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(54) Apparatus for feeding fuzzy thread for chenille machines

(57) Apparatus for feeding fuzzy thread for chenille machines, comprising a motor (M) with longitudinally hollow shaft (1), wherein the cavity of said shaft (1) is intended for guiding the fuzzy thread during the feeding thereof; a gauge (3) upon which the fuzzy thread is wound by forming turns to be cut in lengths of preset extension; and a rotary feeder (6) driven by said shaft (1) and from which the fuzzy thread comes out to be wound over said gauge (3), characterized in that the said gauge (3) is fixedly attached to the skirt (11) of said motor (M).

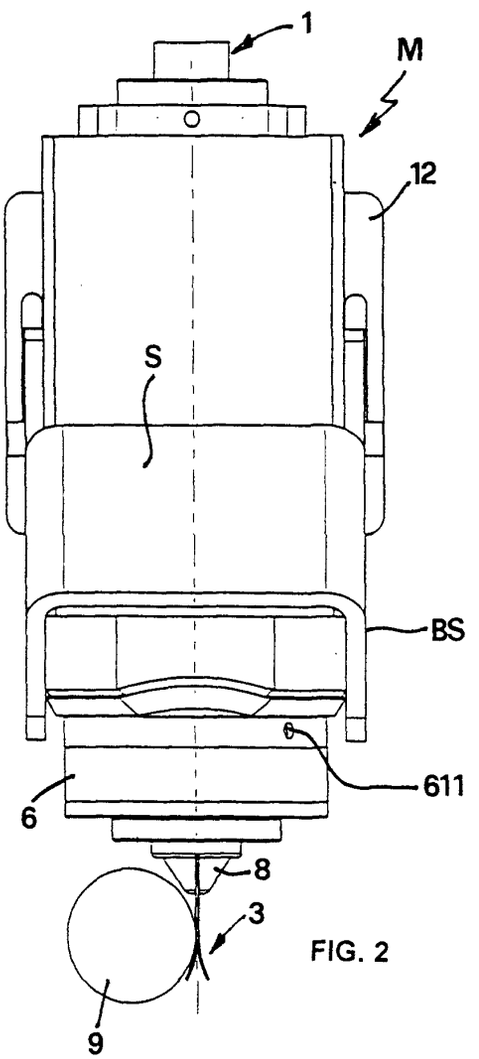

FIG. 2

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Description

[0001] The present invention relates to an apparatus for feeding fuzzy thread for chenille machines.

[0002] Machines are known for the production of chenille which generally comprise more chenille-forming lines or "axes" each of which comprises a unit for feeding interweaving threads, a unit for feeding and cutting the fuzzy thread, and a unit for twisting and collecting the yarn.

[0003] Patents Nos. EP 502.282, 396881 and EP 674.030 describe machines for producing chenille which include the devices mentioned above.

[0004] In practice, the chenille is produced by twisting two so-called "interweaving" threads, with a third, so-called "fuzzy" thread interposed therebetween. The fuzzy thread is spiral-like wound onto a gauge which has a notch for receiving a blade performing the cutting of the turns into lengths of preset extension. The interweaving threads are fed laterally with respect to the gauge so as to engage and retain the lengths of thread after said twisting operated by means of spindles on which the thus produced yarn is collected.

The gauge is associated with a corresponding support able to be fixed to the machine's structure at a preset point thereof.

[0005] A drawback related to this known system lies in the fact that the positioning of the gauge, that is, the disposition of the latter, changes in the course of the production, because of the vibrations which inevitably this type of machine is subjected to, the possible constructive faults of the gauge's support and of the thermal gradient as well provided by the work environment of the machine.

The gauge's displacements with respect to the ideal operating position, which should be all the time in a most accurate positional relationship with the fuzzy thread's feeder, may bring about serious inaccuracies in the dimensioning and cutting of the relevant turns and, accordingly, a progressive impairment in the quality of the finished product.

[0006] The main object of the present invention is to overcome the said drawbacks.

This result has been achieved, according to the invention, by providing an apparatus having the characteristics indicated in claim 1. Further characteristics being set forth in the dependent claims.

[0007] The present invention makes it possible to keep the gauge in a precise and steady positional relationship with respect to the fuzzy thread's feeding means, so that the quality of the finished product results constant throughout the manufacturing cycle. Moreover, an apparatus according to the invention is relatively easy to make, cost-effective, and reliable even after a prolonged service life.

[0008] These and other advantages and characteristics of the invention will be best understood by anyone skilled in the art from a reading of the following description in conjunction with the attached drawings given as a practical exemplification of the invention, but not to be considered in a limitative sense, wherein:

- Fig. 1 is a view in longitudinal section of an apparatus according to the invention;
- Figs. 2 and 3 are, respectively, a front view and a side view of the apparatus of Fig. 1;
- Figs. 4A, 4B and 4C are, respectively, a bottom view, a view in section taken along H-H and a perspective view of the gauge's support;
- Fig. 5 is a perspective view of a safety shield;
- Fig. 6 is a perspective view in reduced scale of the central shaft of the apparatus in Fig. 1;
- Figs. 7A-7D are, respectively, a bottom view, a view in section taken along the line A-A, a view in section along B-B and a perspective view of the fuzzy thread's rotary feeder;
- Figs. 8A-8C are, respectively, a bottom view, a view in section along C-C and a perspective view of the anchorage to the motor body;
- Figs. 9A, 9B, 9C and 9D are respectively, a bottom view, a view in section along E-E and a perspective view of the cage for the upper magnets;
- Figs. 10A and 10B are respectively, a plan view and a view in section along K-K of the support for the lower magnets;
- Figs. 11A and 11B are, respectively a plan view and front view of the flange below the lower magnets' support.

[0009] For the sake of representation, the drawings are not all in the same scale.

[0010] Reduced to its basic structure, and reference being made to the figures and the attached drawings, an apparatus according to the invention comprises an electric motor (M) with the longitudinally hollow shaft (1). The longitudinal cavity of the shaft (1) is intended for guiding the fuzzy thread which enter from the top (arrow "F" in Fig. 1) and comes out laterally through a hole (100) formed across the same shaft (1) at a preset distance from the inlet hole (10). The guide for the fuzzy thread may also consist of a pipe (2) located within the longitudinal cavity of the shaft (1) and provided with openings in correspondence of said holes (10) and (100). The skirt (11) of the motor (M) can be made solid to the frame (not shown) of a machine for chenille by means of a fixing plate attached at the back of the same skirt (11). Numerals (13) and (14) indicate the inner components of the motor (M) which is known per se. The shaft (1) is borne by an upper bearing (15) and a lower bearing (16). The upper bearing (15) is received in a corresponding seat formed in a flange (17) fixed to the upper base of the skirt (11). The lower bearing (16) is received in a seat (42) exhibited by the element (4) described later on.

[0011] According to the invention, the present apparatus has a gauge (3) solid to the lower base of said skirt (11), that is, solid to the base of the skirt (11) opposite

to the section for the admission of the fuzzy thread.

[0012] According to the embodiment shown in the figures of the attached drawings, this is achieved with the use of an anchoring element (4) attachable to the lower base of the said skirt (11) by screw means, and which has a central hole (40) for the shaft (1) to pass therein, the latter having such a length as to go beyond the element (4). The said element (4) is also provided with a plurality of holes (41) allowing it to be fixed to the skirt (11) of the motor (M) by means of corresponding screws. Solid to said element (4) are a number of magnets (50). For example, the said magnets (50) can be housed within suitable seats (51) formed in a cup-like cage (5) fixed to said element (4). More particularly, according to the example embodiment shown in the figures of the attached drawings, the said cage (5) has a plurality of holes (52) for its attachment to the base of the element (4), which base, in use, results oriented downwards. The said cage (5) also exhibits a central opening (53) for the passage of the shaft (1). The present apparatus comprises, in addition, a rotary feeder for feeding the fuzzy thread (6), said feeder being in the shape of a cup and provided with a central hub (60) to be keyed onto the lower part of the shaft (1) and with a straight channel (61) whose inlet section (610) is in correspondence of the opening (100) of shaft (1) for the exit of the fuzzy thread. The said channel (61) is formed in the base (62) of the feeder (6) which, when in use, results facing upwards. The outlet section (611) of channel (61) results therefore eccentric with respect to the longitudinal axis of shaft (1). In practice, said channel (61) makes up an eccentric extension of the fuzzy thread's guide inside the shaft (1). Housed in the space (63) internally delimited by the side surface of the cup (6) is a second set of magnets (70) having polarity opposite to that of the magnets (50) previously mentioned. The magnets (70) of the second set are received within suitable seats (700) of a support (72) located inside said space (63) in a way that no contact will exist between the surface of element (6), which delimits the space (63), and the same support (72). The latter being engaged with an underlying flange (7). Both the support (72) of magnets (70) and the flange (7) exhibit a central opening (720; 74) for the passage of shaft (1). The flange (7) is engaged with the shaft (1) by means of bearings (73), so that the rotation of the shaft (1) does not imply the corresponding rotation of the flange (7) and of the above-standing support (72) of lower magnets (70).

The gauge (3) is fixed to the lower base of the flange (7) which is associated with the support (72) of lower magnets (70). This can be achieved by using the element (8) shown in Figs. 4A-4C of the attached drawings. The said element is provided with a base of annular shape, with a step element (81) able to be inserted into the space (71) internally delimited by said flange (7), and with a pair of diametrically opposite holes (82) to allow the fixing of same base to the flange (7) by means of two screws. In addition, the element (8) has a slit (83) on the side opposite to the step (81). Going through this slit is the shank (30) of the gauge (3) to be steadly attached by a screw going through a hole (84) extending orthogonally to the slit (83). The latter being in line with the axis of shaft (1).

[0013] In this way, the gauge (3) results solid to the skirt of motor (M), that is, fixed at a predetermined position with respect to the fuzzy thread-feeding system. In fact, the element (8) supporting the gauge (3) is fixed to the flange (7), which is magnetically attached to the cage (5) because of the magnetic coupling of magnets (50) and (70), and the cage (5) is solid to the skirt (11) of motor (M) via the anchorage (4). The feeder is free to rotate, driven by the shaft (1) between the bodies (5) and (7).

The fuzzy thread comes out laterally of the feeder (6) and winds up over the gauge (3), thereby forming the turns to be cut in lengths. The cut of turns is operated by a blade (not shown in the drawings) located at the bottom of the gauge, in correspondence of the notch (31) formed by the two sides (32) of the same gauge. The lengths of fuzzy thread are successively engaged with known procedures by the interweaving threads fed by draw rollers and twisted by spindles normally provided in the machines for chenille. For sake of graphic representation, only one of said draw rollers (9) is shown in Fig. 2. The body (5) visible in Figs. 1, 2, 3 and 5 is a safety shield (S) hooked up to the skirt (11) of motor (M) by means of screws to which it is possible to anchor the arms (BS) of same shield (S) so that the latter will result on a side opposite to that of plate (12).

Claims

1. Apparatus for feeding fuzzy thread for chenille machines, comprising a motor (M) with longitudinally hollow shaft (1), wherein the cavity of said shaft (1) is intended for guiding the fuzzy thread during the feeding thereof; a gauge (3) upon which the fuzzy thread is wound by forming turns to be cut in lengths of preset extension; and a rotary feeder (6) driven by said shaft (1) and from which the fuzzy thread comes out to be wound over said gauge (3), **characterized in that** the said gauge (3) is fixedly attached to the skirt (11) of said motor (M).

2. Apparatus according to claim 1, **characterized in that** the said gauge (3) is in line with the axis of said shaft (1).

3. Apparatus according to claim 1, **characterized in that** the said gauge (3) is magnetically attached to said skirt (11).

4. Apparatus according to claims 1 and4, **characterized in that** it comprises two fixed bodies (5, 7) magnetically attached to each other and having the

said feeder (6) interposed and rotating therebetween: the said gauge (3) being solid to one of said bodies (5, 7).

5. Apparatus according to claim 4, **characterized in that** the said bodies (5, 7) support magnets (50, 70) of reverse polarity.

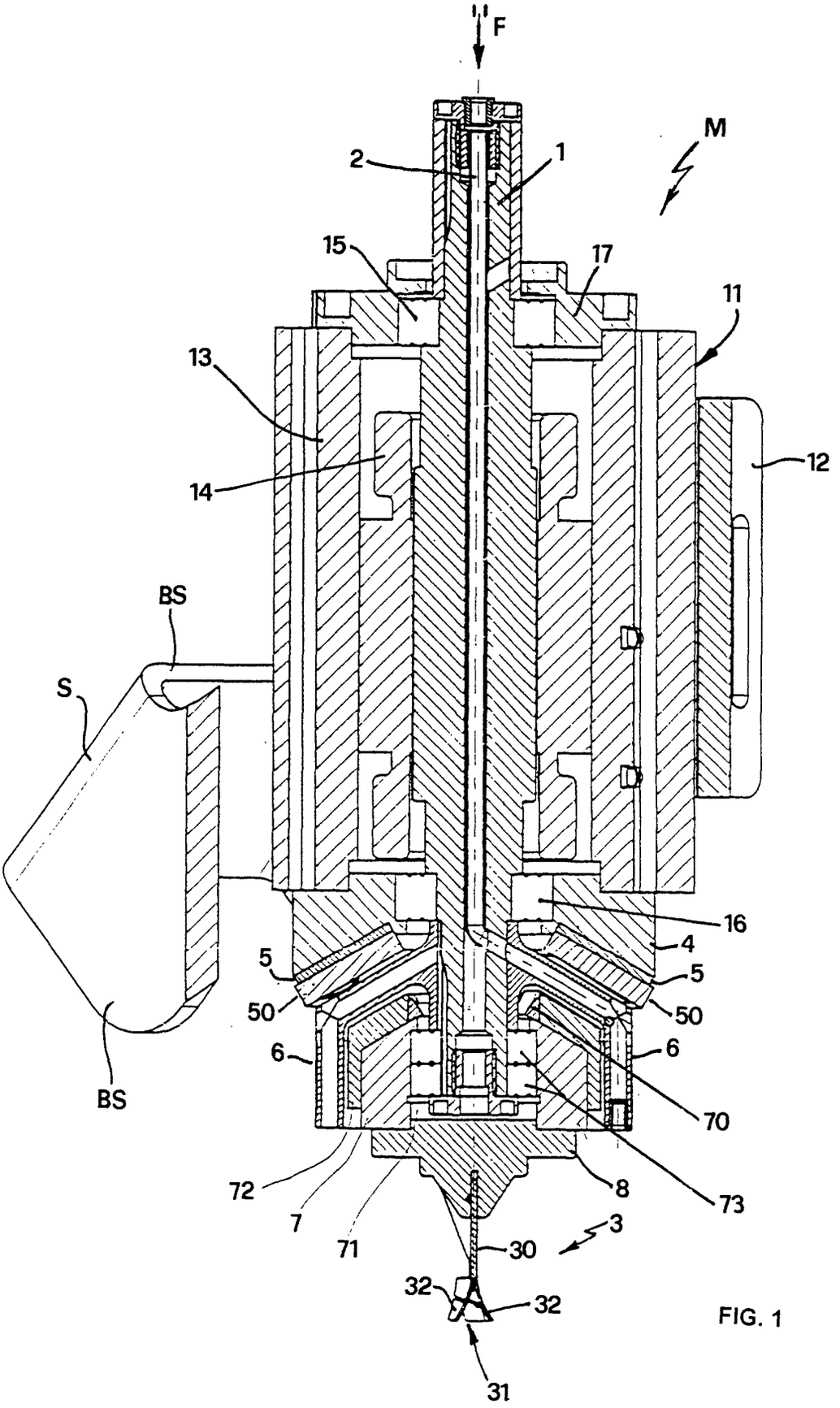
F
M
2
1
15
17
11
13
12
14
BS
S
16
4
5
5
50
50
6
6
70
72
8
73
7
71
30
3
32
32
31
BS

FIG. 1

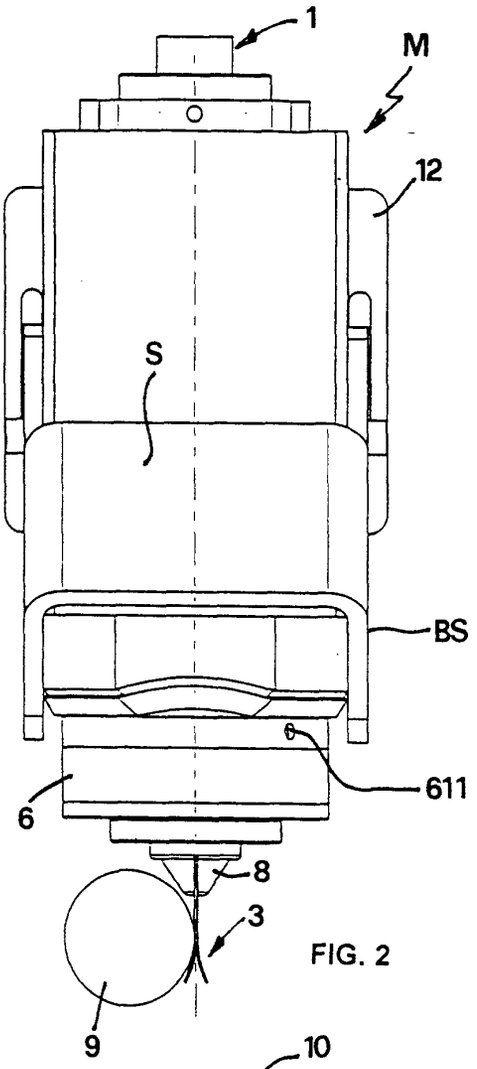

FIG. 2

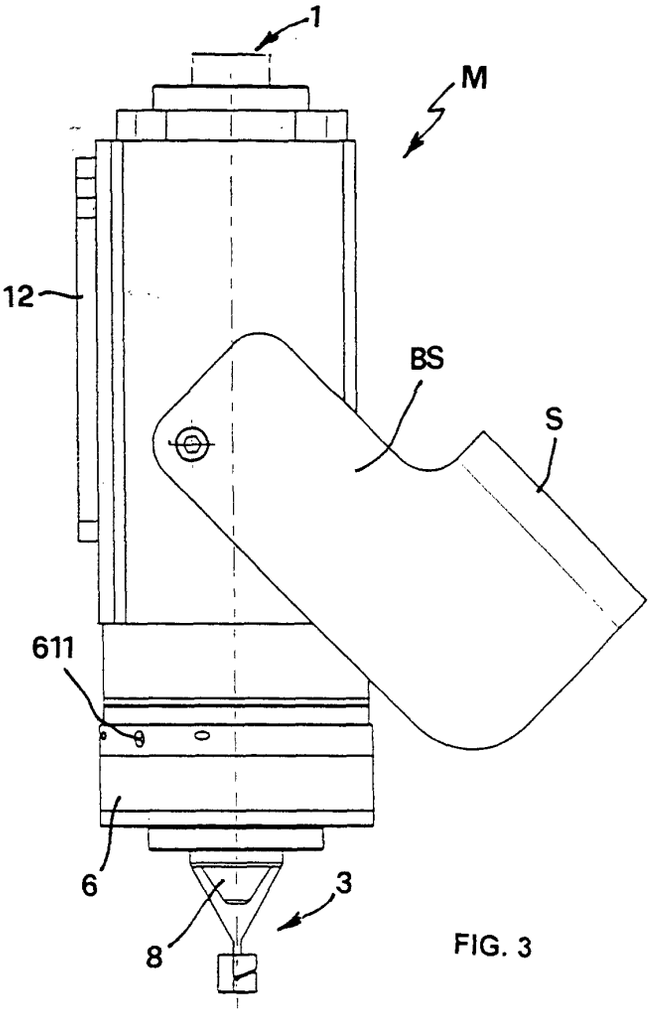

FIG. 3

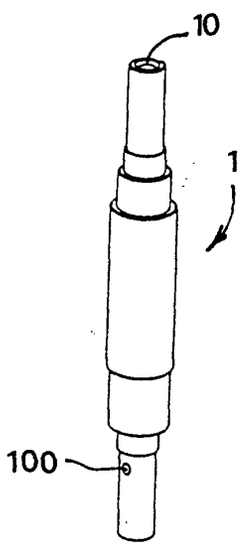

FIG. 6

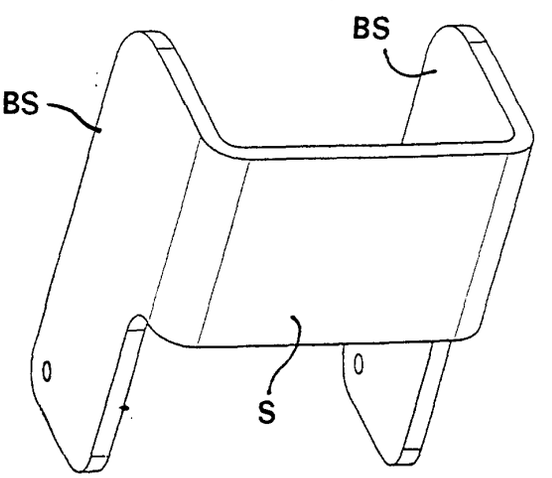

FIG. 5

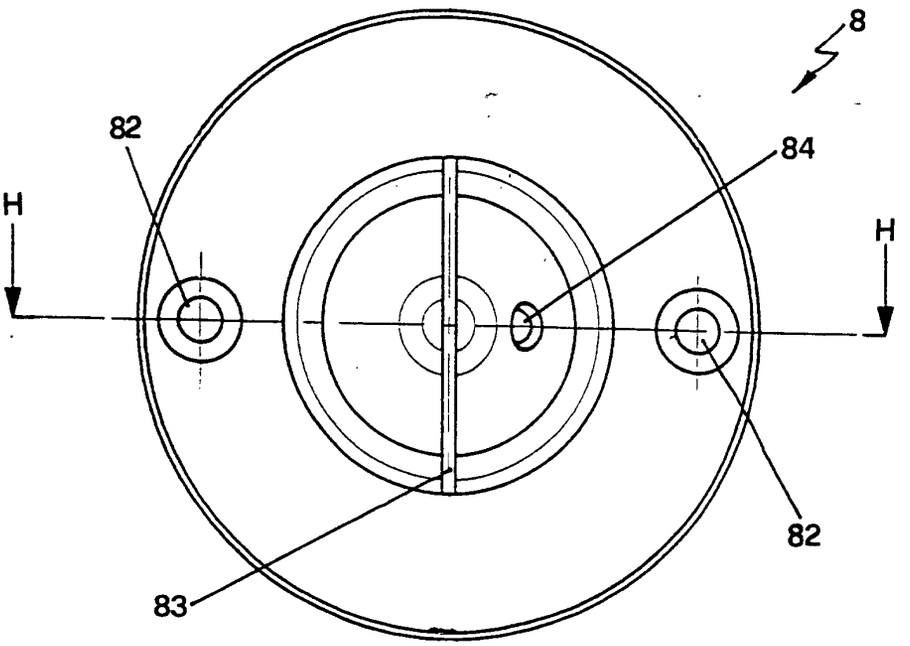

FIG. 4A

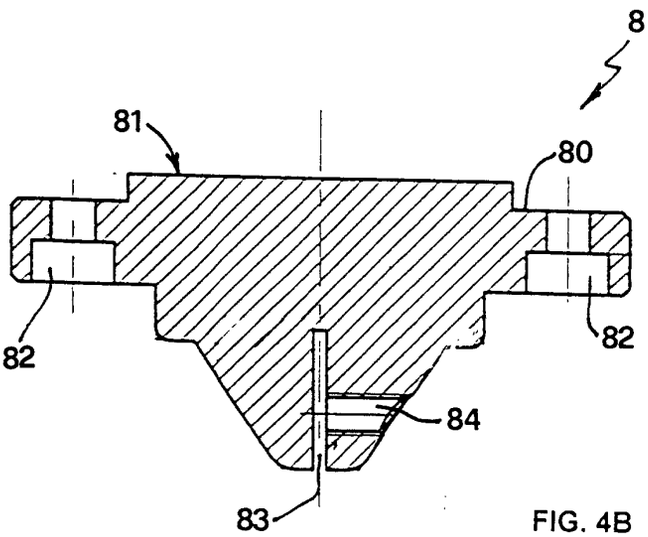

FIG. 4B

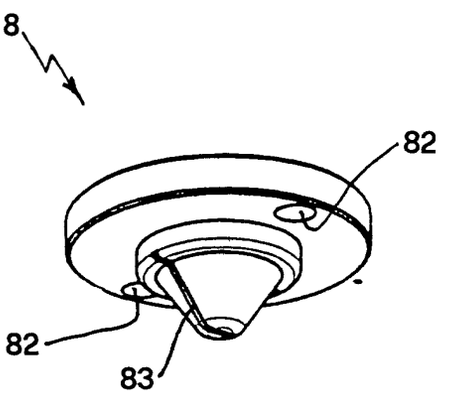

FIG.4C

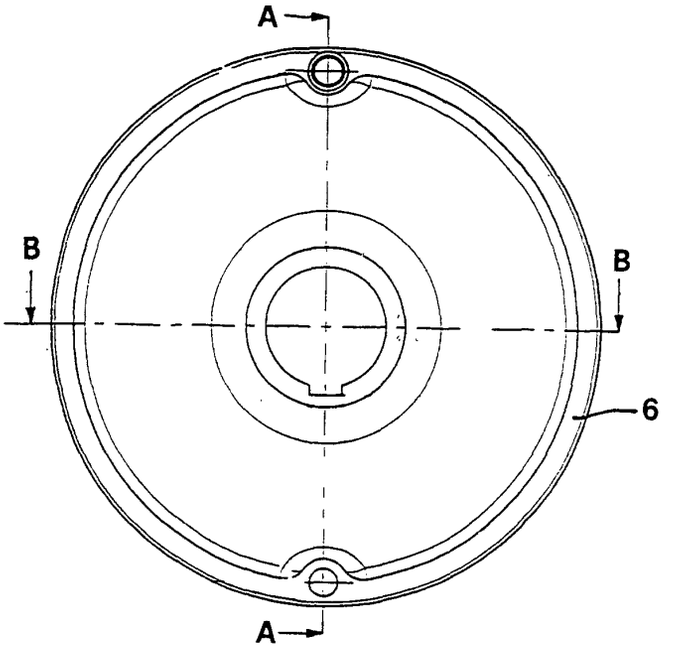

FIG. 7A

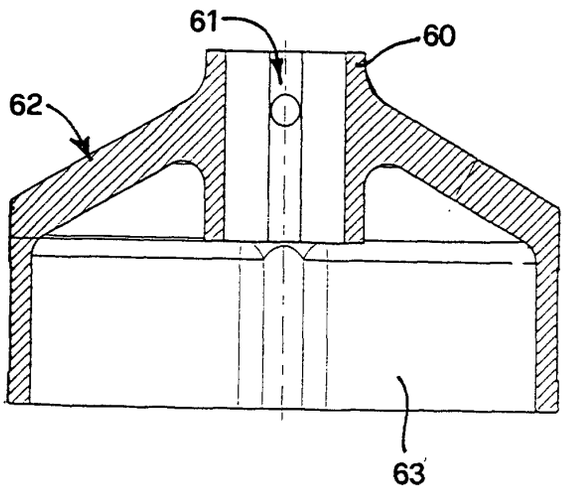

FIG. 7C

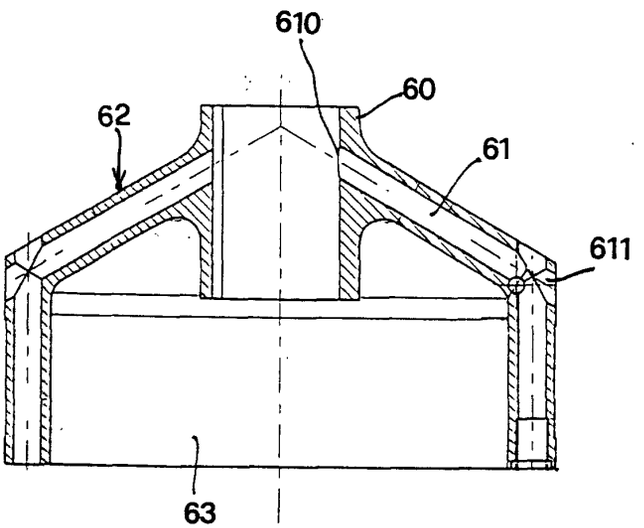

FIG. 7B

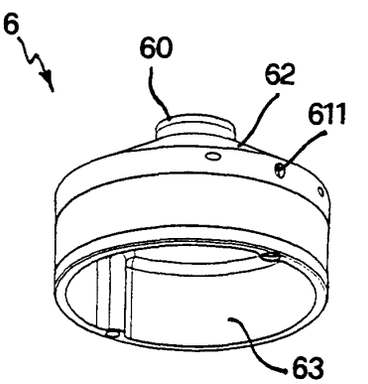

FIG. 7D

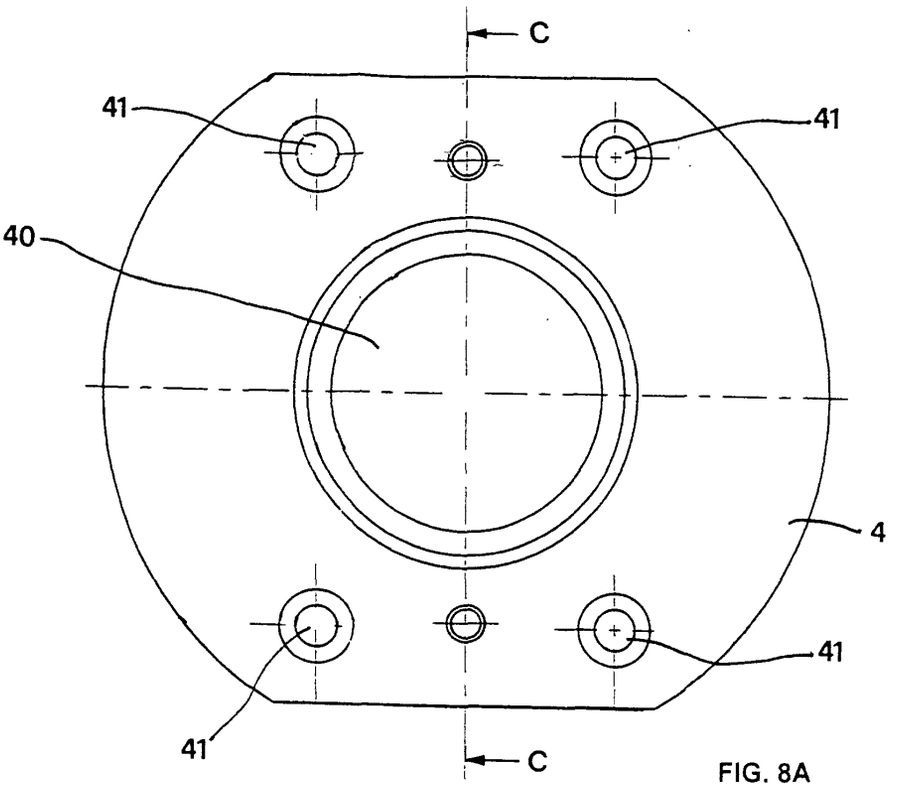

FIG. 8A

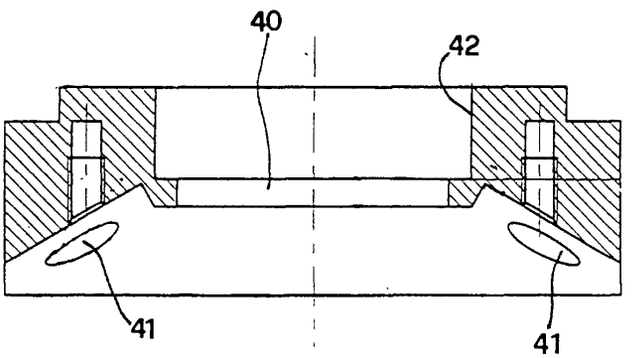

FIG. 8B

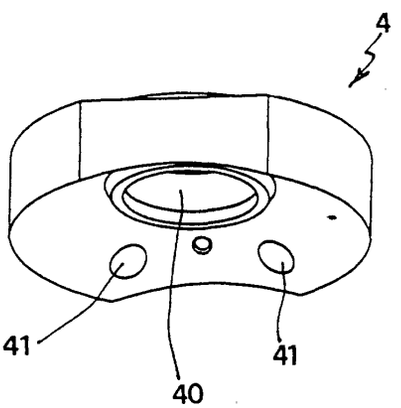

FIG. 8C

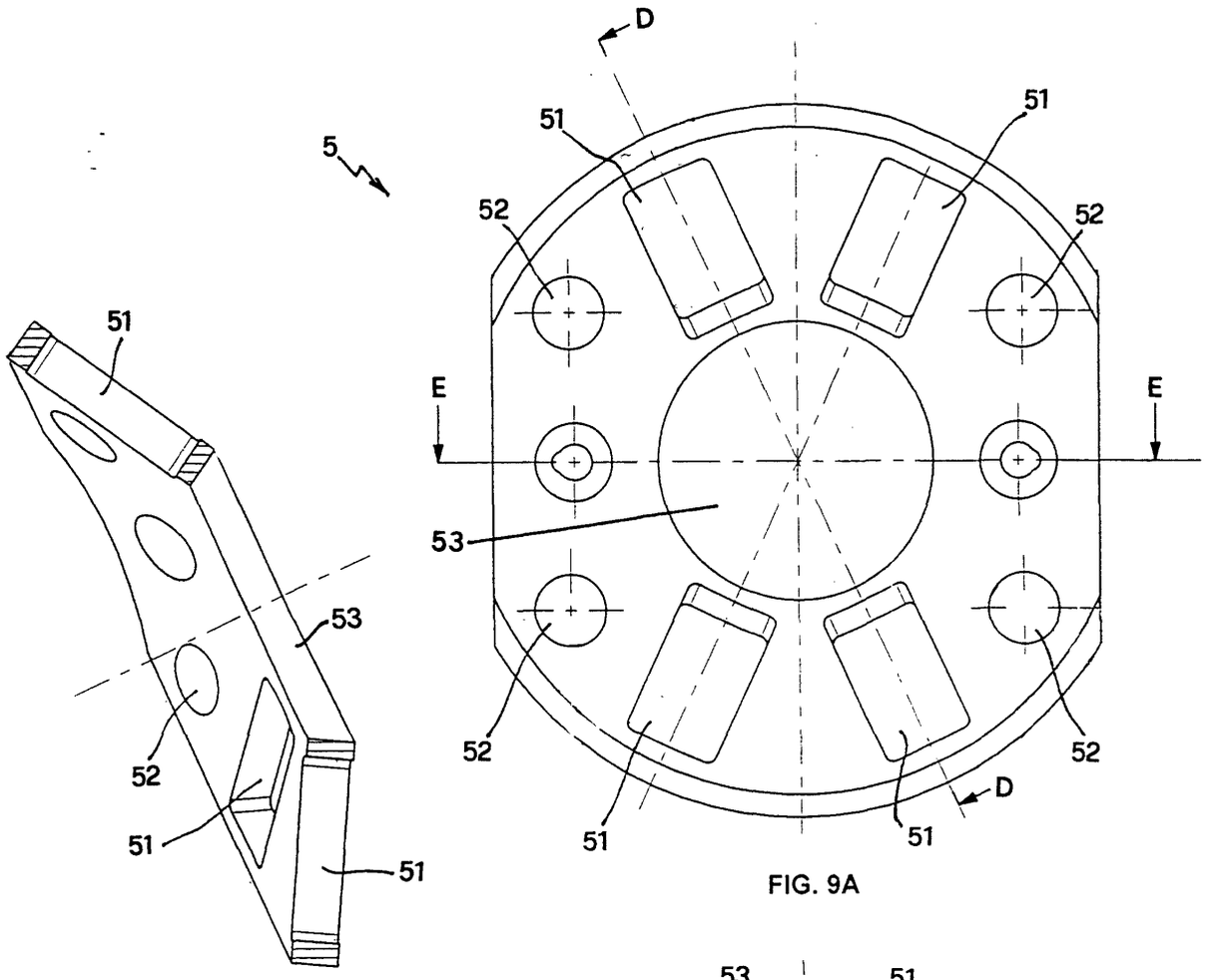

FIG. 9A

FIG. 9B

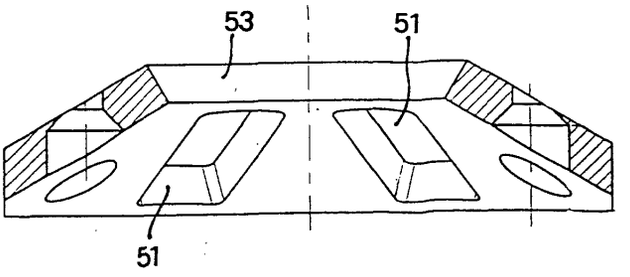

FIG. 9C

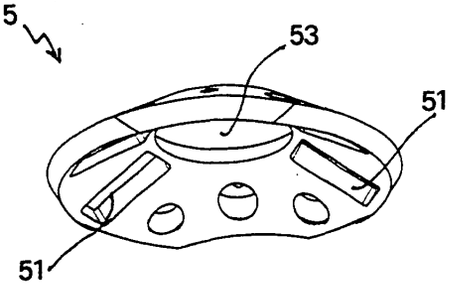

FIG. 9D

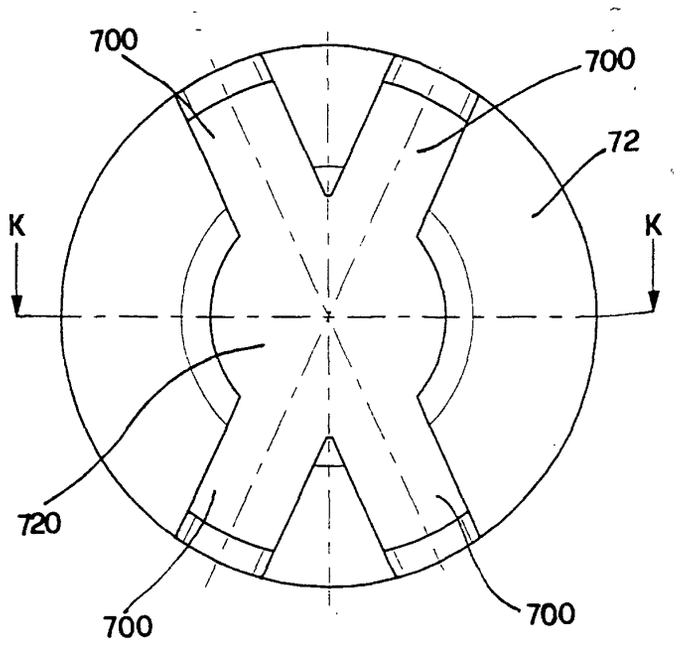

FIG. 10A

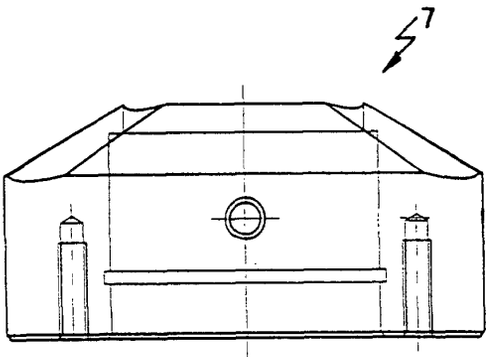

FIG. 11B

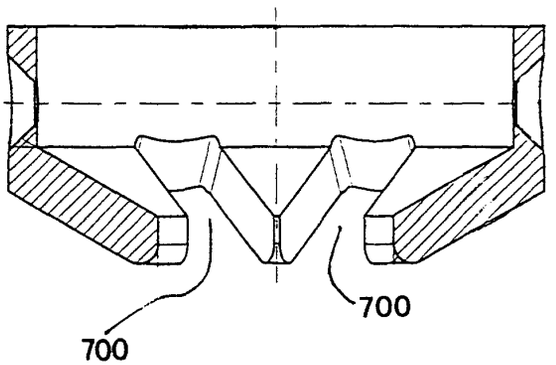

FIG. 10B

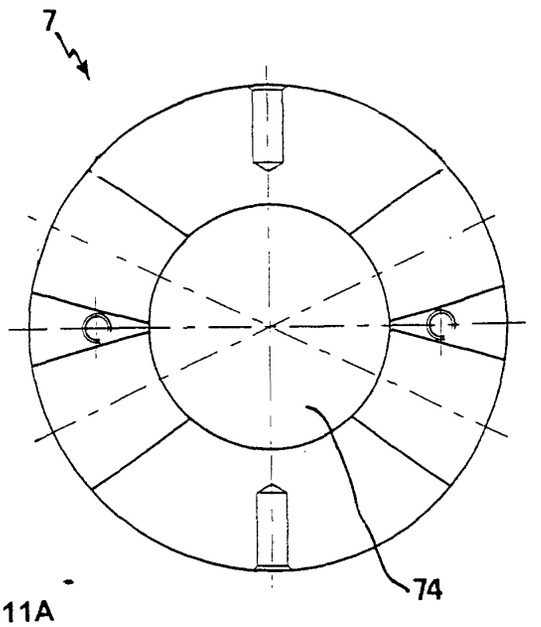

FIG. 11A

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0660

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.7)
X	DE 31 06 810 A (STAHLECKER FRITZ ;STAHLECKER HANS (DE)) 9 September 1982 (1982-09-09) * page 7, line 12 - page 8, line 14; figure 1 *	1-5	D02G3/42
A	US 3 855 768 A (JUBANY M) 24 December 1974 (1974-12-24) * column 10, line 62 - column 11, line 52; figure 7 *	1-5	
D,A	EP 0 674 030 A (GIESSE SRL) 27 September 1995 (1995-09-27) * the whole document *	1-5	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

D02G
D04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 February 2002	Henningsen, O

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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L : document cited for other reasons

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21-02-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3106810 A	09-09-1982	DE 3106810 A1	09-09-1982
US 3855768 A	24-12-1974	ES 404853 A1	16-06-1975
		GB 1390897 A	16-04-1975
EP 0674030 A	27-09-1995	IT FI940059 A1	25-09-1995
		AT 171735 T	15-10-1998
		DE 69505030 D1	05-11-1998
		DE 69505030 T2	10-06-1999
		DK 674030 T3	21-06-1999
		EP 0674030 A1	27-09-1995
		ES 2124513 T3	01-02-1999
		JP 7292537 A	07-11-1995

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