(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 375 633 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: 89830548.7

(51) Int. Cl.5: **A46B 3/02, A46D 3/00**

(22) Date of filing: **15.12.89**

(30) Priority: **23.12.88 IT 371088**

(43) Date of publication of application:
27.06.90 Bulletin 90/26

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL SE

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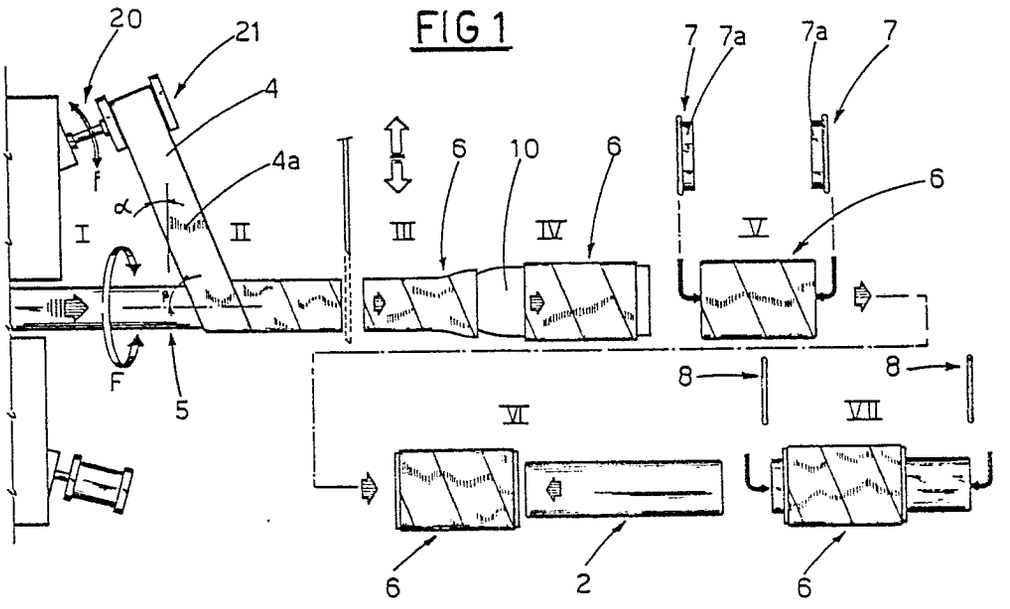
(54) A method of embodying clothes brushes, and a brush obtained by the implementation of such a method.

(57) The method is one of manufacturing clothes brushes by forming a continuous tube (5), enveloping the tube completely and continuously with a strip of velvet material (4), this being bonded with a layer of adhesive, and cutting the continuous tube into discrete lengths (6) which are then deformed plastically in an axial plane, before the adhesive has time to set, in such a way as to produce a substantially flat profile; each length (6) of the flattened velvet-covered tube is then paired with a relative handle (2).

FIG 1



EP 0 375 633 A2

A method of embodying clothes brushes, and a brush obtained by the implementation of such a method

The invention relates to a method of manufacturing clothes brushes of the type consisting in a handle, associated with a cleaning member faced in velvet material, and to a brush obtainable by implementing such a method.

Brushes of the type in question are particularly effective by virtue of the fact that the exposed side of the velvet brushing material is embodied with a short, stiff pile raised substantially at a uniform angle in relation to the surface to which the velvet is applied. When a cleaning implement faced with a fabric of this type is drawn over the surface of a cloth or garment, against the angle of the pile, the projecting ends of the pile penetrate the outer fibres of the weave, lifting ingrained dust and surface fluff and brushing the nap at one and the same time.

In short, the velvet subjects the cloth to a mildly "abrasive" action, and it is this action that gives positive results in cleaning.

The drawback encountered with a brush of this type is that it must be drawn over the garment or cloth in one direction only, "against" a pile and not "with", otherwise the brush simply slides over the cloth, and the dust and fluff gathered previously and retained by the velvet pile will be dislodged and deposited on the garment.

As long as the garment to be brushed is not being worn, the user generally will remember to draw the velvet pile in the right direction. It will often happen, however, that it is a garment being worn that needs to be brushed, in which case the user must remember to reverse the direction of the pile, for example, in passing from one sleeve to another; failure so to do results in the occurrence of the drawback aforementioned, inasmuch as dust and fluff picked up from the first sleeve will be transferred promptly to the second.

Efforts have been made to defeat this involuntarily incurred type of drawback by embodying brushes in which the cleaning member and handle are slidable one in relation to the other, thereby creating an implement that is reversible; in fact, by changing the relative positions of the cleaning member and the handle, the pile of the velvet can be set in the appropriate brushing direction without changing the direction of movement of the brush itself.

The pertinent prior art embraces numerous patents aimed at solving the drawback in question; a brush is disclosed in US 3 729 762, for example, of which the handle can be slid internally of the cleaning member between two limit positions and held fast at each one, preferably by snapping elastically into place.

US 3 421 171, on the other hand, discloses a brush of which the cleaning member can rotate in relation to the handle about an axis disposed perpendicular to the handle, and perpendicular or parallel to the surface with which the velvet is associated.

Both of these patent brushes overcome the drawback mentioned above, albeit by different expedients, but betray the disadvantage of featuring a special type of construction that needs specific machinery or equipment and thus incurs higher manufacturing costs.

Moreover, such embodiments exhibit one velvet pile brushing surface only, invariably small and thus of limited durability inasmuch as a significant number of passes must be made to cover the entire surface of a given garment.

The object of the invention is to provide a method that will permit the economical manufacture of a clothes brush affording a generous velvet covered brushing surface.

The stated object is realized by adoption of the method as characterized in the appended claims, which is designed to enable the manufacture of the type of clothes brush consisting in a handle, and a cleaning member faced in velvet and associated with the handle; such a method comprises the steps of fashioning a continuous tubular element, of which the external surface is coated with an adhesive of paste consistency, then totally and continuously enveloping the element with a strip of velvet pile material, cutting the continuous velvet-covered element into discrete elements of given length, and plastically deforming each discrete length through an axial plane before the adhesive dries, in such a way as to produce a substantially flat profile that enables its being fitted slidably over a relative straight flat core member which ultimately provides the handle, the transverse dimensions of which are substantially matched to those of the axial bore of the discrete tubular element following its plastic deformation.

Among the advantages of the present invention is that of the increased durability of a brush made by the method disclosed, which not only affords a more generous brushing surface, inasmuch as the entire tubular element is faced with velvet, but offers two such surfaces that can be used in alternation. The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

-fig 1 is a schematic representation of the steps of the method according to the present in-

vention;

-fig 2 illustrates a brush according to the present invention, seen in perspective;

-figs 3, 4 show the brush of fig 2 in end elevation and longitudinal section respectively, with certain of its parts cut away better to reveal others;

-fig 5 illustrates an alternative embodiment of the brush, in side elevation, with certain parts cut away better to reveal others.

The method according to the invention is designed to produce a brush as illustrated in figs 2, 3, 4 and denoted 1 in its entirety, which is of the type comprising a handle 2, and a cleaning member 3, supported by the handle and exhibiting a surface faced in velvet material 4.

The method disclosed comprises the steps of:
-forming a continuous tubular element 5 of circular section from a paper based material (fig 1/I);
-coating the external surface of the tubular element 5 with an adhesive of paste consistency and completely and continuously enveloping the element with a strip of velvet facing material 4 (fig 1/II);
-cutting the continuous velveted tubular element 5 into discrete elements 6 of predetermined length (fig 1/III);
-subjecting each discrete element 6 to plastic deformation through a diametral plane, before the adhesive has set, in such a way as to invest it with a substantially flattened shape (fig 1/IV);
-fashioning straight core members 2 of which the section substantially matches that of the axial bore presented by each discrete element 6;
-pairing each discrete element 6 with a respective core member 2, ultimately providing the handle, by insertion of the latter in the axial bore offered by the former (fig 1/VI).

'Application' of the layer of adhesive is effected in practice by fashioning the continuous tubular element 5 from a previously gummed paper material.

The discrete element 6 and the core member 2 can be paired together by sliding the one over the other, and accordingly, the method disclosed comprises the further preparatory step of fitting each end of the discrete element with a guide collar 7 embodied in rigid material (fig 1/V). The dimensions of the collar 7 are such that the rim does not project radially beyond the surface of the element 6 and its velvet facing 4, and the hole accommodates the core member 2 with a marginal degree of clearance. Each collar 7 exhibits a short, slightly tapered appendage 7a that can be inserted to a tight fit, and glued if so desired, in the respective end of the discrete tubular element 6.

Following its insertion in the relative element 6, each end of the core member 2 is fitted with a plug or stop 8 of which the transverse dimensions are greater than those of the holes afforded by the guide collars 7 (fig 1/VII).

As regards the embodiment of the continuous tubular element 5, this is a conventional process whereby strips of relatively stiff paper, pre-coated with a suitable adhesive as aforementioned, are wound onto a former. The gradually forming continuous tubular element 5 is traversed steadily forward along its own longitudinal axis, and enveloped by a single layer of the velvet facing 4 (fig 1 step II), wound on in exactly the same fashion as would be employed in applying a further layer of the paper material. Fig 1 illustrates the possible embodiment of a winding device 20, carrying at least one roll 21 of the velvet strip 4, which is rotatable about the continuous tubular element 5 as indicated by the arrow denoted F. The rolls are adjustable through an arc denoted f, so as to permit of widening or narrowing the angle in relation to the longitudinal axis of the tubular element 5, commensurately with the helical pitch of the winding.

Expansion of the discrete tubular element 6 through a diametral plane can be effected using mandrels of various embodiment, e.g. an expanding type. In the preferred embodiment shown in fig 1, the mandrel 10 comprises a first, tapered section exhibited by the end inserted into the discrete element 6, which merges with a straight second section of length not less than the length of the element 6, and of shape substantially matching the external shape of the core member 2. Thus, one achieves full and uniform deformation of the tubular element 6 without in any way damaging the velvet facing 4.

In an alternative implementation of the method, the continuous paper tube might be wound in such a way as to produce a substantially flat profile at the outset, enabling elimination of the deformation step (fig 1/IV).

The option also exists of extruding the continuous tubular element 5 from plastic material, whereupon a layer of adhesive paste can be applied to the surface and the velvet 4 wound over as described above. In this instance, the tubular element 5 could be extruded to a circular cross section and then deformed as illustrated in fig 1, or extruded to the requisite flat section by combining steps I and IV in a single operation.

The velvet facing 4 is embodied generally with its pile fibres 4a angled from the perpendicular in a common direction, considered in relation to the plane containing the backing material of the strip. In addition, the pile 4a will lie generally at a given angle α in relation to the longitudinal axis of the strip 4. Accordingly, the strip 4 is wound helically, the angle β between the strip and the longitudinal generators of the tubular element 5 being complementary to the angle α of the pile 4a and the longitudinal axis of the strip 4, such that on com-

pletion of the winding step, the pile 4a will be directed at right angles to the longitudinal axis of the tubular element 5. It will be observed from fig 1 that the winding angle β can be altered by adjusting the device 20 (arrow f) so as to widen or narrow the angle between the axis of the roll 21 and the longitudinal axis of the tubular element 5. The velvet strip 4 might equally well be wound onto the tubular element 5 with the pile 4a not angled, but simply projecting perpendicular from the plane of the backing material, in which case the plastic deformation step IV will be followed by a further step (not illustrated in fig 1) whereby the pile 4a is pressed to the required angle or angles. The two flanks of the cleaning member 3 might be pressed in different directions, for example, in such a way that the angles of the pile 4a on the two flattened surfaces will be mutually reflected on either side of an axial plane lying essentially parallel to the two surfaces (fig 3).

In the event of the method comprising a pressing step, the discrete tubular element 6 and the core member 2 can be rigidly associated, for example, by utilizing an adhesive or other means that disallows their relative movement. With an embodiment of this type, neither the collars 7 nor the end stops 8 are required, and the transverse dimensions presented by the bore of the element 6 will be substantially identical to those of the core member 2.

A brush 1 according to the invention consists in a core member 2, providing a handle, and a cleaning member 3 of tubular embodiment the entire external surface of which is faced with a helically wound layer of velvet material 4, and comprises means 8 serving to prevent the separation of the cleaning member 3 and the core member 2 one from the other. The cleaning member 3 can be either capable of sliding axially along the handle 2, or associated rigidly therewith. In the first instance, means 8 preventing the separation of the two members will consist in two stops, attached one to each end of the handle 2 and exhibiting transverse dimensions greater than those of the bore of the cleaning element 3. In the second, such means 8 might be embodied as in fig 5, namely, a fixed intermediate shoulder 8a afforded by the core member 2, and a stop 8b fitted to one end of the core member 2. The shoulder 8a and end stop 8b present transverse dimensions greater than those of the axial bore of the cleaning member 3, and are set apart one from the other by a distance substantially matching the axial dimension of the cleaning member 3. The end stop 8b can be attached to the core member 3 using fastening means of conventional type, denoted 11. As mentioned in the part of the specification that refers to the method, the brush 1 may be provided with slidable guide collars 7 fitted one to each end of the cleaning member 3, freely accommodating the core member 2, in which case the transverse dimensions of the separation preventing means 8 will be greater than those of the guide collars 7, which are associated with the cleaning element 3, and the side of the collar 7 directed away from the cleaning element 3 will afford a socket 9 in which the relative stop 8 is insertable to a moderately tight fit, thereby affording means by which to lock the cleaning member 3 in place at either end of the core member 2.

Claims

1) A method of embodying clothes brushes of the type comprising a handle (2), and a cleaning member (3) supported by the handle and exhibiting at least one surface faced in a velvet material of which the pile is angled in given directions in relation to the surface,
characterized
in that embodiment of the cleaning member (3) involves the steps of:
-forming a continuous tubular element (5) of circular section from a paper based material, and investing the element at least with traversing motion along its own longitudinal axis;
-coating the external surface of the tubular element (5) with an adhesive of paste consistency and completely and continuously enveloping the element with a strip of velvet facing material (4);
-cutting the continuous velvet-faced tubular element (5) into discrete tubular elements (6) of predetermined length;
-subjecting each discrete element (6) to plastic deformation through a diametral plane, before the adhesive has set, in such a way as to invest it with a substantially flat shape;
and in that embodiment of the handle (2) involves the steps of:
-fashioning straight core members (2), each one insertable in and serving to carry a respective cleaning member (3), of length greater than that of the cleaning member (3) and of shape such as will disallow rotation of the two members (2, 3) one in relation to the other;
-fitting each end of each of the core members (2) with a relative stop (8), of which the transverse dimensions are such as to disallow separation of the cleaning member (3) from the respective core member (2).

2) A method as in claim 1, comprising the further step, implemented following the steps of cutting and plastic deformation, of fitting each end of each discrete tubular element (6) with slidable guide means (7), embodied in a rigid material, which afford an axial hole matched to the external

profile of the core member (2) and are proportioned such that their external profile will not project beyond the external profile of the tubular element.

3) A method as in claim 1, wherein the continuous tubular element (5) is formed from a paper material pre-coated externally with an adhesive of paste consistency.

4) A method as in claim 1, wherein each discrete tubular element (6) cut from the continuous tubular element (5) is deformed by the insertion of at least one mandrel (10), comprising a first tapered section that coincides with the inserted end and is merged with a straight second section of length not less than the length of the discrete element (6), and exhibiting an external profile substantially matching that of the core member (2).

5) A method as in method 1, wherein each discrete tubular element (6) cut from the continuous tubular element (5) is deformed by the insertion of a mandrel (10) capable of expanding diametrically to emulate the essential external profile of the core member (2).

6) A method as in claim 1, wherein the strip (4) of velvet facing material is wound helically onto the continuous tubular element (5) at an angle (β), in relation to the longitudinal generators of the tubular element (6), that is complementary to the angle (α) at which the pile (4a) of the velvet material is set in relation to the longitudinal axis of the strip (4), in such a way as to ensure that the pile (4a) will be disposed at right angles to the longitudinal generators of the element (5) on completion of the winding step.

7) A method as in claim 1, wherein the strip (4) of velvet facing material is wound onto the continuous tubular element (5) with the pile (4a) standing substantially perpendicular in relation to the surface of the tubular element, comprising the further step, following plastic deformation of the discrete element (6) cut from the continuous element, of pressing the velvet in such a way as to set the pile (4a) permanently in a direction normal to the longitudinal generators of the tubular element (6) and at an angle reflected symmetrically on either side of a median plane lying essentially parallel to the surfaces flattened by deformation.

8) A method as in claim 1, wherein the steps of forming a tubular element (5) in a paper material and effecting its plastic deformation through a diametral plane are implemented as a single step, by investing the tubular paper element (5) with a substantially flat profile at the moment of its initial embodiment.

9) A method of embodying clothes brushes of the type comprising a handle (2), and a cleaning member (3) supported by the handle and exhibiting at least one surface faced in a velvet material of which the pile is angled in given directions in relation to the surface,
characterized
in that embodiment of the cleaning member (3) involves the steps of:
-extruding a continuous tubular element (5) of circular section from plastic material;
-coating the external surface of the tubular element (5) with an adhesive of paste consistency and completely and continuously enveloping the element with a strip of velvet facing material (4);
-cutting the continuous velvet-faced tubular element (5) into discrete tubular elements (6) of predetermined length;
-subjecting each discrete element (6) to plastic deformation through a diametral plane, before the adhesive has set, in such a way as to invest it with a substantially flat shape;
and in that embodiment of the handle (2) involves the steps of:
-fashioning straight core members (2), each one insertable in and serving to carry a respective cleaning member (3), of length greater than that of the cleaning member (3) and of shape such as will disallow rotation of the two members (2, 3) one in relation to the other;
-fitting each end of each of the core members (2) with a relative stop (8), of which the transverse dimensions are such as to disallow separation of the cleaning member (3) from the respective core member (2).

10) A method as in claim 9, comprising the further step, implemented following the steps of cutting and plastic deformation, of fitting each end of each discrete tubular element (6) with slidable guide means (7), embodied in a rigid material, which afford an axial hole matched to the external profile of the core member (2) and are proportioned such that their external profile will not project beyond the external profile of the tubular element.

11) A method as in claim 9, wherein the steps of extruding a tubular element (5) in plastic material and effecting its plastic deformation through a diametral plane are implemented as a single step, by investing the tubular plastic element (5) with a substantially flat profile at the moment of its initial embodiment.

12) A clothes brush of the type comprising a handle (2), and a cleaning member (3) supported by the handle and exhibiting at least one surface faced in a velvet material of which the pile is angled in given directions in relation to the surface, obtainable in particular though not exclusively by implementation of a method as in preceding claims,
characterized
in that the cleaning member (3) consists in a tubu-

lar element (6) of substantially flat section, of which the entire external surface is faced with a helically wound strip (4) of velvet material.

13) A brush as in claim 12, wherein the cleaning member (6) freely and slidably accommodates a core member (2), functioning as a handle, of length greater than that of the tubular element (6) and of shape such as disallows rotation of the two members (2, 3) one in relation to the other, and is provided with means (8) by which to disallow its separation from the core member (2).

14) A brush as in claim 13, wherein the cleaning member (3) and the core member (2) are distanced mutually by way of guide means (7) associated rigidly with each end of the cleaning member (3), which slidably accommodate the core member (2) while preventing its rotation relative to the cleaning member.

15) A brush as in claim 13, wherein means (8) by which to prevent separation of the members (2, 3) consist in stops (8) associated with each end of the core member (2), of which the transverse dimensions are greater than the minimum passage afforded by the axial bore of the cleaning member (3).

16) A brush as in claim 13, wherein means preventing the separation of the cleaning member (3) from the core member (2) consist in fastening means designed to bring about a rigid connection between the two members.

17) A brush as in claim 16, wherein fastening means consist in a fixed shoulder (8a) afforded by the core member (2) at an intermediate point along its length, and a stop (8b) fitted to one end of the core member, which exhibit transverse dimensions not less than the passage afforded by the axial bore of the cleaning member (3), and are set apart one from the other by a distance substantially matching the axial length of the cleaning member.

18) A brush as in claim 12, wherein the pile (4a) of the strip of (4) velvet material projects from the substantially flat surfaces on either side of the cleaning member (3) in a direction normal to the longitudinal generators of the member, and at an angle reflected symmetrically on either side of a median plane lying essentially parallel to the flat surfaces.

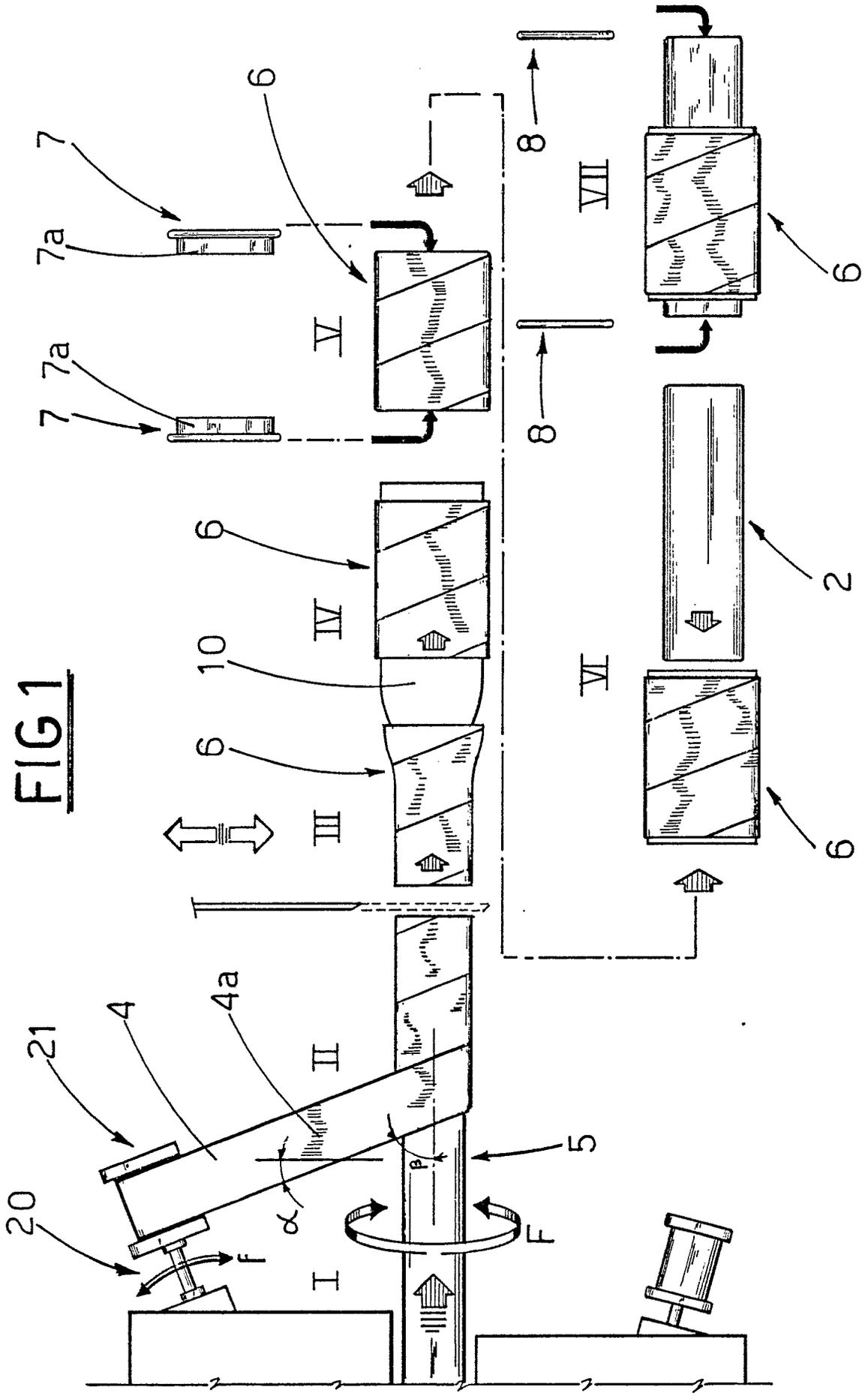


FIG 1

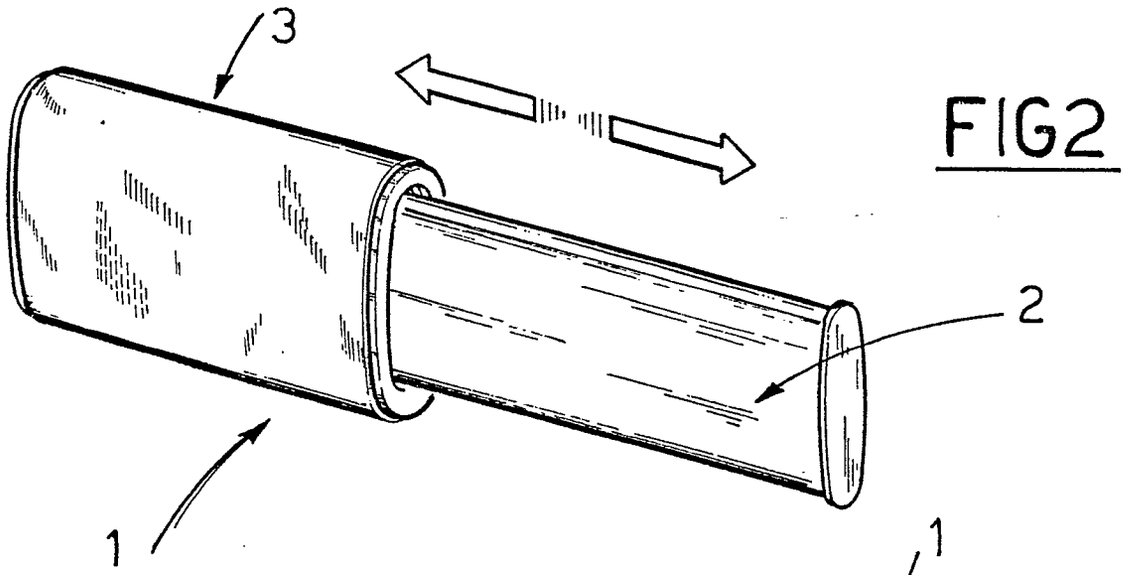


FIG2

FIG3

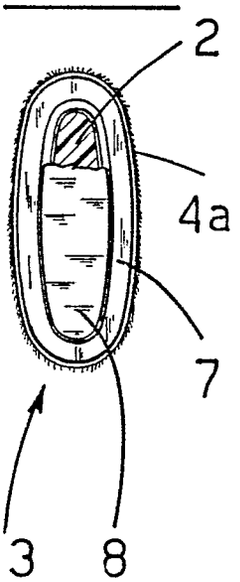


FIG4

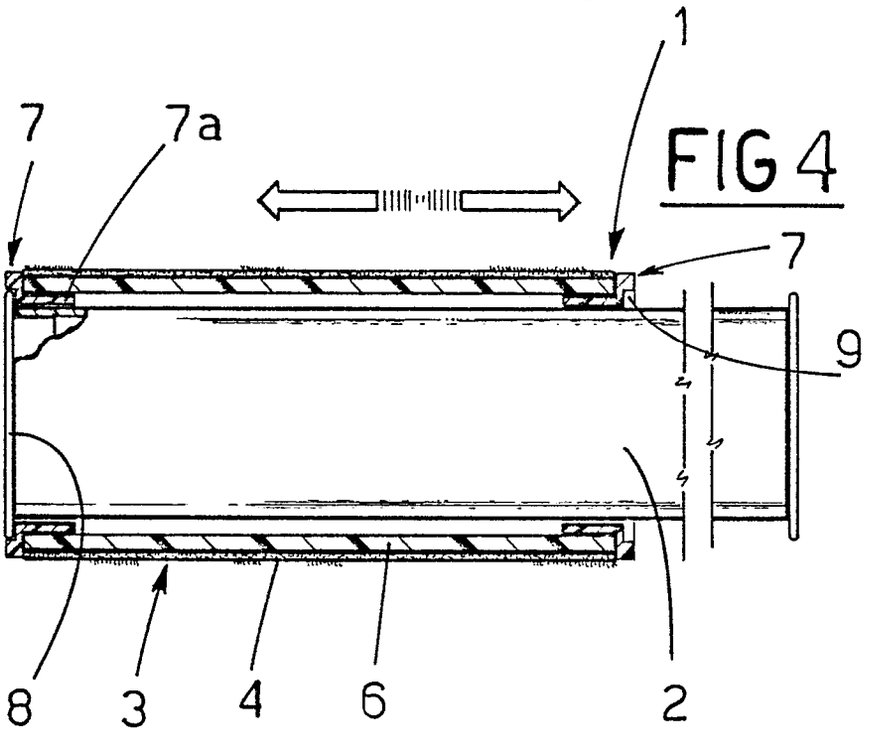


FIG5