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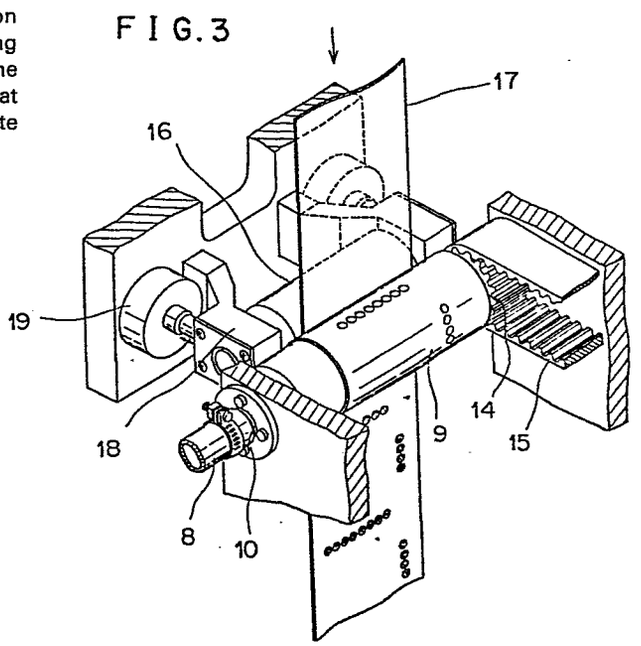
(54) Paste application method and apparatus for the same.

(57) A paste application apparatus comprises a paste application roller (9) having a plurality of paste discharge outlets on the outer periphery thereof, said discharge outlets being communicated with a paste supply passage (9a) within the roller (9) and a plurality of valve means, each provided at said discharge outlet for closing and opening the paste discharge outlet.

FIG.3



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PASTE APPLICATION METHOD AND APPARATUS FOR THE SAME.

BACKGROUND OF THE INVENTION

The present invention relates to a paste application method and apparatus for applying or coating adhesive paste upon packaging paper for products.

Conventional paste application or coating apparatus is shown in Fig. 1 in which a paste take-up roller 2 is rotatably provided within an open top paste reservoir 1 to dip a part thereof into the paste. A paste application roller 3 which is formed with a plurality of paste applying projections 3a on the outer peryphery thereof is rotated while it is in pressure-contact with the paste take-up roller 2 so that the paste take-up projections 3a takes up the paste for applying the paste upon the adhere ends on the surface of the packaging paper which passes between the paste application roller 2 and a back-up roller 4.

However if paste such as vinyl acetate which will solidify on exposure to atomosphere is used, the paste may solidify at the surface thereof while the apparatus is stopped during a lunch break or at night since the paste in the reservoir is directly exposed to the atomosphere. Accordingly an operation for preventing the paste solidification is required before paste application apparatus is stopped to operate for a short period of time whereas the washing operation for the paste reservoir etc. is needed to be carried out after stop of the apparatus for a long period of time. Furthermore residual paste should be discarded, resulting in waste of paste and cause of water pollution.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a novel adhesive paste application apparatus free of the disadvantages of the prior art.

It is another object of the present invention to provide an adhesive paste application apparatus in which a paste will not solidify during stop of the operation of the application apparatus.

It is a further object of the present invention to provide a paste application apparatus which is easy in maintenance and operation.

In an aspect of the present invention there is provided a paste application apparatus comprising a paste application roller having a plurality of paste discharge outlets on the outer periphery thereof, said discharge outlet being communicated with a paste supply passage within the roller and a plurality of valve means, each provided at said discharge outlet for closing and opening the paste discharge outlet.

In another aspect of the present invention there is provided a method of applying paste comprising pumping paste into the inside of a paste application roller having a plurality of paste discharge outlets on the outer periphery thereof and opening the paste discharge outlets when the paste discharge outlets of the paste application roller and a back-up which the paste discharge outlets confront to sandwitch paper to be applied with paste therebetween.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing a conventional paste application apparatus;

Fig. 2 is an elevational view showing a paste application apparatus of the present invention;

Fig. 3 is a perspective view showing an essential part of the apparatus of Fig. 2;

Fig. 4 is a sectional view showing a paste application roller;

Fig. 5 is an enlarged sectional view showing a paste discharge port; and

Fig. 6 is an enlarged sectional view showing another example of the paste discharge port.

DESCRIPTION OF PREFERRED EMBODIMENTS

A preferred embodiment of the present invention will be described with reference to the drawings.

Referring now to Fig. 2, there is shown an entire paste application apparatus. Paste liquid in a paste reservoir 6 is pumped into the inside of the paste application roller 9 via a pipe or hose 8 under pressure by means of a pneumatic cylinder 7.

As shown in Fig. 4, a fixed tube 10 with which the hose

8 is connected is rotatably coupled to the paste application roller 9 via a bearing 11 and is sealed by means of O rings 12 for preventing the paste from being leaked therefrom.

Paste liquid is supplied to a passage 9a which axially extends within the paste application roller 9 via the hose 8.

A plurality of branch passages 9b radially extend from the central axial passage 9a to the outer peripheral surface of the paste application roller 9. A ball nipple 13 is inserted into and secured to an opening of each branch passage 9b at the outer surface of the roller 9 as shown in Figs. 5 and 6 to provide a paste liquid discharge outlet. The ball nipple 13 comprises a housing 13a inserted into the branch passage 9b and having an outlet opening radially outwardly to form a projecting valve seat 13b, a ball valve member 13c within the housing 13a and a spring 13d which baises the ball valve member against the projecting valve seat 13b so that the ball nipple 13 is normally closed. The ball nipple is arranged so that a part of the ball valve member extends beyond the valve seat 13b and further the outer surface of the roller in an outwardly radial direction. The paste application roller 9 is driven via a gear 14 on one side of the roller by means of a gear belt 15.

A back-up roller 16 is rotated in pressure-contact with the paste application roller 9 so that the rollers 9 and 16 sandwitch and feed paper to be applied with paste, such as package paper. The back-up roller 16 is rotatably supported by the housing 18. The back-up roller 16 is pressed upon the paste application roller 9 by means of pneumatic cylinder 19 when the paste is to be applied and

is separated from the roller 9 by the same pneumatic cylinder 19 when the paste is not to be applied.

In the afore-mentioned arrangement, paste is pumped to the inside of the paste application roller 9 on use of the apparatus. When the paste application roller 9 and the back-up roller 16 sandwitch and feed the paper to be applied with paste while they are in pressure contact, the partially projecting ball valve member 13c is pressed by the back-up roller 16 and in turn the paper 17 so that the ball valve member 13c is moved in an inner radial direction. This causes the ball nipple to open so that paste is discharged and is applied upon the paper.

Fig. 6 shows another embodiment of the paste discharge port. A valve member 13c' includes a semi-spherical part $13c_2'$ at the top of a truncated cone $13c_1'$.

When the paste application roller 9 is stopped, the back-up roller 16 is separated from the roller 9 by means of the pneumatic cylinder 19 and simultaneous pumping of the paste is stopped so that the paste will not be discharged even when the roller 9 is stopped at a place where the valve is opened to discharge the paste.

Since the paste application apparatus of the present invention is constructed as described above, paste is normally contained in a hermetically sealed enclosure. Therefore necessary amount of paste may be applied upon the packaging paper when necessary. The need for the operation of preventing paste from solidifying or curing

and the paste replenishing operation before starting the paste application apparatus are eliminated. In this way, various excellent advantages may be obtained.

What is claimed is:

1. An paste application apparatus comprising

(a) a paste application roller having a plurality of a paste discharge outlets on an outer periphery thereof, said discharge outlets being communicated with a paste supply passage within the roller; and

(b) a plurality of valve means, each provided at said discharge outlet for closing and opening the paste discharge outlet.

2. The paste application apparatus as defined in claim 1, in which said valve means comprises a valve member which is normally biased upon a valve seat by a spring to close the paste discharge outlet.

3. The paste application apparatus as defined in claim 2, in which a part of the valve member projects beyond the outer periphery surface of the paste application roller.

4. The paste application apparatus as defined in claim 3, in which the valve member is separated from the valve seat against the spring force to open the discharge outlet when the valve member is in contact with paper.

5. The paste application apparatus as defined in claim 2, in which said valve member is spherical in shape.

6. The paste application apparatus as defined in claim 2, in which said valve member includes a semi-spherical part at the top of a truncated core.

7. A method of applying paste comprising pumping paste into an inside of a paste application roller having a plurality of paste discharge outlets on the outer periphery thereof and opening the paste discharge outlets when the paste discharge outlets of the paste application roller and a back-up roller which the paste discharge outlets confront to sandwitch paper to be applied with paste therebetween.

8. The method as defined in claim 7, further including rotating the paste application roller.

9. The method as defined in claim 8 and further including rotating the back-up roller in synchronization with the paste application roller.

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FIG.1

Prior Art

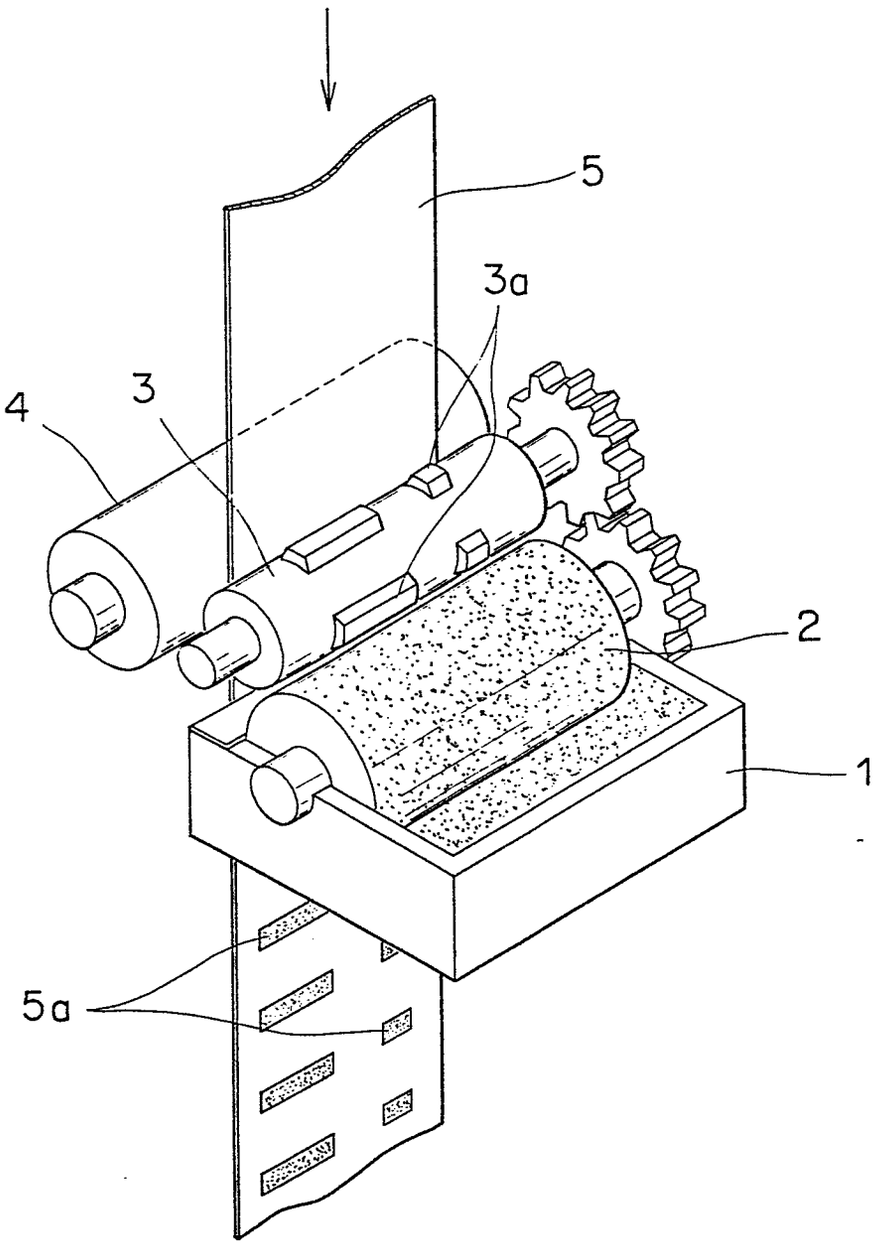


FIG.2

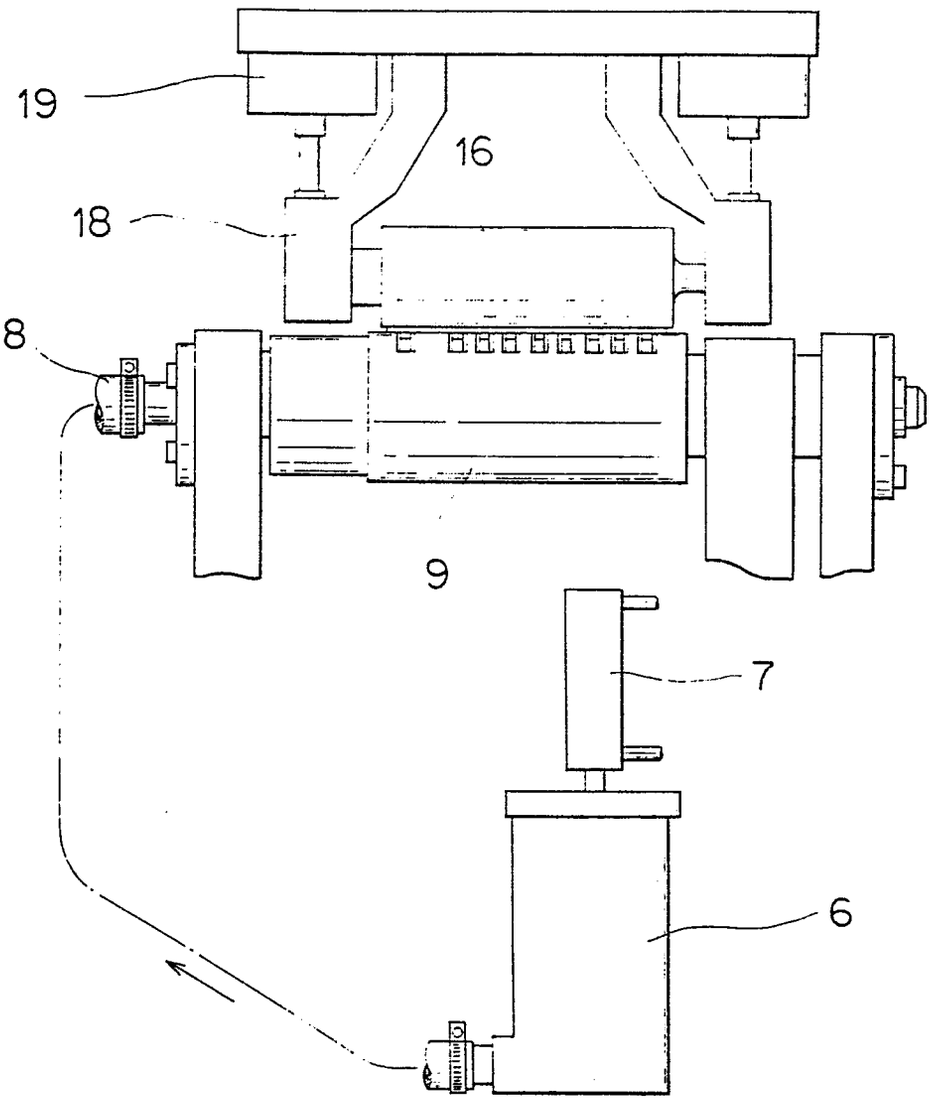


FIG.3

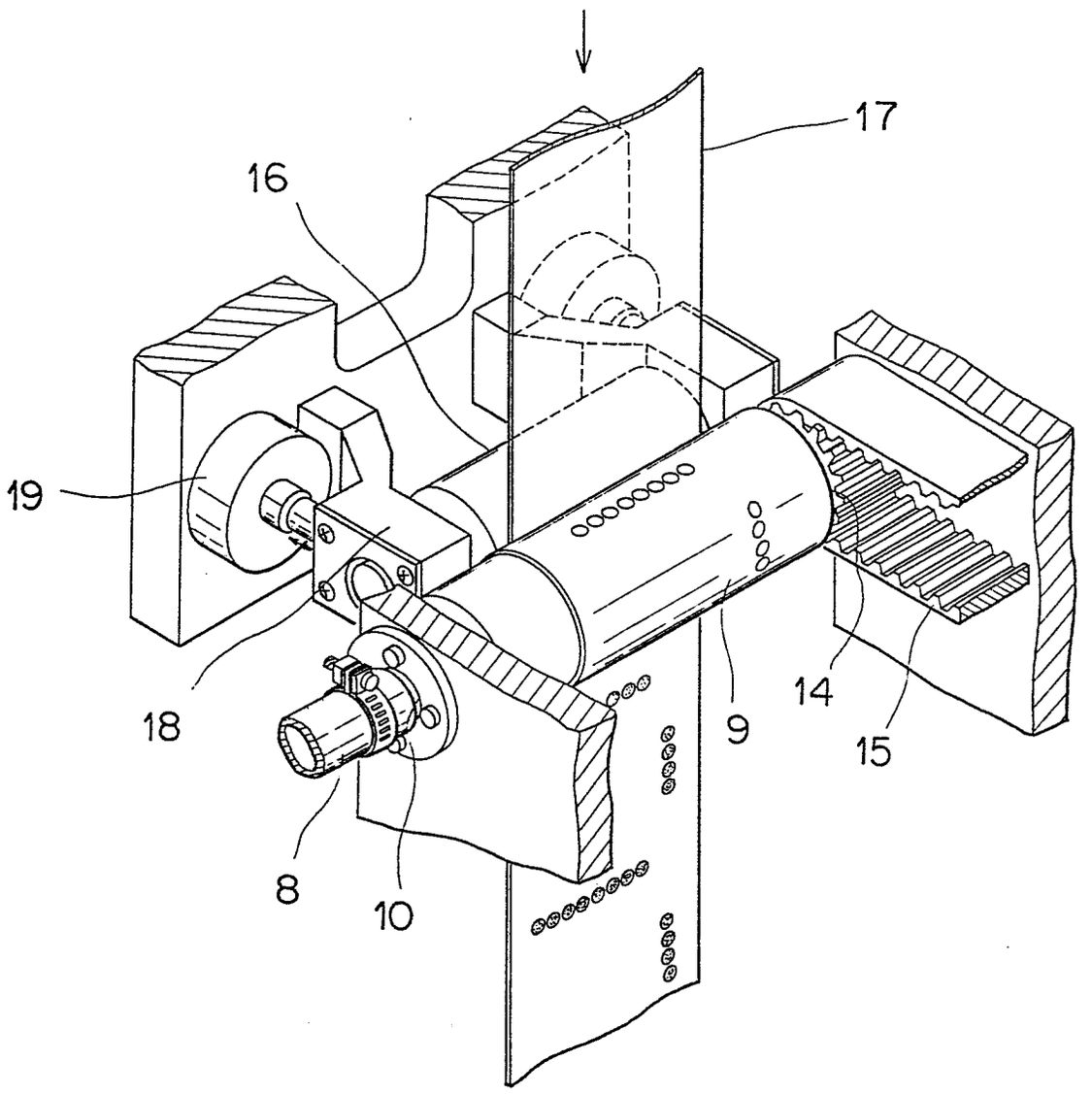


FIG.4

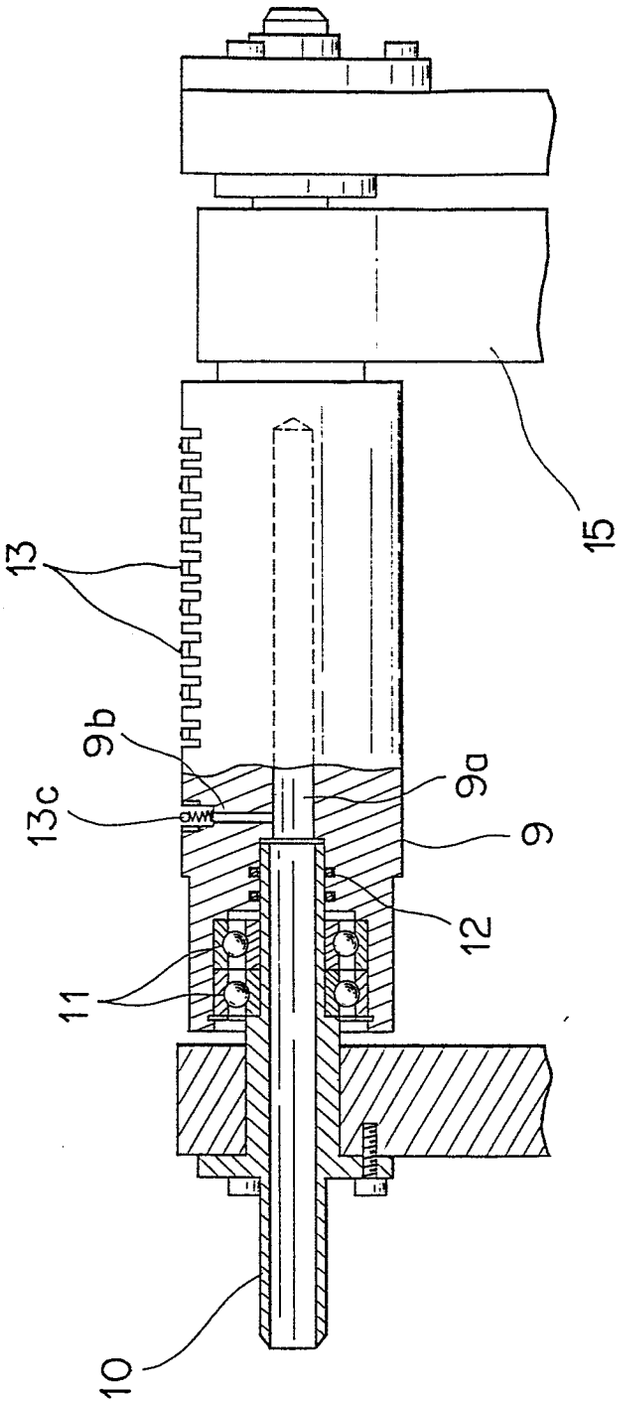


FIG.5

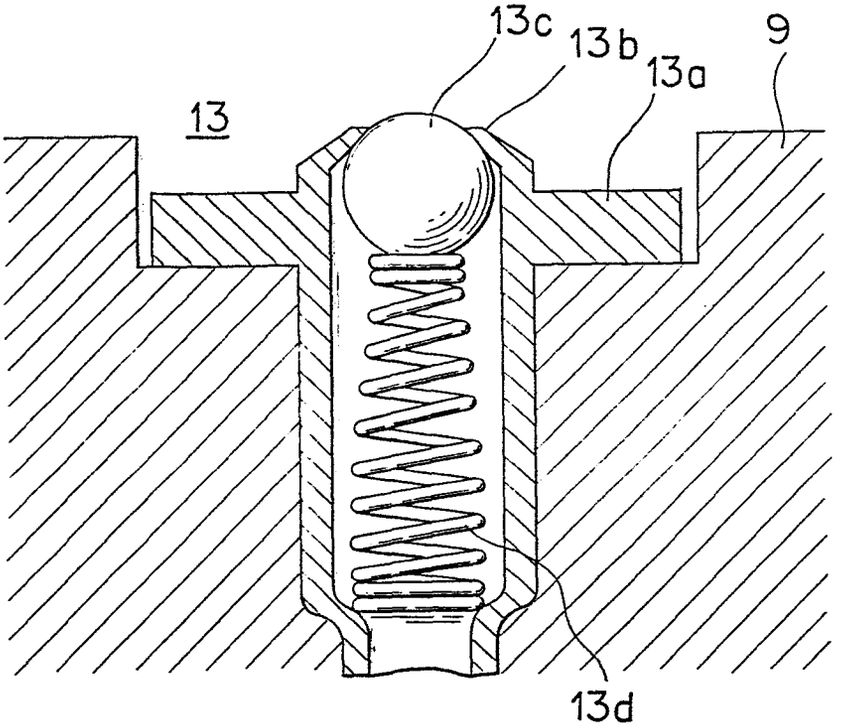
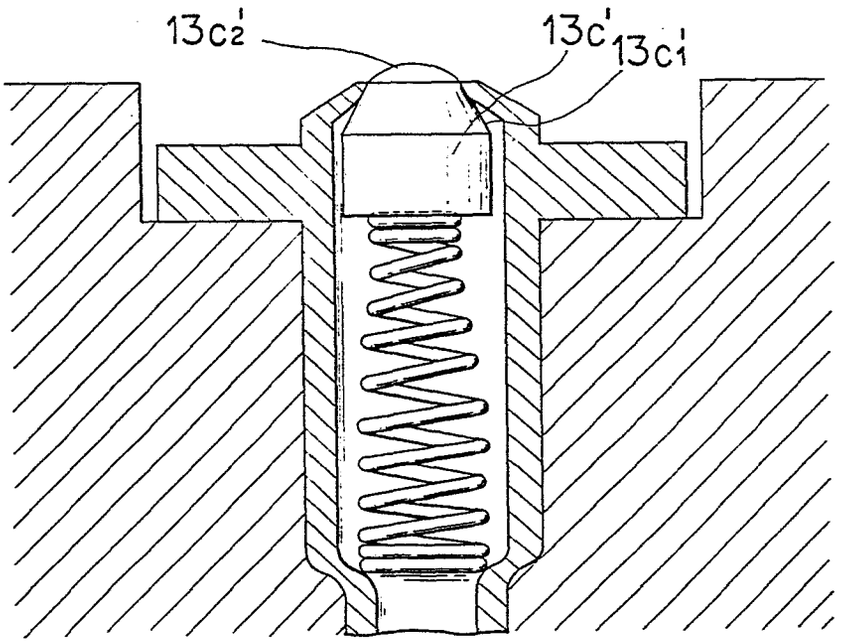


FIG.6



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Application number

European Patent Office

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 85400183.1

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
A	DE - A - 1 561 523 (WINDMÖLLER) * Claims * --	1	B 05 C 1/10 B 05 D 1/26 B 41 F 31/22 B 41 F 31/26
A	DE - A - 1 817 702 (WEYERHAEUSER) * Claims * --	1,2	
A	DE - A - 2 001 034 (SCHWARZWÄLDER ETUISFABRIK) * Claims; fig. 1 * --	1-5	
A	US - A - 4 409 896 (HAMISCH) * Totality * --	1,7,8	
A	CH - A - 557 748 (GUHL & SCHEIBLER) * Totality * ----	1,7	

TECHNICAL FIELDS SEARCHED (Int. Cl 4)

B 05 C
B 05 D
B 41 F
B 41 J
B 41 L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	25-04-1985	SCHÜTZ

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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