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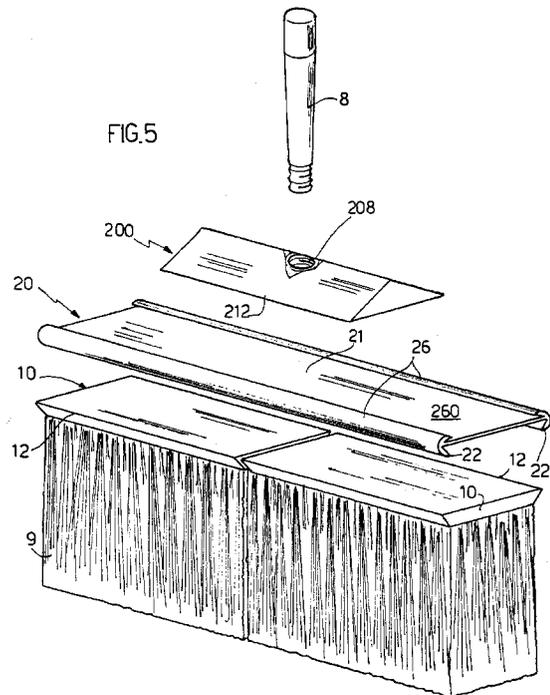
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Flat brush structure, for example a paint brush.

The brush structure (1), e.g. a paint brush comprises at least one monolithic block (10) of rigid resin which secures one end of the bristles (9), and a support member (20) joined to a single handle (8); the monolithic block (10) and the support member (20) are mutually independent and are shaped so that they can be fitted together by mutual insertion, they being freely connectable and disconnectable.



EP 0 573 081 A1

This invention relates to brushes in general and in particular to large-dimension brushes, such as so-called emulsion brushes.

Usual large-dimension brushes are known to comprise a flat plate-like member to which one end of the bristles (or filaments) is secured, these being arranged mutually parallel. Said plate-like member is usually formed from a type of plastics tray with low side walls, which is filled with a self-hardening adhesive substance forming a monolithic base into which the bristle ends are embedded.

The plate-like member is fixed to a support member comprising a frontal recess into which the plate-like member is inserted and fixed. A handle is also fixed to this support member to enable the brush to be gripped.

The object of the present invention is to improve the brushes of the stated type, in particular to more rationalize the consumption of the constituent materials of the brush and to increase its versatility of use.

This and further objects are attained by the present invention as characterised in the claims.

The brush of the invention comprises:

- at least one rigid monolithic block which secures one end of the bristles;
- a support member joined to a handle for gripping the brush;
- said at least one monolithic block and said support member being mutually independent and being shaped so that they can be fitted together by mutual insertion, they being freely connectable and disconnectable;
- said at least one monolithic block consisting of a mass of bristle retention adhesive formed in a separate openable mould, with possible incorporation of a rigid base of different material.

Specifically, the monolithic base and the support member possess elements shaped to define a dovetail joint when in mutual combination.

The monolithic block carrying the bristles is therefore independent of the support member, so that during use, as the bristles have a relatively short life because of their relatively rapid wear, it can be removed from the support member and be replaced with another comprising new bristles. The support member plus handle, the production cost of which forms

a considerable part of the overall brush production cost, can therefore be used for an indefinite time because it usually undergoes no wear or damage during use. It is therefore unnecessary to dispose of the support member plus handle (as happens with known brushes) when the bristles have worn down.

Hence, considerable economy and versatility are achieved in the use of the brush, it being

necessary merely to replace the monolithic block carrying the bristles.

Further according to the invention, the bristle-carrying monolithic block can be formed as a succession of modular blocks inserted into the same support member.

Alternatively, lengthy bristle-carrying monolithic blocks can be used, from which portions of the required length can be separated by a cutting member.

Finally, the invention also provides an advantageous configuration of the support member, in which the channelled base receiving the bristle block or blocks is a segment, cut to size from a section bar of indefinite length, which on the opposite face to that receiving the bristles comprises fitting and retention means for the handle.

Further characteristics and advantages of the present invention will be more apparent from the detailed description of some embodiments thereof given hereinafter with reference to the accompanying figures.

Figure 1 is a perspective view of a first embodiment of the invention.

Figure 2 is a section on a transverse vertical plane of Figure 1.

Figure 3 is a top plan view of Figure 2.

Figure 4 is a section on a transverse vertical plane showing a second embodiment of the invention.

Figure 5 is an exploded perspective view of a third embodiment of the invention.

Figure 6 is a side view of the invention of Figure 5 in the assembled configuration.

Figure 7 is an enlarged detailed view of the section taken on the plane VII-VII of Figure 6.

With reference to Figures 1-4 the brush support member, indicated by 20 in the figures, comprises a flat central portion 21, and two opposing side walls 22 extending along two longitudinal sides of the portion 21, they projecting downwards (ie towards the bristle pack 9) and having at least their lower end edges converging towards each other.

The monolithic block, indicated by 10, and which secures one end of the bristles 9, comprises a flat upper face, and two longitudinal parallel sides 12 shaped such that their outer cross-sectional profile is substantially complementary to the inner cross-sectional profile of said side walls 22. In other words, the sides 12 of the monolithic block 10 together with the side walls 22 of the support member 20 form a dovetail joint narrow enough to prevent mutual axial sliding.

In the embodiment shown in Figures 1 to 3, the lower face of the portion 21 is completely flat and the side walls 22 have their lower edge inclined downwards and inwards. The monolithic block 10

consequently has a flat upper face, and two sides 12 with their lower portion inclined downwards and inwards.

In the embodiment shown in Figure 4, the lower face of the portion 21 is flat only close to the lateral edges, and the side walls 22 comprise a vertical portion followed by the lower end edge, which is horizontal and facing inwards. The monolithic block 10 has its sides 12 vertical and projecting slightly outwards laterally from the bristle pack 9.

The monolithic block 10 is inserted into and withdrawn from the support member 20 by frontal sliding, with movement parallel to the generators of the joint-forming profiles defined by the block 10 and member 20.

Said insertion fit between the block 10 and member 20 can be slightly forced to prevent the block 10 being able to easily withdraw from the member 20. Alternatively, appropriate means can be provided to prevent this withdrawal. For example, self-tapping screws 24 can be provided for insertion into through holes provided in the walls 22 of the member 20, so that when the screws 24 are screwed through these holes their ends screw into the sides 12 of the monolithic block 10.

The monolithic block 10 with its bristles is prepared by usual brush manufacturing methods, and is conveniently formed from a mass of synthetic resin hardened in a separate openable mould, into which one end of the bristles 9 is embedded by said usual methods. A thin flat plate 14 of different material may be embedded in this resin mass to define the upper face of the block 10 (see Figure 4).

The support member 20 can be of any known material, such as synthetic resin, wood or aluminium. It can be advantageously formed from an extruded section cut to the required length.

In this case, as illustrated in Figures 2 and 3, two symmetrically facing profiled elements 26 are provided on the upper face of the portion 21 to define a longitudinal seat 260 with an upper through slot 27.

Said seat 260 is intended to receive a plate 7 rigid with one end of the handle 8 and having plan dimensions such that it can be inserted into the seat 260, to then remain fixed therein by rotating it through 90° as is apparent from Figures 2 and 3.

Alternatively, to fix the handle 8 to the member 20, this can be provided with a threaded seat 29 of known type, into which a threaded end of the handle 8 is screwed (as shown in Figure 4).

In the embodiment illustrated in Figures 5-7 at least two monolithic blocks 10 of rigid synthetic resin are provided, carrying the bristles 9 as heretofore described.

The monolithic blocks 10 are independent of each other, they are of modular length and are fitted to the member 20 in the aforesaid manner.

In addition the support member 20 has a length such as to enable several side-by-side blocks 10 to be simultaneously retained.

The support member 20 comprises the same elements as shown in Figures 1 to 3 and are identified here by the same reference numerals. The formal differences between the elements of Figures 1 to 3 and the corresponding elements of Figures 5 to 7 are not important from the point of view of the result.

Suitable means, of the type shown in Figure 2, can be provided for preventing withdrawal of the blocks 10 from the member 20.

As stated, the member 20 comprises two symmetrically facing upper sections 26, which form the insertion seat 260.

An intermediate element 200, comprising a threaded hole 208 for receiving the handle 8, has two edges complementary to the seat 260, into which it is inserted endwise.

The element 200 is inserted into and withdrawn from the seat 260 longitudinally.

The insertion fit between the seat 260 and the element 200 can be slightly forced to prevent mutual withdrawal.

By cutting the member 20 to the required length and fitting two or more blocks 10 thereto, a brush can be formed as long as desired.

This has substantial manufacturing advantages in that to form brushes of any desired length it is necessary only to manufacture blocks 10 of modular dimensions, which can be small, so saving on plant.

Typically, the element 200 has a length which is independent of the member 20 associated with it, which latter can be cut to the desired length from an extruded section of indefinite length.

Hence using a single element 20 and a single handle 8 (these being of relatively high cost), different-length brushes can be formed, this representing a considerable saving in the brush manufacturing cost.

The blocks 10 with their bristles can be replaced when worn, whereas the handle 8, the element 200 and the member 20 can be used for an indefinite time, so achieving further saving.

Claims

1. A brush structure, characterised by comprising:
 - at least one monolithic block (10) of rigid resin which secures one end of the bristles (9);

- a support member (20) joined to a handle (8) for gripping the brush;
 - said at least one monolithic block (10) and said support member (20) being mutually independent and being shaped so that they can be fitted together by mutual insertion, they being freely connectable and disconnectable.
2. A brush structure as claimed in claim 1, characterised in that said monolithic block (10) and said support member (20) comprise means (12, 22) shaped to define when in mutual combination a dovetail joint allowing at least one block (10) to be inserted into and withdrawn from the member (20) in a direction perpendicular to the direction of the bristles (9).
3. A brush structure as claimed in claim 2, characterised in that:
- said support member (20) possesses, along two parallel sides, two opposing parallel side walls (22) having at least their lower end edges converging towards each other,
 - said at least one monolithic block (10) having two parallel sides (12),
 - the side walls (22) of said support member (20) embracing said sides (12) both upperly, laterally and lowerly.
 - at least one of the ends of the support member (20) being open to allow the monolithic block (10) to pass in said insertion and withdrawal direction.
4. A brush structure as claimed in claim 1, characterised in that each block (10) is formed from a mass of hardened synthetic resin in which one end of the bristles (9) is embedded.
5. A brush structure as claimed in claim 1, characterised in that the support member (20) comprises a portion (21) from which there project two opposing side walls (22) facing the bristle pack (9) and having at least their end edges converging towards each other, and two parallel section pieces (26) projecting from the side not occupied by the bristles (9) and forming a seat (260) into which the handle (8) is fixed by a plate (7) which can be force-fitted into said seat (260) by rotating it through 90 degrees.
6. A brush structure as claimed in claim 1, characterised in that said support member (20) is a piece of extruded section, cut to the desired length.
7. A brush structure as claimed in claim 1, characterised by comprising a single monolithic block (10).
8. A brush structure as claimed in claim 1, characterised by comprising an intermediate element (200) to be joined to the handle (8) and to be removably fitted into the seat (206) present on that face of the member (20) not occupied by the bristles (9).

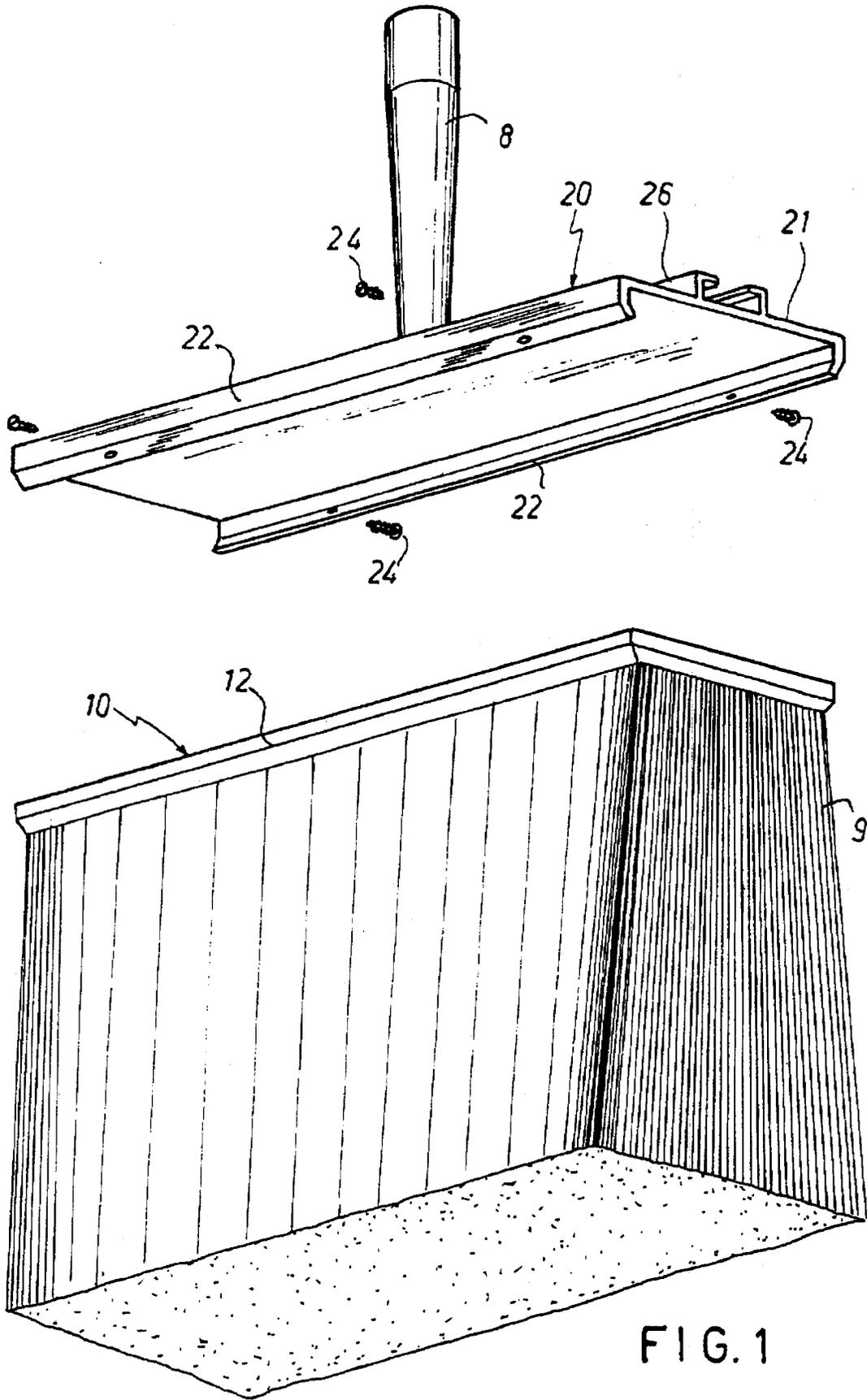
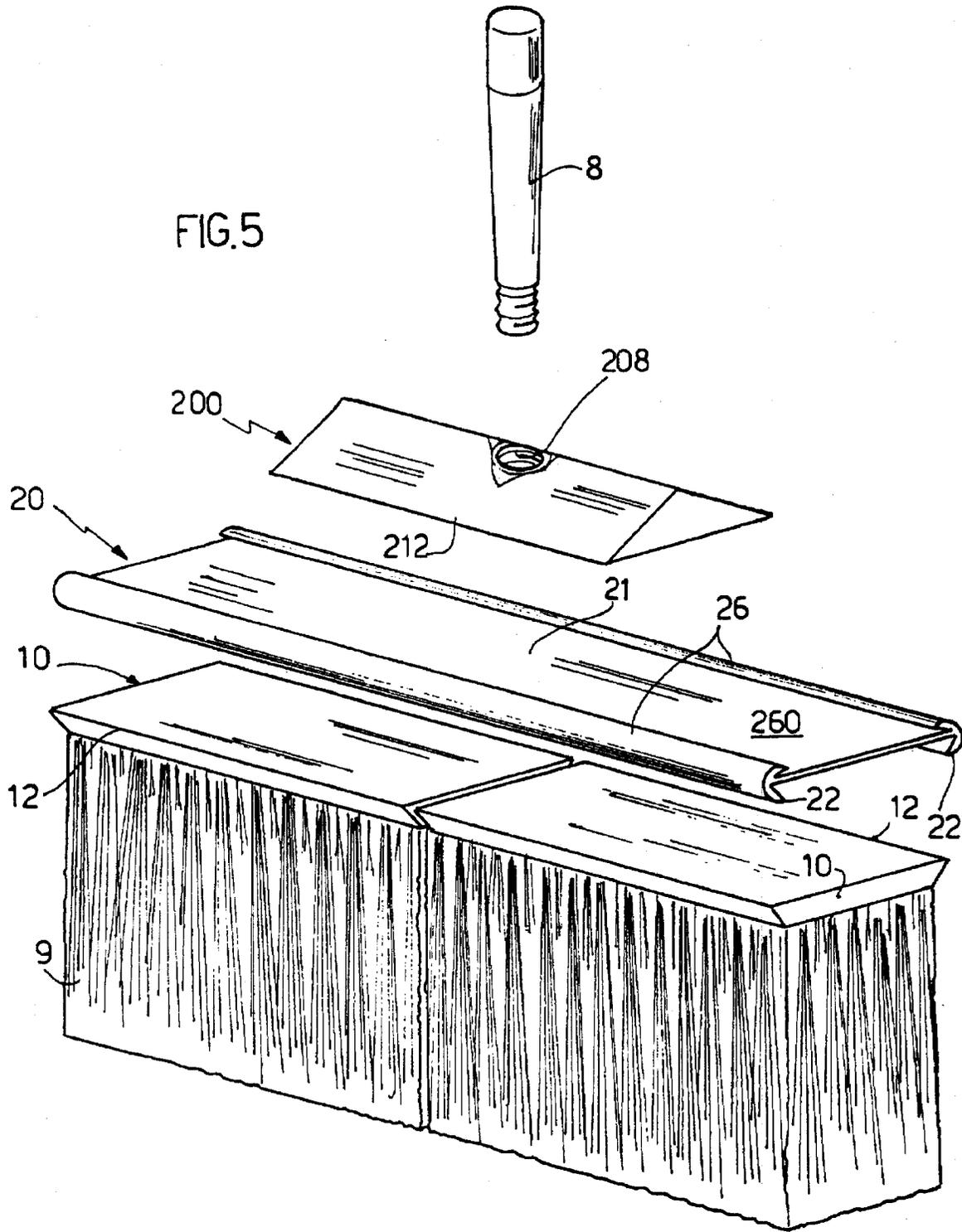
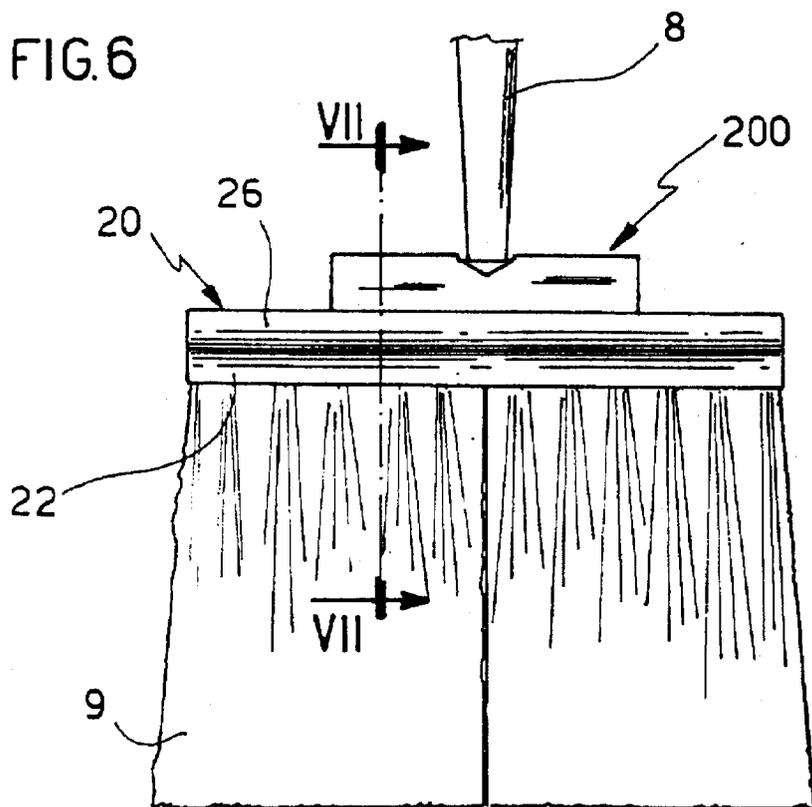
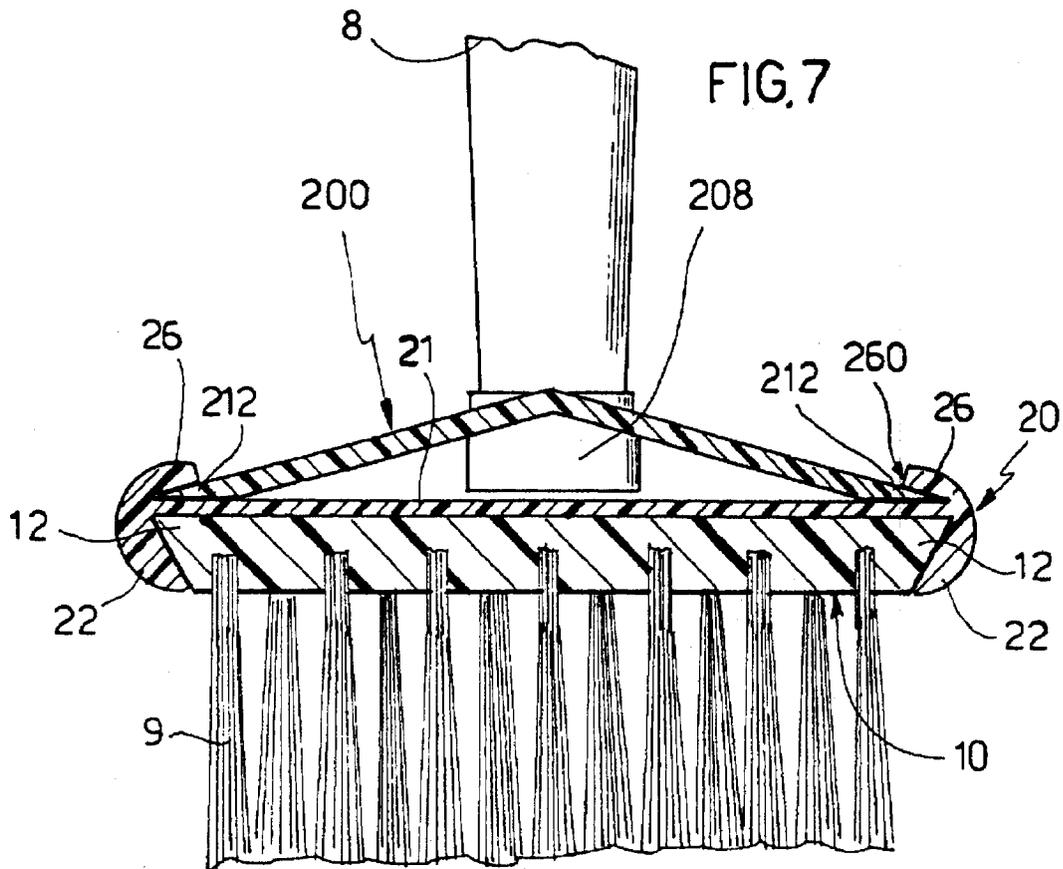


FIG. 1







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EUROPEAN SEARCH REPORT

Application Number

EP 93 20 0997

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)
X	US-A-4 469 223 (SMITH)	1-4,7	A46B1/00
Y	* column 3, line 40 - column 6, line 45; figures *	5,6,8	A46B7/04 A46B5/00

Y	DE-A-3 834 301 (DIETSCHE)	5,6	
	* column 2, line 21 - column 3, line 43; figures *		

Y	US-A-4 882 802 (LEVERE ET AL.)	8	
	* figures 3-10 *		

A	US-A-3 065 480 (SEXTON)	1,5	
	* claim; figures *		

A	US-A-2 712 145 (KARNES)	1	
	* figures *		

			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A46B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07 SEPTEMBER 1993	Examiner ERNST R.T.
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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