connection with one end of said connecting piece (7) and, from the side of the closing plug (8), into corresponding elements (81) obtained in said closing plug (8), being the other end of said connecting piece (7) provided with additional elements (71) connectable by fitting in into corresponding elements (610) obtained on a substantially cylindrical end portion (61) of the breathing pipe (6).
5. A mouthpiece (1) according to claim 4, **characterized in that** said connecting piece (7) is hollow inside and in connection with its ends includes annular projections (71) obtained on its inner surface and connectable by fitting in, from one side, into annular carvings (610) obtained on the outer surface of the end portion (61) of the breathing pipe (6) and, from the other side, into annular carvings (510) obtained on the outer surface of the substantially cylindrical portion (51) of the side part (5) corresponding to the mouthpiece (1).
6. A mouthpiece (1) according to any of the preceding claims 1 to 5, **characterized in that** said plug (8) is hollow inside and on its inner surface are obtained annular projections (81) connectable by fitting in into annular carvings (410) obtained on the outer surface of the substantially cylindrical portion (41) of the side part (4) corresponding to the mouthpiece (1).
7. A mouthpiece (1) according to any preceding claims, **characterized in that** said substantially cylindrical portions (41, 51) of the mouthpiece (1) side parts (4, 5) have a reduced section.
8. A mouthpiece (1) according to any preceding claims, **characterized in that** said substantially cylindrical end portion (61) of the breathing pipe (6) has a reduced section.
9. A mouthpiece (1) according to any preceding claims, **characterized in that** it includes sealing

rings (10) inserted between the fitting in connection element of the breathing pipe (6) with the mouth-piece (1) portions (41, 51) or with the connecting piece (7) and/or of the connection of said connecting piece (7) and of the closing plug (8) with their substantially cylindrical lengths (51, 41). 5

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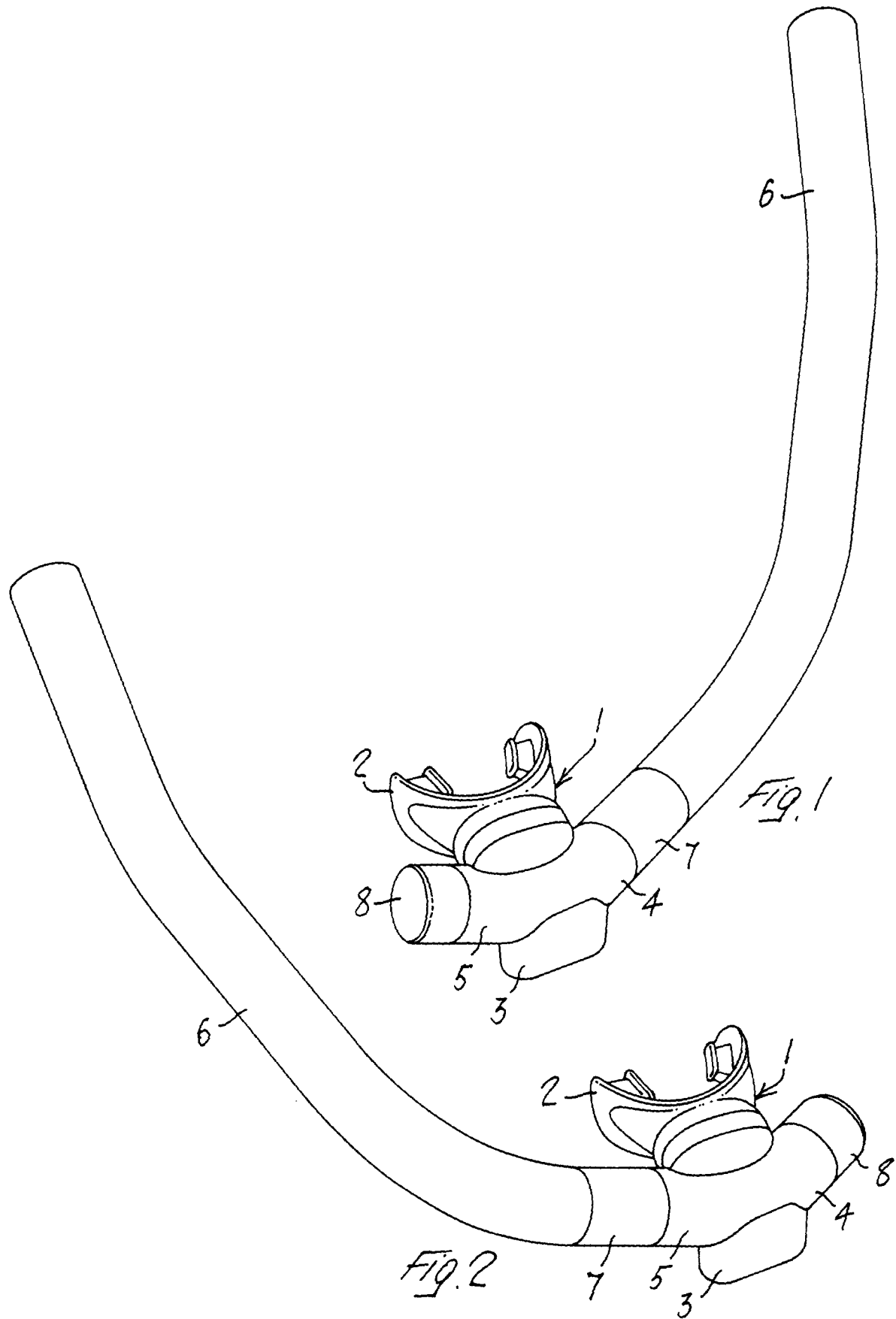
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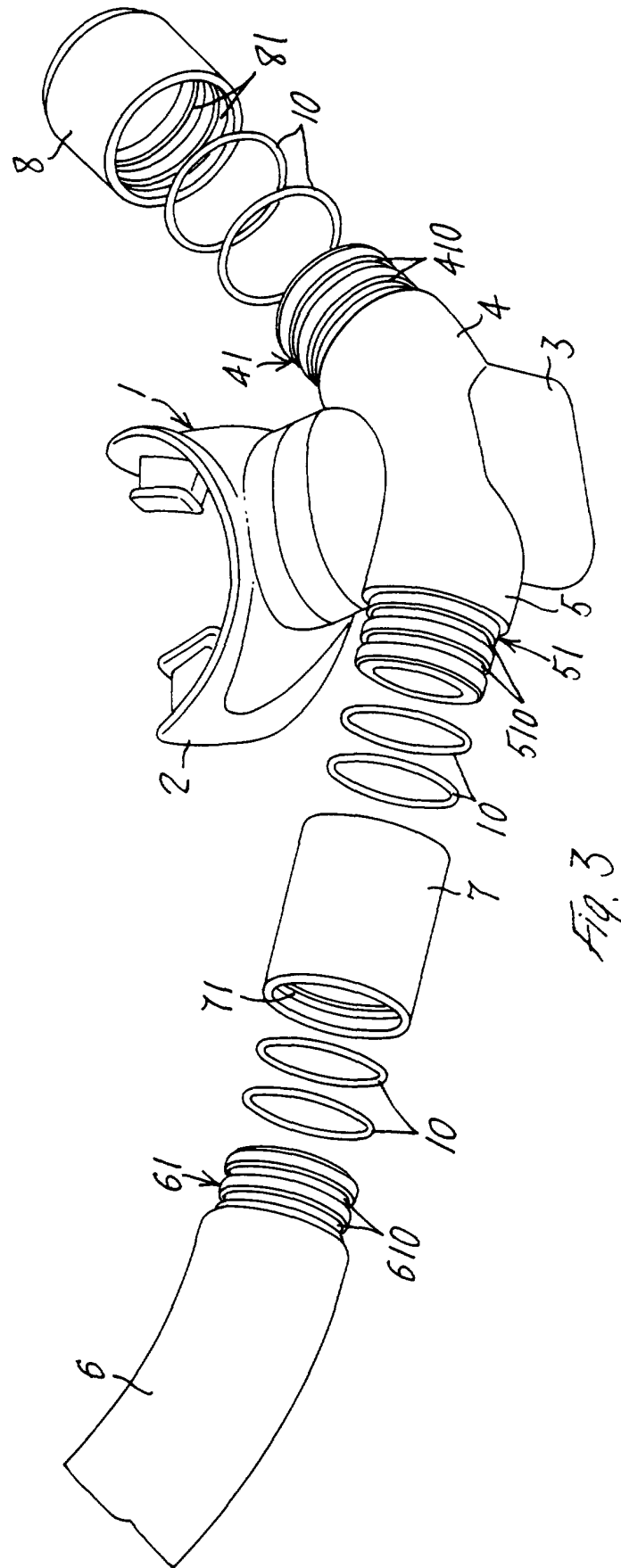


Fig. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 9021

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Place of search		Date of completion of the search	Examiner
THE HAGUE		15 November 2001	De Schepper, H
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 11 9021

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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