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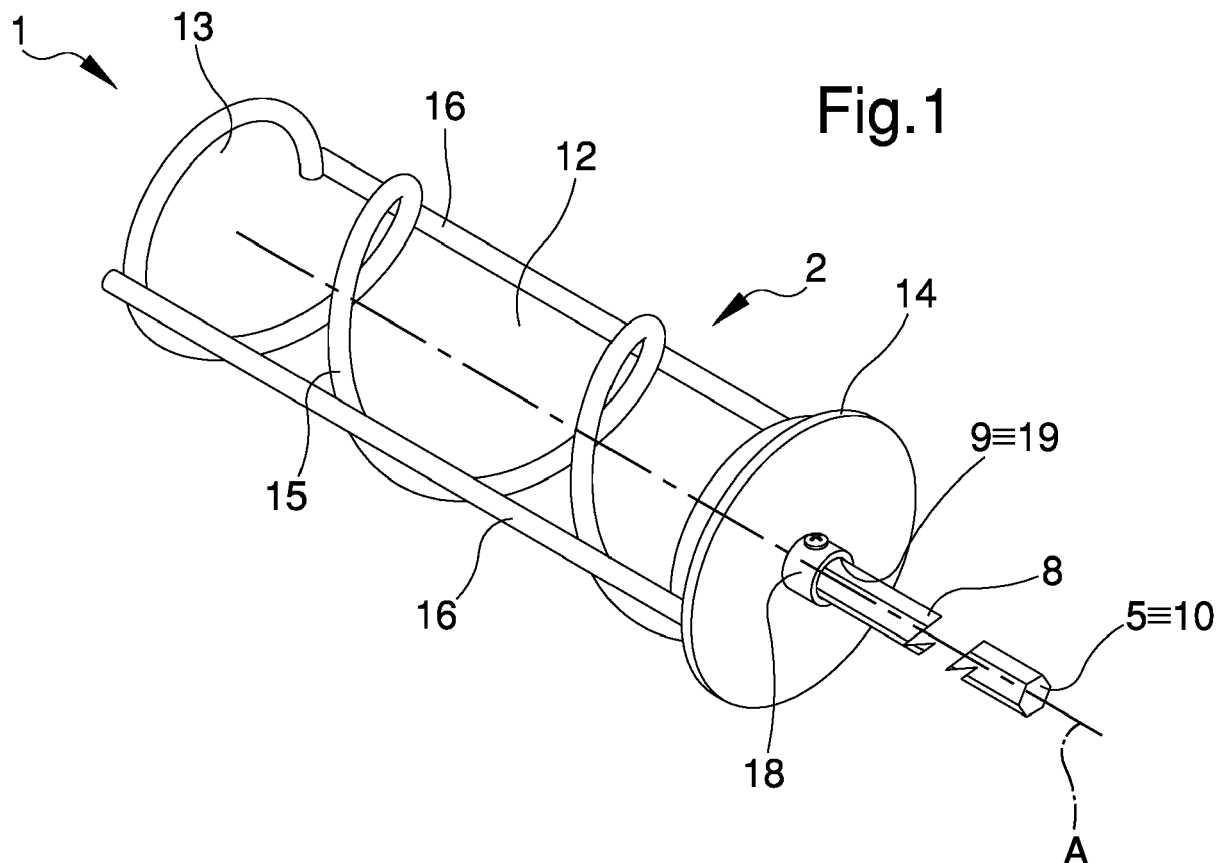
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(54) **DEVICE FOR WASHING AND DRYING ROLLS FOR SPREADING LIQUID COATINGS**

(57) The device (1) for washing and drying rollers for spreading liquid coatings comprises:

- retaining means (2) of at least one roller (3) for spreading at least one coating in liquid form to be washed and/or dried; and

- connecting means (4) locked together in rotation to the retaining means (2) and provided with at least one attachment element (5) to actuating means (6), which are adapted to rotate the retaining means (2) around at least one axis of rotation (A).

**Fig. 1****EP 3 640 043 A1**

Description

[0001] The present invention relates to a device for washing and drying rollers for spreading liquid coatings.

[0002] A variety of devices for washing rollers are known for spreading liquid coatings, such as e.g. paints, sealers, adhesives or the like.

[0003] Generally, the rollers for spreading liquid coatings are used with the aim of facilitating and speeding up the job of spreading such coatings on different types of surfaces, among which the most common are, e.g., ceilings, walls and floors of domestic environments and beyond.

[0004] In fact, it is known that this type of roller is provided with special absorbent covers that, once soaked with the coating to be spread, are made to contact with the surface to be coated, covering it with the same absorbed dye.

[0005] It is also known that these absorbent covers must be washed and dried after use in order to preserve the integrity thereof over time or to spread other types of coatings.

[0006] However, the washing and drying operations of this type of roller are generally particularly complex and require long execution times, thus significantly slowing down the job of spreading the liquid coatings.

[0007] To overcome these drawbacks, known washing devices generally comprise a roller containment body provided with an inlet which is connectable in a fluid-operated manner to a source of a washing fluid under pressure, such as e.g. to the water tap, and with a discharge outlet of the same.

[0008] In particular, the roller is associable movable in rotation inside the containment body, inside which the washing fluid is put under pressure.

[0009] This way, the washing fluid sets the roller in rotation and washes the absorbent cover thereof.

[0010] These devices do, however, have some drawbacks related to the lack of flexibility of use and to the structural complexity of the same.

[0011] In addition, the rollers that are washed using known type of devices remain wet or moist and cannot be used immediately to spread a new coating without first being dried, e.g. by suitable drying means or of course, letting it dry in the air.

[0012] In addition, the devices of known type inevitably require the source of the washing fluid under pressure for their operation.

[0013] However, depending on the work environment in which the coating spreading job is carried out, a source of washing fluid is not always available or the same may not be used for the operation of the known device, e.g. because it does not have a compatible dispenser to be connected to the containment body in fluid-operated manner, or because of the impossibility for the source itself to deliver the washing fluid with a pressure that ensures the washing of the roller.

[0014] In addition, this type of device comprises a par-

ticularly bulky containment body, which is not always easily transportable with the rest of the painting and/or white-washing equipment.

[0015] These drawbacks make the devices of known type inflexible, uncomfortable and complex to be used.

[0016] The main aim of the present invention is to devise a device for washing and drying rollers for spreading liquid coatings that allows washing and drying the rollers quickly and easily.

[0017] Another object of the present invention is to devise a device for washing and drying rollers for spreading liquid coatings that does not require a source of washing fluid under pressure for its operation.

[0018] Another object of the present invention is to devise a device for washing and drying rollers for spreading liquid coatings that allows overcoming the aforementioned drawbacks of the prior art in the context of a simple, rational, easy, effective to use and cost effective solution.

[0019] The aforementioned objects are achieved by the present device for washing and drying rollers for spreading liquid coatings having the characteristics of claim 1.

[0020] Other characteristics and advantages of the present invention will be more evident from the description of a preferred, but not exclusive, embodiment of a device for washing and drying rollers for spreading liquid coatings, illustrated by way of a non-limiting example in the accompanying tables of drawings in which:

Figure 1 is a schematic axonometric view of an embodiment of the device according to the invention;
Figure 2 and Figure 3 are two schematic axonometric views of the device according to the invention showing the preparation of the roller;

Figure 4 is a schematic axonometric view of the device according to the invention in use;

Figure 5 is a schematic axonometric view of an alternative embodiment of the device according to the invention;

Figure 6 is a detailed view of an element of the device shown in Figure 5.

[0021] With particular reference to these figures, a device for washing and drying rollers for spreading liquid coatings has been globally indicated with reference numeral 1.

[0022] The device 1 for washing and drying rollers for spreading liquid coatings comprises:

- retaining means 2 of at least one roller 3 for spreading at least one coating in liquid form to be washed and/or dried; and
- connecting means 4 locked together in rotation to the retaining means 2 and provided with at least one attachment element 5 to the actuating means 6, which are adapted to rotate the retaining means 2 around at least one axis of rotation A.

[0023] In the following treatise, the term "roller" means a generic roller for spreading liquid coatings of substantially cylindrical shape and provided with an absorbent lateral surface for the application and spreading of the liquid coating.

[0024] In addition, the term "liquid coating" or "coating in liquid form" means any more or less dense liquid or mixture of liquids, such as paints, sealers, anti-moulds, glues, glazes and the like, used for coating a wide variety of surfaces, such as e.g. masonry, plaster, parquet and beyond.

[0025] Preferably, the actuating means 6 comprise at least one rotating clamping unit 7 of the attachment element 5, which can be associated in a removable manner with the latter and is adapted to rotate it around the axis of rotation A.

[0026] In Figure 4, the actuating means are conveniently represented as motor-driven means, e.g. of the type of a drill, a screwdriver or the like, the rotating clamping unit 7 of which is a motor-driven head, to which the attachment element 5 can be fastened.

[0027] In addition, the attachment element 5 preferably has an elongated shape which extends longitudinally along the axis of rotation A and having a cross-section of hexagonal shape, so as to facilitate the fixing and rotation of the attachment element itself to the rotating clamping unit 7.

[0028] Alternative embodiments of the device 1 cannot however be ruled out wherein the attachment element 5 is made differently according to the type of rotating clamping unit 7 used by the actuating means 6 to which the connecting means 4 are intended to be connected.

[0029] In particular, the connecting means 4 comprise at least one support body 8 of elongated shape, movable in rotation around the axis of rotation A and provided with at least one pair of end portions 9, 10 opposed to each other, of which a first end portion 9 is locked together in rotation with the retaining means 2, and a second end portion 10 is locked together in rotation with the attachment element 5.

[0030] In particular, the support body 8 extends longitudinally along the axis of rotation A and has a cross-section of substantially hexagonal shape.

[0031] This way, the support body 8 and the attachment element 5 can be conveniently made in a single body piece, as shown in Figure 1.

[0032] Alternative embodiments cannot however be ruled out of the connecting means 4 wherein the support body 8 and the attachment element 5 are not made in a single body piece, e.g. wherein the support body 8 has a circular cross-section and the attachment element 5 has a square cross-section.

[0033] On the other hand, the retaining means 2 comprise at least one fixing body 14, 15, 16 of the roller 3 adapted to support the roller 3 coaxially with the connecting means 4.

[0034] In other words, the fixing body 14, 15, 16 has the object of fixing the longitudinal axis of symmetry of

the roller, i.e. the axis around which the roller 3 rotates when dragged in contact with the surface to be coated, coaxial to the axis of rotation A, along which the support body 8 extends, as shown in Figure 3.

[0035] In particular, the fixing body 14, 15, 16 defines at least one housing 12 which extends along the axis of rotation A and inside which the roller 3 can be inserted by interlocking in a removable manner.

[0036] Conveniently, the housing 12 has a shape substantially complementary to the roller 3.

[0037] In addition, the fixing body 14, 15, 16 defines at least one insertion opening 13 of the roller 3 inside the housing 12.

[0038] This way, according to the embodiments of the device 1 shown in the figures, the fixing body 14, 15, 16 has a substantially cylindrical hollow shape open frontally, which extends longitudinally around the axis of rotation A and associated at the rear with the support body 8.

[0039] In particular, the fixing body 14, 15, 16 comprises:

- at least one base element 14 adapted to abut against the roller 3 inside the housing 12;
- at least one lateral abutment grid 15, 16 of the roller 3 which extends along the axis of rotation A starting from the base element 14, defining the housing 12.

[0040] Conveniently, the base element 14 is associated with the first end portion 9 to substantially define the bottom of the housing 12.

[0041] Preferably, the base element 14 has a flat circular shape and is arranged substantially orthogonal to the axis of rotation A and to the support body 8.

[0042] On the other hand, the lateral abutment grid 15, 16 comprises at least one spiral element 15 of substantially elongated shape, which extends around the axis of rotation A and is adapted to contain the roller 3 laterally.

[0043] In addition, the lateral abutment grid 15, 16 preferably comprises at least one holding element 16 of the spiral element 15 having a substantially elongated shape and extending from the base element 14, extending longitudinally substantially parallel to the axis of rotation A.

[0044] In particular, according to the embodiments of the device 1 shown in the figures, the lateral abutment grid 15, 16 comprises two holding elements 16 arranged parallel and opposed to each other and associated with the spiral element 15, where each holding element 16 is associated with the spiral element 15 at each intersection point with the latter, thus substantially defining the lateral wall of the fixing body 14, 15, 16.

[0045] Alternative embodiment of the fixing body 14, 15, 16 cannot however be ruled out, wherein the lateral abutment grid 15, 16 is made differently, e.g. wherein the lateral abutment grid 15, 16 comprises only one holding element 16 and a pair of spiral elements 15.

[0046] In particular, the spiral element 15 has a substantially circular cross-section.

[0047] In addition, the holding element 16 also prefer-

ably has a substantially circular cross-section.

[0048] Alternative embodiments of the spiral element 15 and of the holding element 16 cannot however be ruled out, e.g. wherein these have different cross-sections, e.g. of rectangular shape or the like.

[0049] In particular, the Figure 5 shows an alternative embodiment of the device 1, wherein the spiral element 15 has a substantially rectangular cross-section.

[0050] Advantageously, the dimensions of the spiral element 15 and of the holding element 16 are particularly small compared to the dimensions of the roller 3.

[0051] In particular, the holding element 16 and the spiral element 15 have a smaller lateral surface area than the extension of the lateral surface area of the roller 3, so as to limit the contact surface between the lateral abutment grid 15, 16 and the roller 3, when the latter is fixed inside the housing 12.

[0052] At the same time, this solution allows increasing the lateral surface of the roller 3 exposed through the lateral abutment grid 15, 16 and consequently washing and drying the roller 3 more efficiently.

[0053] In addition, Figure 5 and Figure 6 show an alternative embodiment of the device 1, wherein the fixing body 14, 15, 16 comprises at least one through opening 17 made on the base element 14 and adapted to allow the flow of at least one operating fluid inside the housing 12.

[0054] In particular, the fixing body 14, 15, 16 comprises a plurality of through openings 17 of substantially circular shape.

[0055] Alternative embodiments of the fixing body 14, 15, 16 cannot however be ruled out wherein the through openings 17 are of different shape and/or size.

[0056] Conveniently, the device 1 comprises removable coupling means 18, 19 of the connecting means 4 to the retaining means 2.

[0057] Advantageously, the coupling means 18, 19 preferably comprise at least a first coupling element 18 made on one of either the retaining means 2 or the connecting means 4 and at least a second coupling element 19 to the first coupling element 18 made on the other of either the retaining means 2 or the connecting means 4.

[0058] Preferably, according to the embodiments of the device 1 shown in the figures, the first coupling element 18 is made at the centre of the base element 14 substantially opposed to the fixing body 14, 15, 16, and the second coupling element 19 is made at the first end portion 9 of the support body 8.

[0059] Conveniently, the device 1 comprises a plurality of retaining means 2 adapted to retain the rollers 3 of different sizes.

[0060] In particular, the retaining means 2 comprise fixing bodies 14, 15, 16 defining housings 12 having different diameters in order to accommodate rollers 3 having different diameters.

[0061] This way, by means of the coupling means 18, 19, the connecting means 4 can be associated with different retaining means 2 depending on the diameter of

the roller 3 to be washed and/or dried.

[0062] Preferably, the device 1 is made of corrosion-resistant material such as, e.g., antioxidant steel, so as to reduce the corrosive effects of some of the coatings in liquid form on the same device 1, giving the latter greater durability over time.

[0063] The operation of the device 1 described above is as follows.

[0064] Initially, the roller 3 should be inserted inside the housing 12 through the insertion opening 13, as shown in Figure 2.

[0065] Preferably, the roller 3 should be inserted inside the housing 12 until the base element 14 is abutted against it, as shown in Figure 3.

[0066] In this configuration, the roller 3 is interlocked inside the housing 12 by means of the lateral abutment grid 15, 16, which abuts against the lateral surface of the roller 3, fixing the position thereof.

[0067] The attachment element 5 should then be fixed to the actuating means 6.

[0068] Once this configuration is reached, the fixing body 14, 15, 16 is kept suspended inside a container 20 containing a washing fluid 21, e.g. such as a bucket containing water, as shown in Figure 4.

[0069] After that the fixing body 14, 15, 16 and the roller 3 are completely immersed in the washing fluid 21, it is possible to activate the actuating means 6, which set the fixing body 14, 15, 16 in rotation, and consequently also the roller 3, around the axis of rotation A.

[0070] This way, the rotation of the roller 3 immersed in the washing fluid 21 allows removing the absorbed coating of the absorbing surface of the roller itself.

[0071] In particular, during the rotation of the fixing body 14, 15, 16 inside the container 20, the washing fluid 21 penetrates inside the housing 12 through the openings defined by the lateral abutment grid 15, 16 and through the through openings 17 made on the base element 14, washing the roller 3.

[0072] Similarly, the device 1 can be used to dry the roller 3.

[0073] In fact, after washing the roller 3 and after removing the fixing body 14, 15, 16 from the container 20, it is possible to operate the actuating means 6, so as to dry the roller 3 from the washing fluid 21.

[0074] In particular, the fixing body 14, 15, 16 is set in rotation through the actuating means 6 while it is kept suspended in the air, e.g. inside an empty container 20, so as to remove the washing fluid 21 absorbed by the roller 3 thanks to the centrifugal force generated by the rotation.

[0075] Advantageously, the device 1 can also be used to mix the liquid coating stored inside a container 20.

[0076] In particular, the embodiment of the device 1 shown in Figure 5, wherein the spiral element 15 has a substantially rectangular cross-section, is particularly suitable for mixing the liquid coating.

[0077] In fact, the spiral elements 15 made according to the embodiment of the device 1 shown in Figure 5,

when moved in rotation inside the container 20, move a greater volume of painting than the spiral elements 15 shown in the other embodiments of the device 1.

[0078] It has in practice been ascertained that the described invention achieves the intended objects.

[0079] In particular, the retaining means in collaboration with the connecting means allow the rollers to be washed and dried easily and quickly for the spreading of liquid coatings.

[0080] In addition, the structural elements of the retaining means and of the connecting means make it possible to create a practical device 1 to be used and transported, which does not need for its operation to be connected to any source of washing fluid under pressure.

[0081] In addition, the coupling means allow quickly and easily connecting and disconnecting different retaining means depending on the size of the roller to be washed and/or dried.

[0082] In addition, the spiral element of the retaining means allows the liquid coating to be mixed easily before it is spread.

Claims

1. Device (1) for washing and drying rollers for spreading liquid coatings **characterized by** the fact that it comprises:

- retaining means (2) of at least one roller (3) for spreading at least one coating in liquid form to be washed and/or dried; and
- connecting means (4) locked together in rotation to said retaining means (2) and provided with at least one attachment element (5) to actuating means (6), which are adapted to rotate said retaining means (2) around at least one axis of rotation (A).

2. Device (1) according to claim 1, **characterized by** the fact that said connecting means (4) comprise at least one support body (8) of elongated shape, movable in rotation around said axis of rotation (A) and provided with at least one pair of end portions (9, 10) opposed to each other, of which a first end portion (9) is locked together in rotation with said retaining means (2) and a second end portion (10) is locked together in rotation with said attachment element (5).

3. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said retaining means (2) comprise at least one fixing body (14, 15, 16) of said roller (3) adapted to support said roller (3) coaxially with said connecting means (4).

4. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said fixing body (14, 15, 16) defines at least one housing (12)

which extends along said axis of rotation (A) and inside which said roller (3) can be inserted by interlocking in a removable manner.

5. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said housing (12) has a shape substantially complementary to said roller (3).

6. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said fixing body (14, 15, 16) defines at least one insertion opening (13) of said roller (3) inside said housing (12).

7. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said fixing body (14, 15, 16) comprises:

- at least one base element (14) adapted to abut against said roller (3) inside said housing (12);
- at least one lateral abutment grid (15, 16) of said roller (3) which extends along said axis of rotation (A) starting from said base element (14), defining said housing (12).

8. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said lateral abutment grid (15, 16) comprises at least one spiral element (15) of substantially elongated shape, which extends around said axis of rotation (A) and adapted to contain said roller (3) laterally.

9. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said spiral element (15) has a substantially circular cross-section.

10. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said spiral element (15) has a substantially rectangular cross-section.

11. Device (1) according to one or more of the preceding claims, **characterized by** the fact that said fixing body (14, 15, 16) comprises at least one through opening (17) made on said base element (14) and adapted to allow the flow of at least one work fluid inside said housing (12).

12. Device (1) according to one or more of the preceding claims, **characterized by** the fact that it comprises removable coupling means (18, 19) of said connecting means (4) to said retaining means (2).

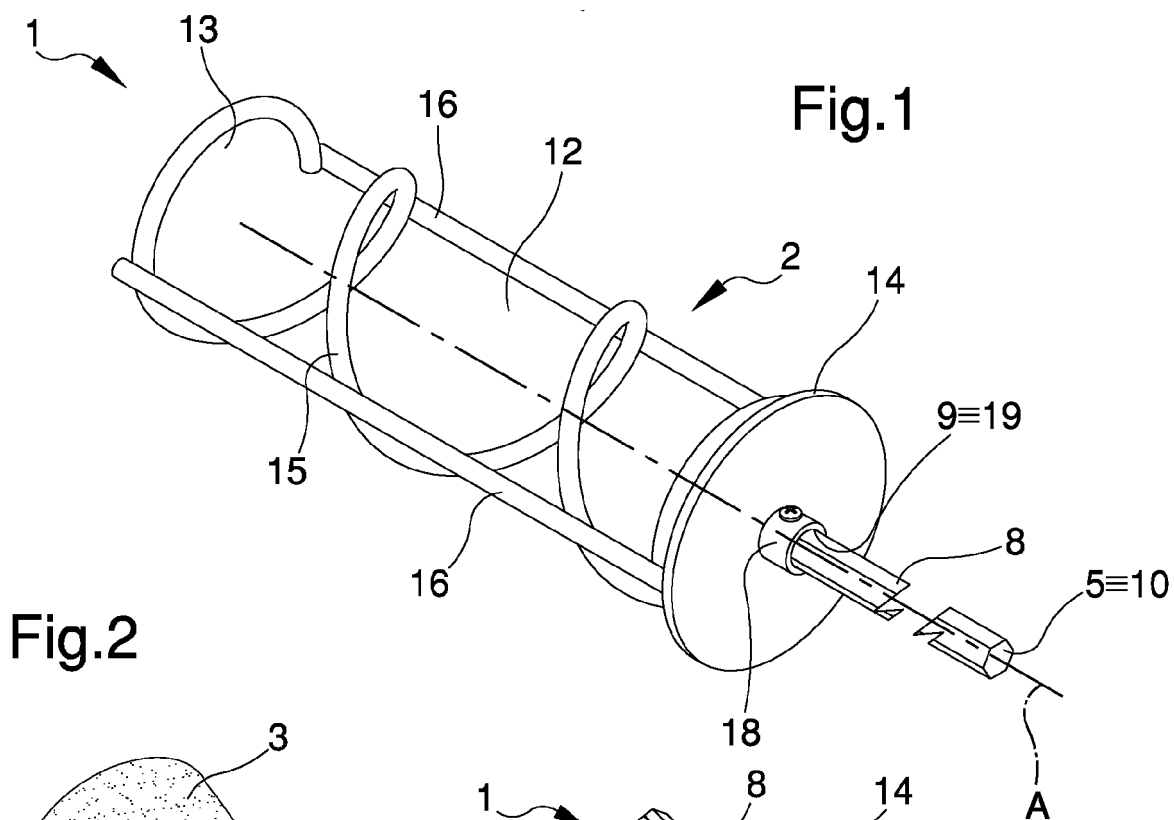


Fig.2

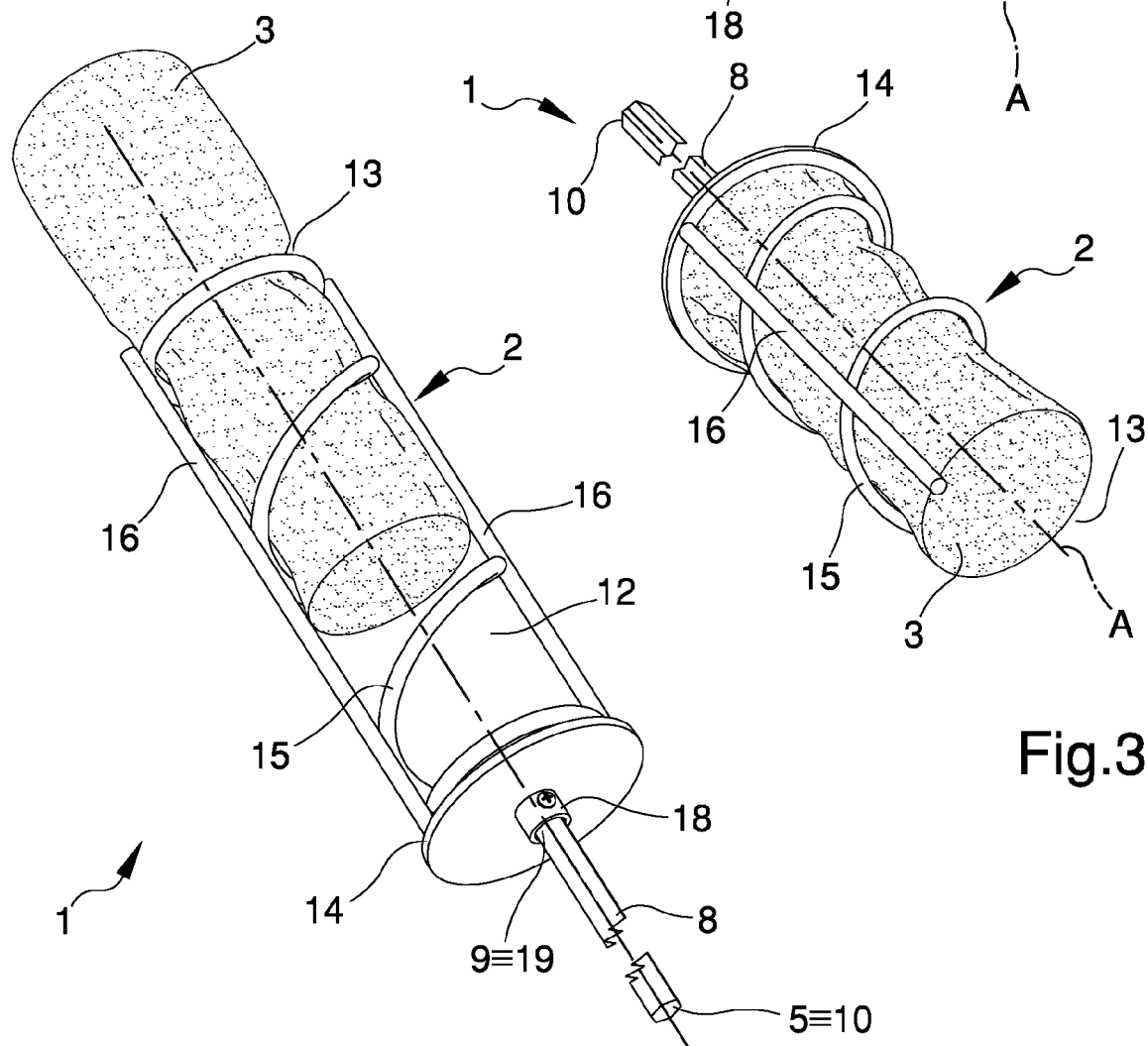


Fig.3

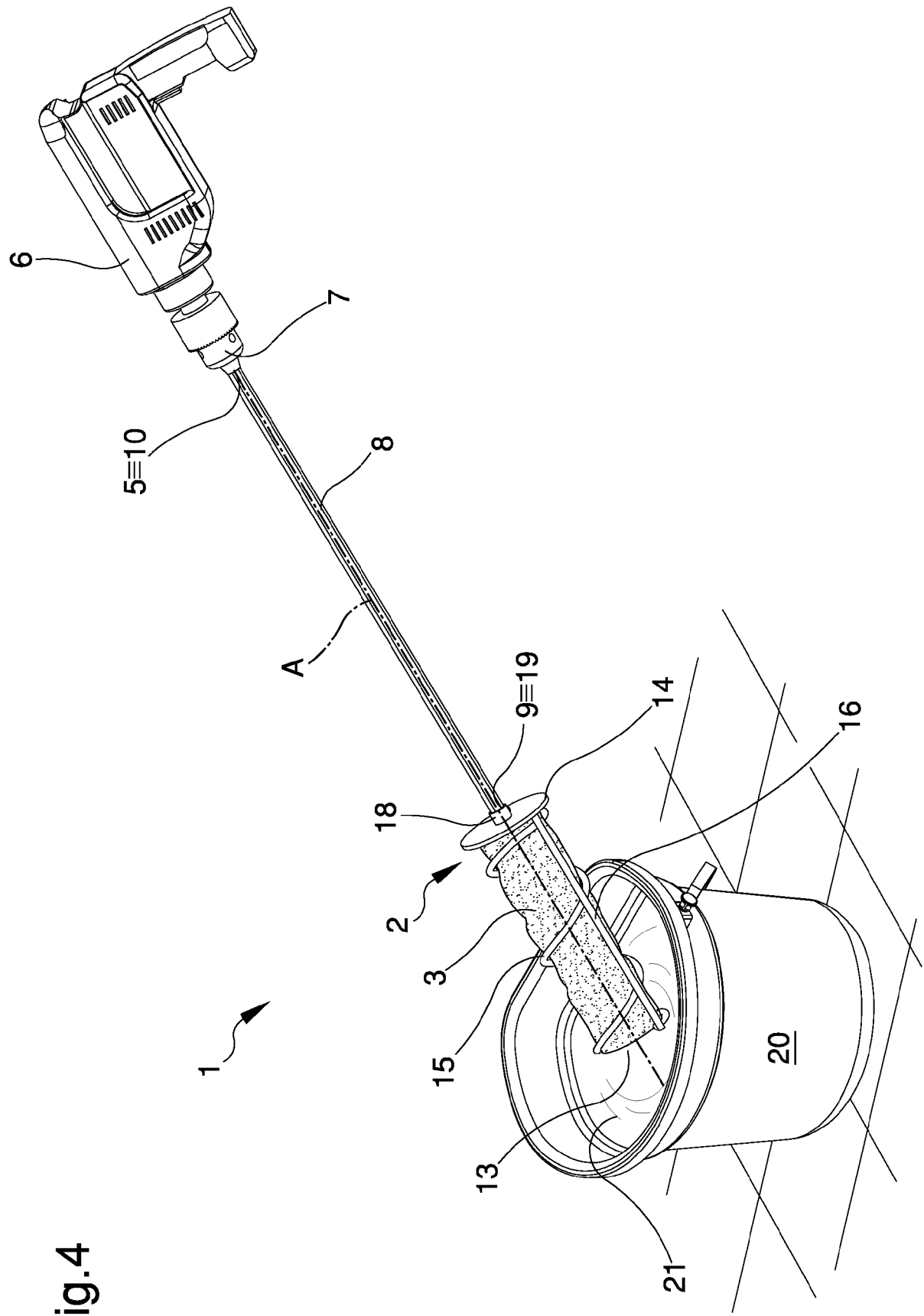


Fig. 4

Fig.5

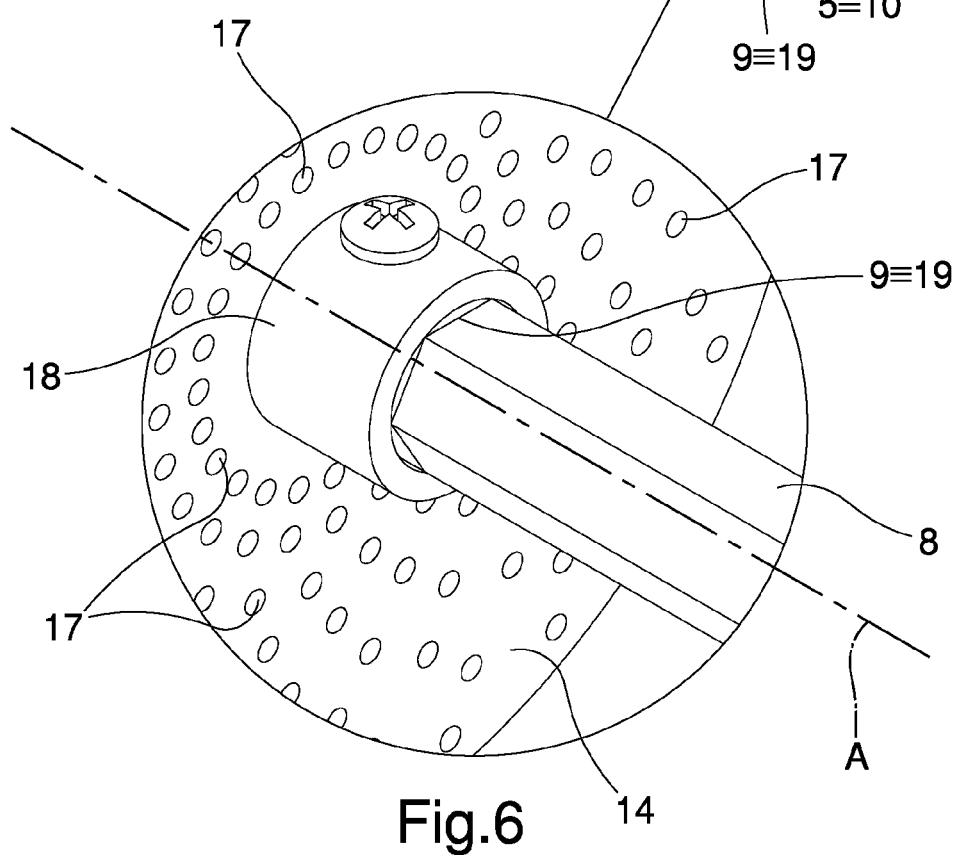
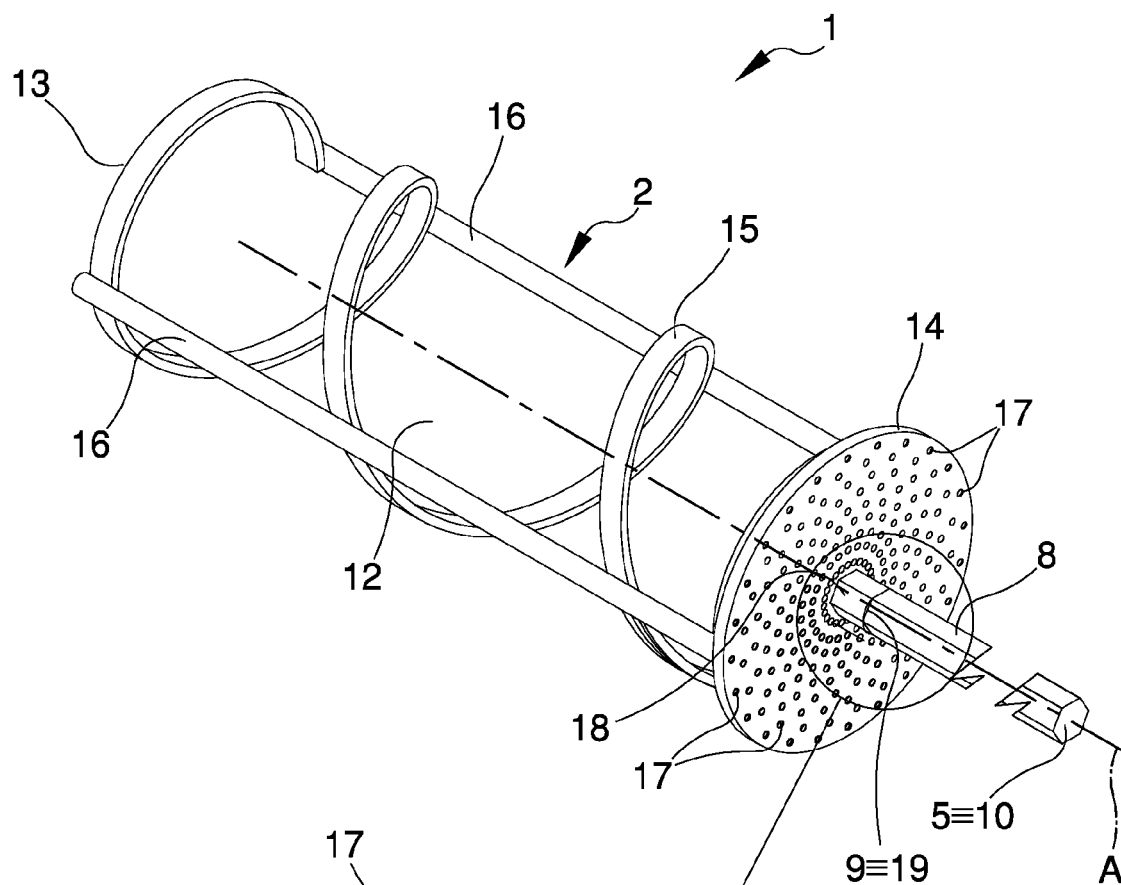


Fig.6



EUROPEAN SEARCH REPORT

 Application Number
 EP 19 20 4157

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 3 048 637 A1 (THUON SEBASTIEN [FR]) 15 September 2017 (2017-09-15) * the whole document *	1-7, 11, 12	INV. B44D3/00
X	US 3 608 120 A (SEILER EDWIN N) 28 September 1971 (1971-09-28) * the whole document *	1-3, 12	
A		4-11	
X	US 4 263 055 A (PERMAR ELBERT R) 21 April 1981 (1981-04-21) * the whole document *	1-3	
A		4-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			B44D B44F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 February 2020	Examiner Kelliher, Cormac
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 3048637	A1	15-09-2017	NONE
US 3608120	A	28-09-1971	NONE
US 4263055	A	21-04-1981	NONE

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