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(54) Improved device for supporting the spindle foot in spinners and twisting frames.

(57) A device for supporting the spindle foot in spinners and twisting frames, comprising a container (8) terminating at the bottom in a laminar body (13) with at least one drawing (14) the bottom end of which is fixed to the bottom end of the said spindle foot (1) which enters with a clearance (9) into the said container in its turn fixed at the top to the fly frame or spindle holder.

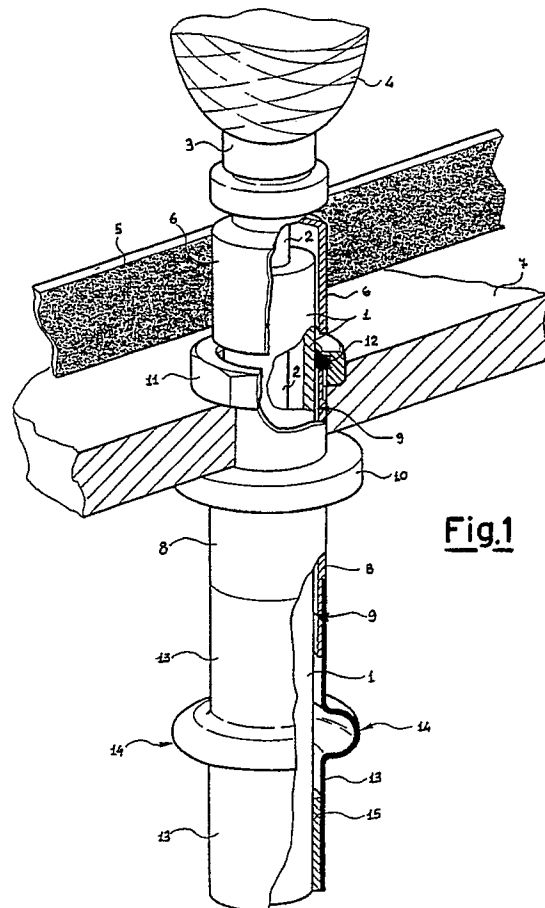


Fig.1

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This invention relates to a new device for supporting the spindle foot in spinners and twisting frames which, since it has a highly constant elastic behaviour and stability over time as well as considerable simplicity of construction, enables effective and economic elastic isolation of the vibrations of the spindle foot from the fly frame or spindle holder with a consequent drastic reduction in noise.

As is known, in spinners and twisting frames the ever faster rotation of the spindles achieved by means of a drive belt which presses against the spindle pulley, inevitably gives rise to considerable dynamic loads which are transmitted to the spindle feet and from these, through the fly frame, to the entire structure of the spinner or twisting frame with a consequent intolerable increase in noise and a considerable worsening of textile characteristics due to the vibrations produced on technologically critical organs such as the drawing cylinders.

In the current state of the art, attempts have been made to avoid such problems by interposing an elastic element, usually an elastomer, between each spindle foot and the said fly frame.

In this way, the said dynamic loads are substantially absorbed by the elastic element and thus are only partially transmitted to the fly frame.

Such a solution, however, involves a series of problems which do not guarantee certain and lasting operation. In fact, the elastomer used is an element which does not give the certainty of a constant performance for all the spindles in that its elasticity depends on various factors such as the mixture batch type, vulcanisation times, etc., and therefore it is highly unlikely that it will be the same for all the elastic elements used. Moreover the elastomer, subjected to the action of a constant and localised radial load as occurs in this field of textile technology where the drive belt always pushes on the same side, in time tends to cause permanent distortion with the result that the spindle foot would in time assume an intolerable inclination to the vertical plane. Lastly, the elastomer has no stability in time in that it is subject to ageing and tends to degenerate, particularly in the presence of oils.

The aim of the present invention is precisely to avoid such problems and provide a device to support the spindle foot which has above all a very simple construction and is therefore economical, and also always has a well-defined constant elastic behaviour as well as high stability in time.

This is essentially achieved by eliminating the use of any rubber pad or elastomeric elastic element and interposing between the fly frame or spindle holder and each spindle foot, to isolate elastically the vibrations of the spindle foot and ensure that only a small proportion of these vibrations is transmitted to the spindle holder, a con-

tainer for the said spindle foot in which the elasticity is achieved by means of one or more drawings in its surface depending on the degree of elasticity required.

More precisely, the spindle foot supporting device, in order to fix elastically the said spindle foot to the fly frame or spindle holder of spinners and twisting frames, is characterised according to the present invention in that it comprises a container into which the said spindle foot fits with a slight clearance, the said container being rigidly secured at the top to the said fly frame or spindle holder and comprising at the bottom a laminar body with at least one drawing inwards or outwards of the said container, the bottom end of which is rigidly secured by drive fitting, welding or gluing to the bottom end of the said spindle foot or directly, if necessary after the appropriate enlargement of the said end of the spindle foot, or by means of an adaptor bush integral with the said spindle foot.

Clearly, in this way considerable constructional simplicity is achieved in that the device, apart from having a linear form, may be made by means of simple plastic distortion of the material without any costly machining operation. Moreover, drawing allows a precisely-controllable easily-repeatable elasticity which, since it enables the distortions to be kept within the elastic field, always guarantees that there will be a return to the initial conditions without any undesired consequences.

According to a preferred embodiment of the present invention, in order to prevent dirt or dust from entering the chamber defined by the said small clearance between the spindle foot and container, on the top of the said container is an elastic seal.

The invention shall now be described in greater detail with reference to the attached drawings which show preferred forms of practical embodiment given purely by way of example but in no way limiting in that technical or constructional variants may always be made without going beyond the scope of the present invention.

In the said drawings:

Fig. 1 is a cutaway view in partial perspective of a spindle foot and its spindle, elastically fixed to the fly frame or spindle holder by means of a supporting device made according to the invention;

Fig. 2 is a front cutaway view of Fig. 1;

Fig. 3 is a partial front cutaway view of the spindle foot support according to a variant of the invention;

Fig. 4 is a front cutaway view of the spindle foot support according to another variant of the invention.

With reference to the Figures, 1 shows a spindle foot within which is supported rotatably, by

means of bearing not shown in the Figure, rod 2 of a spindle 3 which supports cop 4 and is rotated by a belt 5 (see Fig. 1) acting on a pulley 6.

The said spindle foot 1 is then fixed elastically to the fly frame or spindle holder 7 by means of a supporting device comprising a container 8 into which fits the said spindle foot 1 with a small clearance 9, the said container being rigidly secured at the top to the said spindle holder 7 by means of a flange 10 which butts against the bottom surface of the said spindle holder 7 and a tightening nut 11.

The said container 8 also has at the top an elastic seal 12 capable of closing the said clearance 9 and continues down to the bottom as a laminar body 13, with at least one drawing 14, the bottom end of which is rigidly secured to the bottom end of the said spindle foot 1 by means of an adaptor bush 15 integral with the said spindle foot 1.

By contrast, according to a variant of the invention shown in Fig. 3, the bottom end of the said laminar body 13 is rigidly secured directly to the bottom end of the said spindle foot which for this purpose has an appropriate enlarged part 1'.

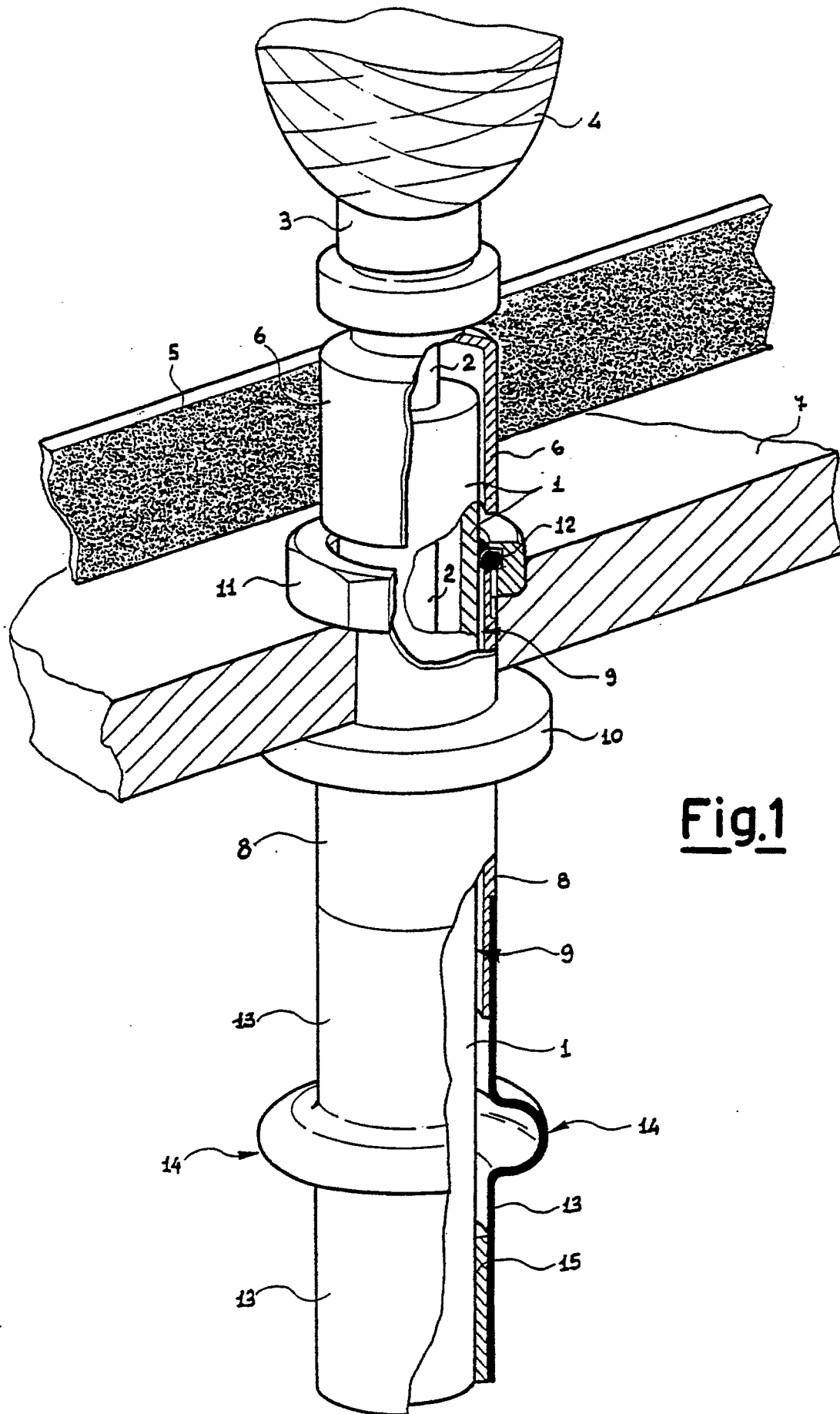
Moreover, the said drawing 14 of the said laminar body 13 may be directed towards the outside of container 8 as shown in Figs. 1-3, but may also be directed towards the inside of the said container 8 which for this purpose must have a thickness 16 of its body as well as adopt a thickness 17 of the said adaptor bush 15 which are sufficient to contain the said drawing 14 as is clearly shown in Fig. 4.

Claims

1. A spindle foot supporting device to fix elastically the said spindle foot to the fly frame or spindle holder of spinners and twisting frames, characterised in that it comprises a container into which the said spindle foot fits with a slight clearance, the said container being rigidly secured at the top to the said fly frame or spindle holder and comprising at the bottom a laminar body, with at least one drawing, the bottom end of which is rigidly secured directly to the bottom end of the said spindle foot.
2. A spindle foot supporting device according to Claim 1, characterised in that the said bottom end of the said laminar body with at least one drawing is rigidly secured to the bottom end of the said spindle foot by means of an adaptor bush integral with the said spindle foot.
3. A spindle foot supporting device according to Claim 1, characterised in that the said bottom

end of the said laminar body with at least one drawing is rigidly secured directly to the bottom end of the said spindle foot which for this purpose has an appropriate enlarged part.

4. A spindle foot supporting device according to any one of the previous Claims, characterised in that the said drawing of the said laminar body is directed towards the outside of the said container.
5. A spindle foot supporting device according to Claim 1 or 2, characterised in that the said drawing of the said laminar body is directed towards the inside of the said container.
6. A spindle foot supporting device according to any one of the previous Claims, characterised in that an elastic seal is provided at the top of the container to close the above-mentioned small clearance between the spindle foot and said container.



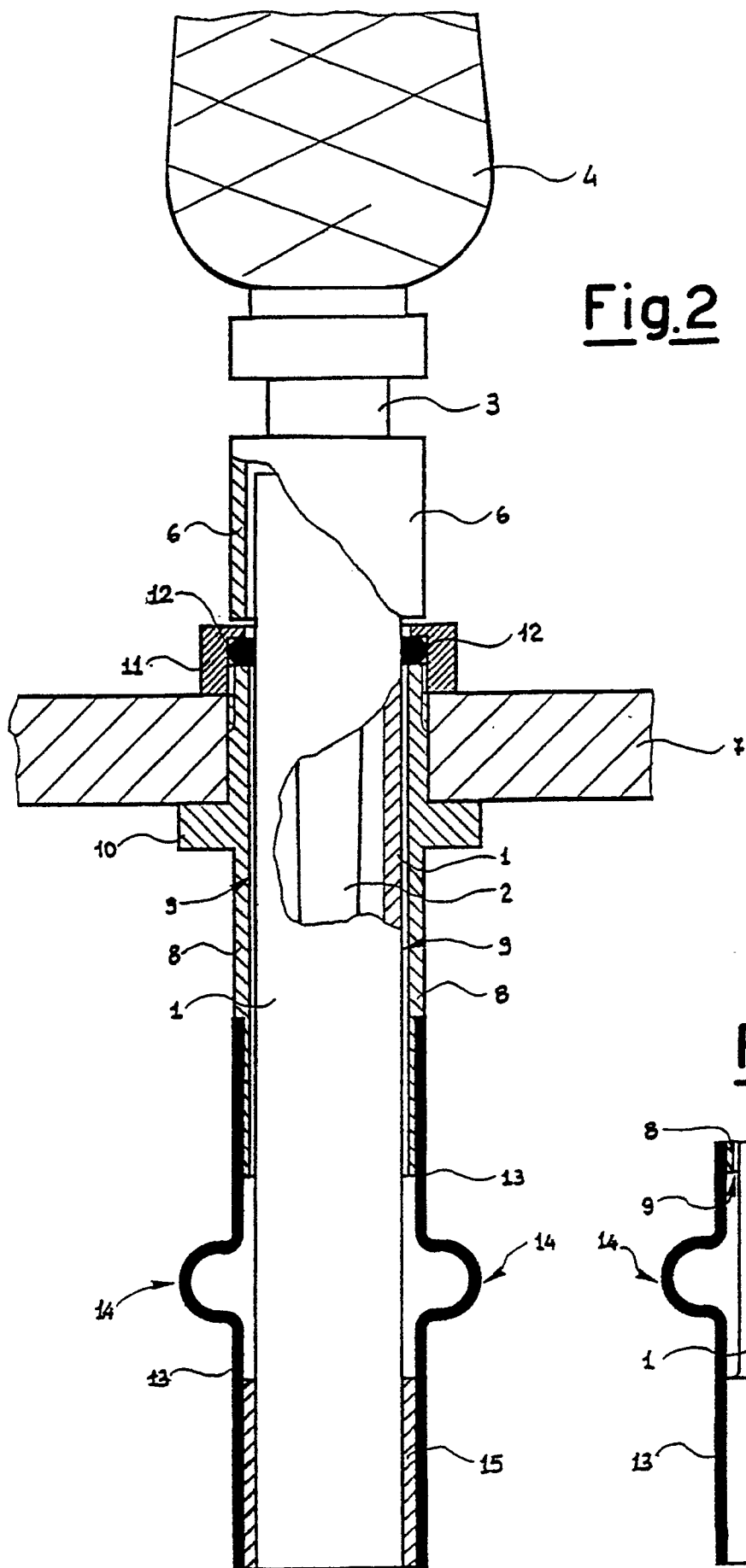
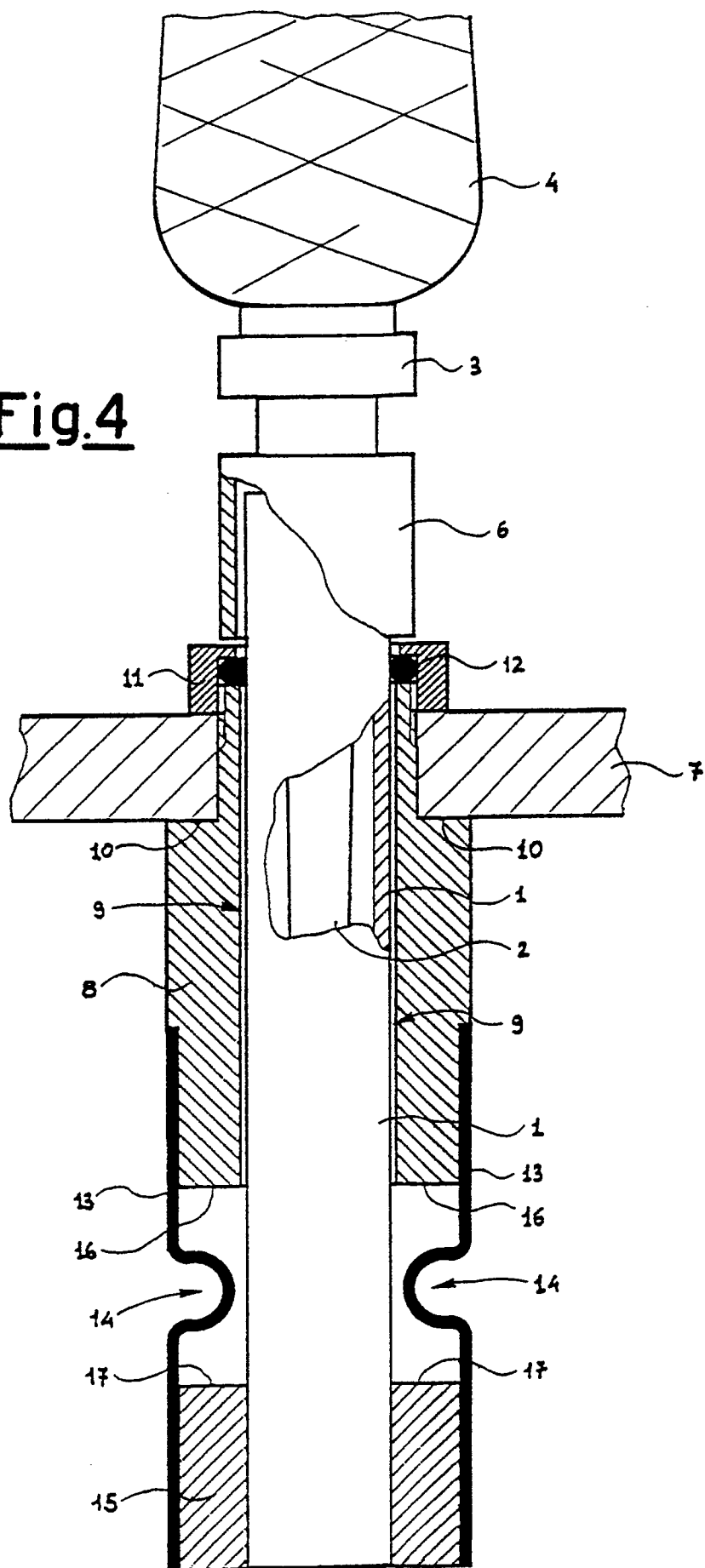


Fig.4





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EUROPEAN SEARCH REPORT

Application Number

EP 91 20 0838

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.5)
A	FR-A-1 293 897 (MASCHINENFABRIK RIETER A.G.) * the whole document * - - -	1	D 01 H 7/10 D 01 H 7/04
A	FR-A-1 204 630 (H. STAUFERT) * page 3, column 2, line 36 - page 4, column 1, line 5 * page 4, column 2, line 12 - line 19; figures 1-9 * - - -	1,4,5	
A	FR-A-1 453 865 (ETABLISSEMENTS PAIN-BOURGEOIS) * page 2, line 47 - line 53; figure 2 * - - - - -	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			D 01 H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 08 July 91	Examiner FAIRBANKS S.A.
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			