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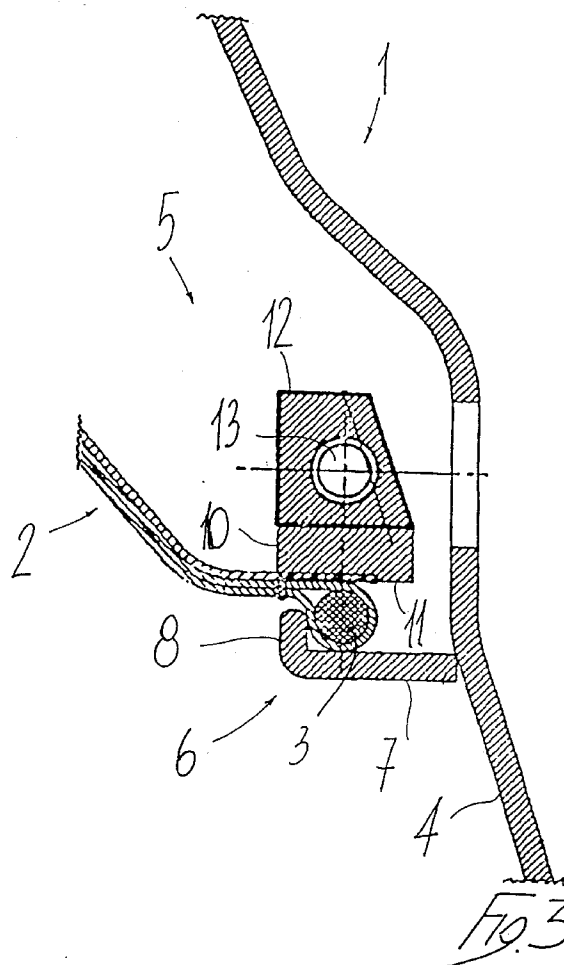
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(54) **Device for fixing a tubular membrane on a pneumatic press, specially suitable for pressing fruit.**

(57) This application describes a device for fixing a tubular membrane to the ends of a pneumatically operated rotating drum on presses of the type specially suitable for pressing fruit. The device comprises a first ring plate which is positioned at each end of the drum. The device also comprises a second ring plate which permits the ends of the membrane to be secured to the first ring plate from inside the drum.

The device is both structurally simple and permits membranes to be fitted and removed quickly.



This application describes a device for fixing a tubular membrane to the ends of a pneumatically operated rotating drum press, of the type specially suitable for pressing fruit.

The most common presses of this type normally comprise a drum which rotates about its own longitudinal axis, and a tubular membrane in non-toxic material, fixed inside the drum coaxially with the drum's axis of rotation.

Product to be pressed is loaded between the perforated drum and the membrane, and the membrane is inflated to press the product.

The membrane must therefore be fixed to the drum at both ends.

The commonest current fixing method is to attach the ends of the membrane to round rod rings and to fix these rings in place with a device comprising two ring plates; the said ring plates can be positioned at flat surfaces at the ends of the drum, and have, on the surface facing the ends of the drum, at least one annular groove to hold the shaped ends of the membrane.

The two ring plates carry a number of studs, at a constant distance one from another, which can be positioned in special holes in the flat ends of the drum, with or without a pressure ring to separate the elements.

Though this common fixing method fulfills the function of fixing the membranes to the drum, it gives rise to a number of problems. The fixing devices which use this method are structurally complicated and difficult to manufacture; manufacturing costs are high because of the large number of components involved and because of the special machining required for the said components; the size of the components represents a further problem.

High manufacturing costs are incurred because the manufacturing process starts with a steel plate which has to be rolled and then turned and perforated before having the studs fixed to it.

Difficulties also occur in fitting and removing the membrane because of the large number of nuts which have to be tightened onto the studs in large and small presses alike. This problem is particularly acute since the membranes in question require regular replacement for wear and breakages. The main objective of the invention described in this application is to solve the technical problems listed above, to eliminate the difficulties associated with the commonest current fixing method, and to permit both quick and effective fixing of the ends of tubular membranes to the corresponding ends of the drums of pneumatic presses for pressing fruit, grapes and similar products.

Within the scope of this main objective, one important purpose of the invention described in this application is to create a device which enables membranes to be fitted and removed quickly and easily irrespective of the size of the press with which the de-

vice is used.

Another important purpose of the invention described in this application is to create a device which is structurally simple and easy to manufacture.

Yet another important purpose of the invention described in this application is to create a device which, while ensuring the best possible fixing of the ends of the membrane, requires only a limited number of machining operations to make, is simple to manufacture in terms of components, and therefore costs little to produce.

The objective and purposes listed above, together with others which will emerge in the course of this application, are fulfilled by a device for fixing tubular membranes to the ends of the rotating drums of pneumatic presses for fruit, which comprises a first ring plate positioned at the ends of the said drum and a second ring plate which secures the ends of the membrane to the first ring plate from inside the drum itself.

Other characteristics in favour of the invention shall emerge in the course of the detailed description of certain typical though not exclusive forms of the device as illustrated by the accompanying drawings which exemplify without limiting the forms of the said device.

Fig.1 illustrates a cross section of one end of the drum with the fixing device applied.

Fig.2 illustrates a front view of one end of the membrane to which the second ring plate is applied.

Fig.3 illustrates a cross section of one part of the join between the first ring plate and the second ring plate carrying the end of the membrane.

Fig.4 illustrates a similar view of another form of the device.

Fig.5 illustrates another similar view of yet another form of the device.

In the above drawings the number 1 identifies the drum of a pneumatic press, hollow inside and capable of rotating about its own longitudinal axis.

The hollow drum houses a special tubular membrane 2, the ends of which are turned around a special metal or plastic round section ring 3.

Drum 1 has an end 4 at both extremities.

Both ends of the membrane 2 can be fixed to the fixing device, generically identified by the number 5.

The fixing device comprises a first ring plate 6 which is basically L shaped in section, the larger wing 7 of which is secured to and protrudes internally from each end 4 of the drum, and the smaller wing 8 of which faces in the opposite direction to the longitudinal axis 9 of the drum 1.

The first ring plate is closed.

The device also comprises a second ring plate 10 which can be positioned approximately parallel to the larger wing 7 of the first ring plate 6 so that the round section ring 3, around which the membrane 2 is turned, can be positioned between the two ring plates, and so that the membrane 2 can extend inside

the drum 1 through the space between the smaller wing 8 and the facing lower surface 11 of the first ring plate 6.

The first ring plate can be secured by a clamp 12 which can be tightened by a single screw 13 directly from inside the drum 1.

The invention functions as follows: once the ends of the membrane have been positioned at the outer edge of the first ring plate 6 and the second ring has been brought over the ends of the said membrane 2, the membrane is fixed in place simply by turning screw 13 and locking the round section ring 3 between the first and second ring plates.

The removal of the membrane for replacement is equally simple: it is sufficient to slacken off screw 13 to allow the ends of the membrane 2 to be pulled off the first ring plate 6.

This demonstrates that the invention fulfills the objective and purposes established, by creating a device which permits the quick fitting and removal of the membrane, which is structurally simple, which comprises a limited number of components, and which costs little to manufacture thanks to the simple design of its components parts.

The invention can be realised in a number of variant forms, all of which are covered by the same description.

Thus, by way of example, figure 4 illustrates a fixing device 105 comprising a first ring plate 106 which has a larger wing 107 secured at one end to and protruding from the end 104 of the drum 101.

The smaller wing 108 of the first ring plate 106 faces towards the longitudinal axis of the drum.

In this form the second ring plate 110 is moved up to the larger wing 107 of the first ring plate 106, and comprises a clamp 112 which is operated by a screw 113 which expands the second ring plate 110 to secure the round section ring 103 to which is applied one end of the membrane 102 to the larger wing 107 of the first ring plate 106.

In another form, illustrated in figure 5, the fixing device 205 comprises a first ring plate 206 which has a single wing 214 secured to and protruding from end 204 of drum 201 approximately parallel with the longitudinal axis of the drum.

At the surface furthest from the longitudinal axis of the drum, this single wing 214 has an annular groove 215 in which the end of the membrane 202 is held when the round section ring 203 is pushed against the drum end 204.

The second ring plate 210 is also positioned at groove 215 and specially comprises a round section ring which can be tightened by a special clamp 212 operated by screw 213.

All these forms of the invention satisfy the specified objective and purposes, permitting the easy fitting and removal of the membrane with relatively low costs.

The materials and dimensions of the components

making up the device can vary to suit the requirements of individual installation.

5 Claims

1) A device for fixing a membrane, having a first ring plate applied to the ends of a drum and a second ring plate for securing the ends of the membrane to the first ring plate from within the said drum.

2) A device as per claim 1 above, having a first, closed ring plate basically L shaped in cross section, the longer wing of which is secured to and protrudes inside the ends of the said drum.

3) A device as per claims 1 and 2 above, having a first, closed ring plate, the shorter wing of which faces away from the longitudinal axis of the said drum.

4) A device as per claims 1 and 2 above, having a first, closed ring plate, the shorter wing of which faces towards the longitudinal axis of the said drum.

5) A device as per claims 1 and 3 or 4 above, having a second ring plate which can be positioned approximately parallel to the larger wing of the first ring plate to permit the positioning between the two ring plates of a round section ring in metal or plastic material, to which is applied the end of the said membrane.

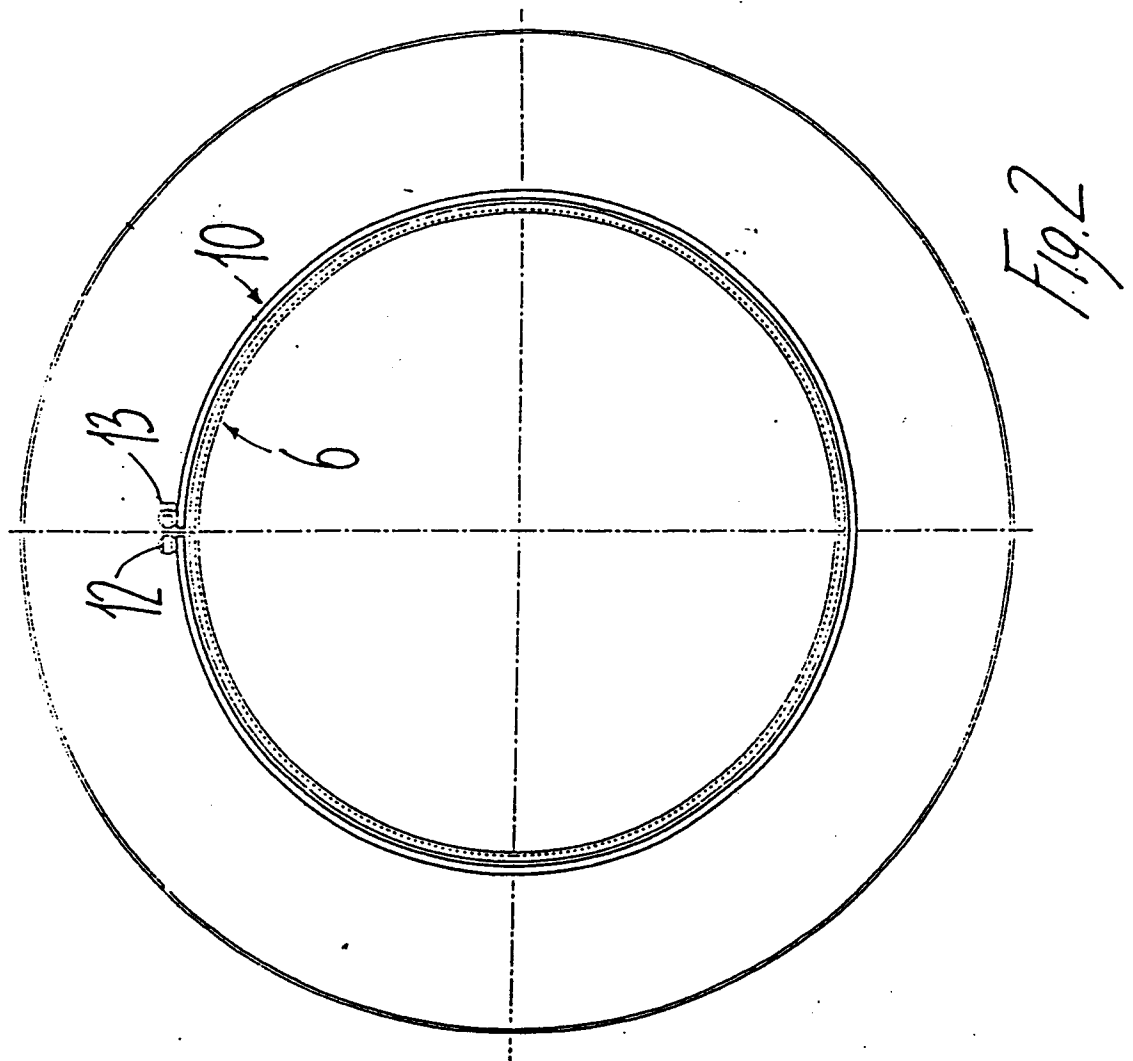
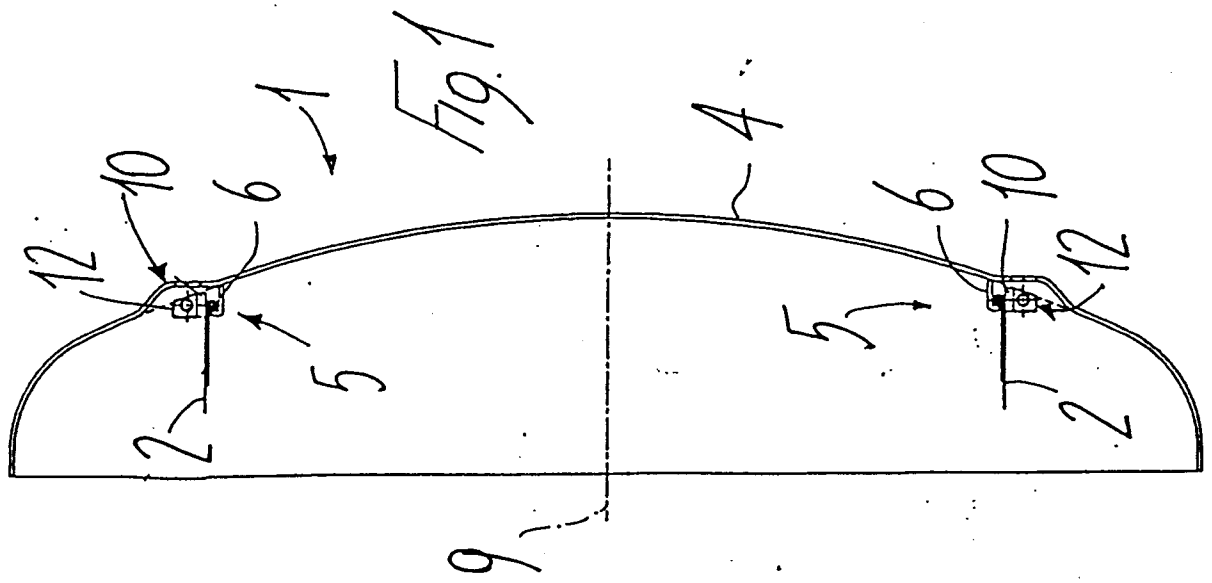
6) A device as per claims 1 and 5 above, having a second ring plate which can be tightened by means of a clamp operated by a single screw which can be turned from inside the said drum.

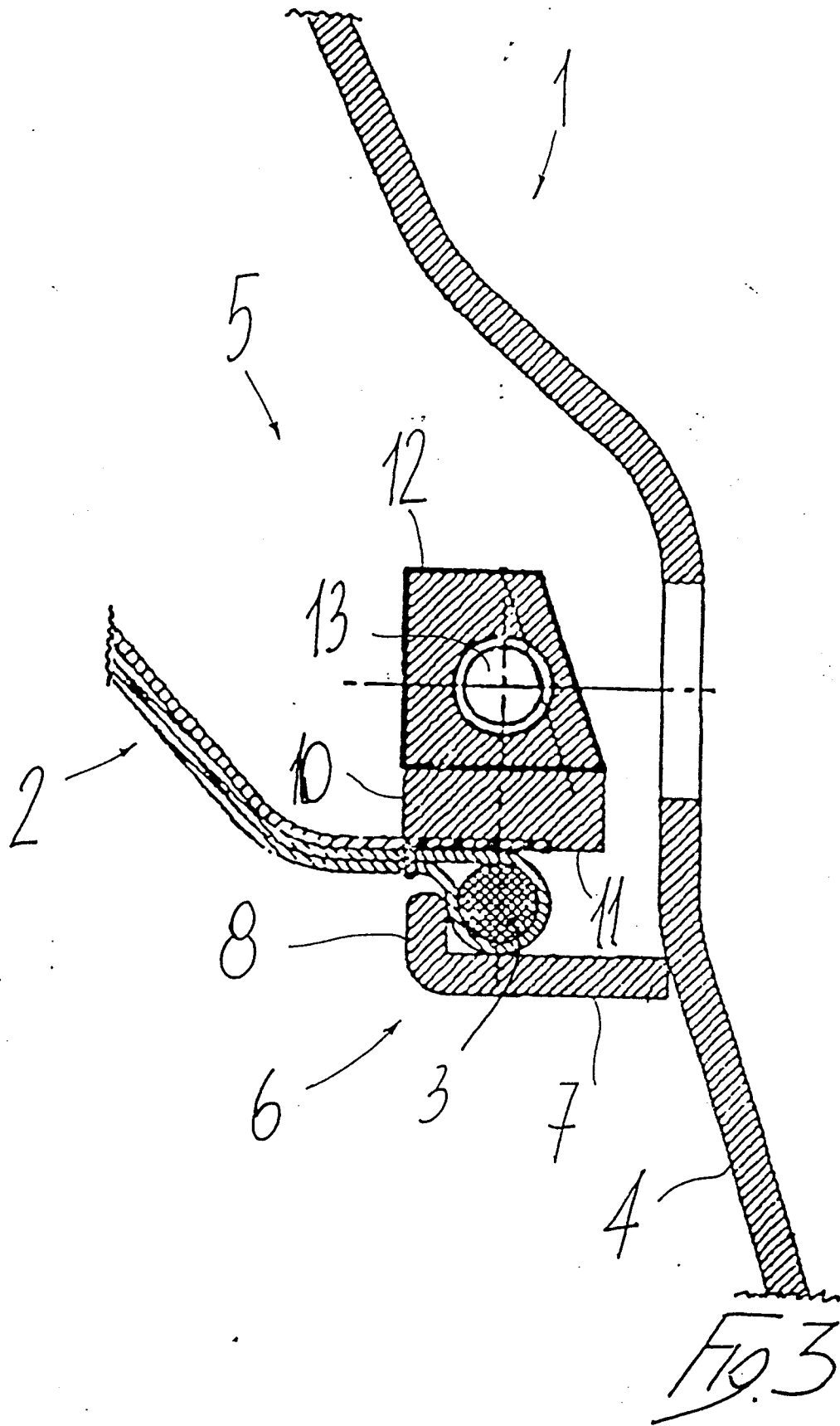
7) A device as per one or more of the previous claims having a first ring plate which has a single wing fixed to and protruding from the end of the drum approximately parallel with the longitudinal axis of the same.

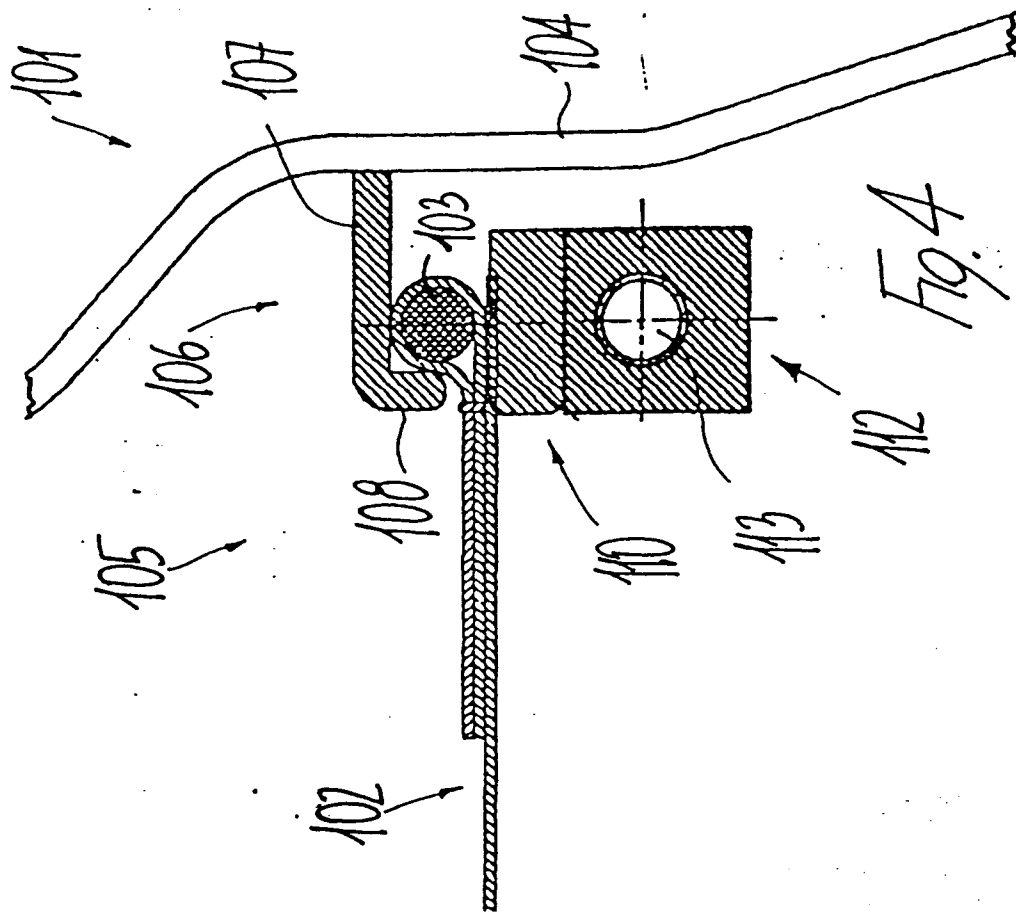
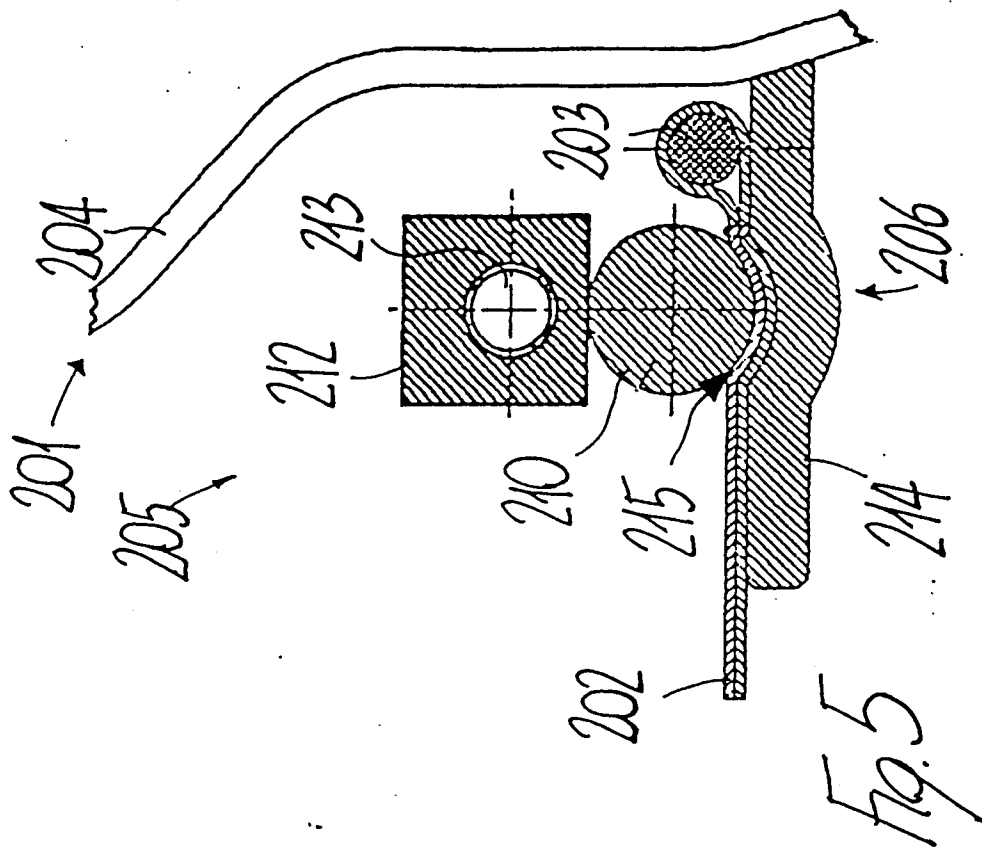
8) A device as per claims 1 and 7 above, having a single wing as above, with an annular groove running around the side furthest from the longitudinal axis of the drum, to hold the end of the membrane when the round section ring is pressed against the drum end.

9) A device as per claims 1 and 8 above, having, at the said groove, a counter-shaped second ring plate which can be tightened by means of a clamp operated by a single screw which can be turned from inside the said drum.

10) A device for fixing a membrane as in any one or more of the previous claims, having any of the characteristics illustrated in the accompanying drawings.









European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0033

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 421 503 (BERZOLLA)	1,10	B30B9/22
Y	* column 3, line 16 - line 31; figures *	2,3	
X	US-A-3 348 578 (MERCIER) * column 1, line 50 - line 68; figures 1,3 *	1,7,10	
X	DE-C-10 01 589 (WILLMES) * figure 1 *	1,10	
X	FR-A-2 202 463 (PRESOIRS MABILLE) * the whole document *	1,10	
Y	CH-A-186 917 (A.G. EISEN & STAHLWERKE) * page 2, left column, line 28 - line 48; figure 2 *	2,3	
A	FR-A-1 066 919 (WILLMES) * figures *	1-10	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B30B
A	FR-A-2 353 389 (BUCHER-GUYER AG) * claims; figure *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 2 June 1995	Examiner Voutsadopoulos, K
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			

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