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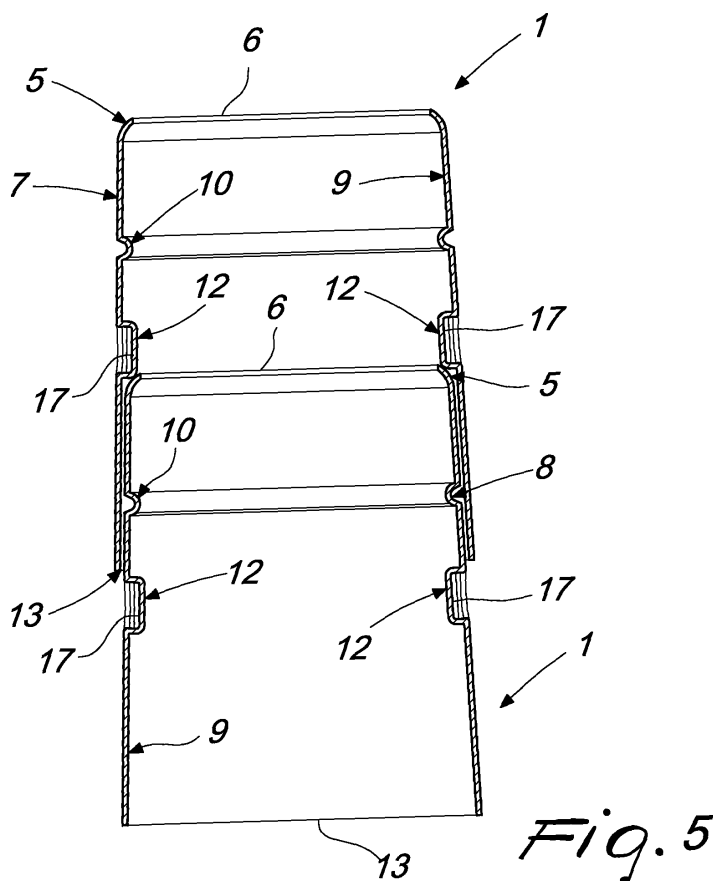
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(54) **Ferrule particularly for a brush**

(57) A ferrule (1), particularly for providing a brush, which is substantially frustum-shaped and hollow and from the inner lateral surface (9) of which there protrude

one or more protrusions (12) adapted to limit the insertion of another ferrule in the ferrule and are therefore adapted to prevent their mutual interlocking.



Description

[0001] The present invention relates to a ferrule particularly for providing a brush.

[0002] Metal ferrules shaped approximately like a frustum and adapted to fix the bristles to the handle of the brush are currently used to provide brushes.

[0003] These known types of ferrule are typically made of steel and are subjected to a galvanic surface plating treatment in order to protect them against corrosion; in particular, it is known to subject such ferrules to a galvanic nickel plating or brass plating or copper plating process.

[0004] The galvanic surface plating treatment provides for the immersion of the ferrule in an electrolytic bath, in which an electric current is made to flow in order to achieve the surface deposition of the chosen layer of metal on the surface of the ferrule.

[0005] The galvanic treatment termed tumbling is also known and provides for the simultaneous immersion of a large quantity of haphazardly arranged metallic bodies in the electrolytic bath; this treatment is not adapted for use for such ferrules of the known type.

[0006] Such ferrules in fact have a shape which causes them to get stuck one inside the other, with the consequence that some of their parts, covered by another ferrule, would not be affected by the galvanic surface plating treatment.

[0007] In order to subject the known types of ferrule to a galvanic surface plating treatment, it is common to hang them, in an appropriately mutually spaced configuration, from appropriately provided frames, which are then immersed in the electrolytic bath together with the ferrules that they support.

[0008] However, this operation has a drawback: the arrangement of the ferrules on the frame is in fact rather laborious and requires a long execution time, thus increasing the production times and costs of such known types of ferrule.

[0009] Further, the presence of the frame limits the number of ferrules that can be immersed simultaneously in the electrolytic bath, further increasing production times and therefore production costs.

[0010] The aim of the present invention is to solve the above described problems, eliminating the drawbacks of the cited background art, by providing a ferrule structure which allows to subject to a galvanic surface plating treatment a large quantity of ferrules in a reduced time.

[0011] Within this aim, an object of the invention is to provide a ferrule which can be used in combination with ordinary handles and bristles for brushes of the known type.

[0012] Another object is to provide a ferrule which is structurally simple and has low manufacturing costs.

[0013] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a ferrule, particularly for providing a brush, which is substantially frustum-shaped and hollow, characterized in that one or more protrusions protrude radially from the

inner lateral surface and are adapted to limit the insertion therein of another ferrule and are therefore adapted to prevent their mutual interlocking.

[0014] Advantageously, the correlation between the distance of such one or more protrusions from the smaller end face of the ferrule, the height of the ferrule, the diameter of the smaller end face, and the diameter of the larger end face of said ferrule is given in the accompanying table 1.

[0015] Conveniently, the one or more protrusions protrude radially from the inner lateral surface of the ferrule by such an extent as to form a free inner opening which is approximately equal to, or smaller than, the diameter of the ferrule proximate to the smaller end face thereof.

[0016] Advantageously, the arrangement of the one or more protrusions is such that by dividing ideally the ferrule into three sectors of the same height, formed by two planes which are substantially parallel to each other and to the smaller and larger end faces of the ferrule, the one or more protrusions are arranged in the intermediate sector.

[0017] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a brush to which a ferrule according to the invention is applied;

Figure 2 is a perspective view of a ferrule according to the invention;

Figure 3 is a sectional view, taken along a diametrical plane, of the ferrule of Figure 2;

Figure 4 is a sectional view, taken along the line IV-IV of Figure 3;

Figure 5 is a sectional view, taken along a diametrical plane, of two ferrules according to the invention stacked together;

Figure 6 is a view, similar to Figure 5, of another exemplary embodiment of two ferrules according to the invention;

Figure 7 is a sectional view of the ferrule according to the invention, with relevant table of measurements.

[0018] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0019] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0020] With reference to the figures, the reference numeral 1 generally designates a ferrule, particularly for providing a brush 2, with which it is possible to associate a handle 3, of a known type, and a plurality of bristles 4,

also of a known type.

[0021] The ferrule 1, advantageously made of steel plate, for example by drawing, is substantially frustum-shaped and hollow, and is preferably but not necessarily rounded at its perimetric edge 5 located at its smaller end face 6.

[0022] Proximate to the smaller end face 6, the ferrule 1 advantageously has an annular crimp which forms, on its outer lateral surface 7, an annular groove 8 and, on its inner lateral surface 9, an annular ridge 10, which protrudes radially inside it and can engage an appropriately provided abutment of a known type, which is not shown in the accompanying figures and is provided in the handle 3 in order to rigidly couple the ferrule 1 to the handle.

[0023] As an alternative, as shown in Figure 6, the ferrule 1 has, at its smaller end face 6, a reduction in its diameter, which forms an annular abutment 11.

[0024] One or more protrusions 12 protrude from the inner lateral surface 9 and are adapted to limit the insertion in the ferrule 1 of an additional ferrule, so as to prevent their mutual interlocking.

[0025] An example of the correlation between the distance of the one or more protrusions 12 from the smaller end face 6 of the ferrule 1, the height of the ferrule 1, the diameter of the smaller end face 6 and the diameter of the larger end face 13 of the ferrule 1 is shown in the accompanying table 1 for some exemplifying values of these measurements (the values are expressed in millimeters); the values not listed in table 1 can be obtained by interpolation of the values given therein.

[0026] Advantageously, the one or more protrusions 12 protrude radially from the inner lateral surface 9 of the ferrule 1 by such an extent as to form a free inner aperture for the ferrule 1 which is equal to, or smaller than, the diameter of the ferrule proximate to its smaller end face; in this manner, the insertion in the ferrule 1 of another ferrule 1 is limited by the abutment of the perimetric edge 5 of the latter with the one or more protrusions 12.

[0027] Advantageously, the arrangement of the one or more protrusions 12 is such that by ideally dividing the ferrule 1 into three sectors of equal height, designated respectively by the reference numerals 14a, 14b and 14c, formed by two surfaces, designated by the reference numerals 15 and 16, which are substantially parallel to each other and to the smaller end face 6 and the larger end face 13 of the ferrule 1, the one or more protrusions 12 are arranged in the sector 14b that is comprised between the other two.

[0028] There can be a chosen number of protrusions 12, all of which are preferably arranged on a same plane which is approximately parallel to the larger and smaller end faces of the ferrule 1.

[0029] In the exemplary embodiment shown in the accompanying figures, there are two protrusions 12, arranged in diametrically opposite positions and each obtained for example by punching so as to form a stud 17, which is advantageously approximately cylindrical and is rounded at its free end; as an alternative, the stud 17

can advantageously have a chosen shape, for example a hemispherical, frustum-like, or pyramid-like shape.

[0030] As an alternative, there can be a single protrusion constituted by an annular tab, not shown in the accompanying figures, which protrudes radially from the internal surface 9 of the ferrule 1 so that it can be engaged at or proximate to the perimetric edge 5 of another ferrule 1.

[0031] Operation is therefore as follows: with reference to the accompanying figures, a plurality of ferrules 1 according to the invention can be immersed simultaneously in an appropriately provided tank, which contains an electrolytic solution, in order to subject them to a galvanic surface plating treatment.

[0032] If a ferrule 1 enters accidentally another ferrule 1, the presence of the one or more protrusions 12 prevents the two ferrules 1 from becoming mutually interlocked, thus allowing the entire surface of the ferrules 1 to come into contact with the electrolytic solution.

[0033] It is therefore possible to subject simultaneously to a galvanic surface coating treatment a large number of ferrules 1 without running the risk that some parts of their surface might not be treated adequately.

[0034] It has thus been found that the invention has achieved the intended aim and objects, a ferrule particularly for providing a brush having been provided which, by way of the presence of the one or more protrusions, does not interlock with other ferrules and therefore allows to subject simultaneously to a galvanic treatment, in the so-called tumbling method, a large number of ferrules, thus reducing production times and costs with respect to the background art.

[0035] Further, the ferrule according to the invention does not require an appropriately provided frame to which it is to be fixed before immersion in the electrolytic bath, and therefore the number of ferrules that can be treated simultaneously increases considerably, further reducing production times and costs.

[0036] Further, the ferrule according to the invention can be used in combination with ordinary handles and bristles for brushes of a known type.

[0037] Further, the production costs of the ferrule according to the invention remain low, since it is provided only by means of components which are easy to manufacture and/or assemble.

[0038] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0039] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to specific requirements.

[0040] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0041] The characteristics indicated as advantageous, convenient or the like may also be omitted or be replaced

with equivalents.

[0042] The disclosures in Italian Patent Application No. TV2006A000068 from which this application claims priority are incorporated herein by reference.

[0043] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A ferrule, particularly for providing a brush, which is substantially frustum-shaped and hollow, **characterized in that** one or more protrusions protrude radially from the inner lateral surface and are adapted to limit the insertion therein of another ferrule and are therefore adapted to prevent their mutual interlocking.
2. A ferrule, particularly for providing a brush, which is substantially frustum-shaped and hollow, **characterized in that** one or more protrusions protrude radially from its inner lateral surface and are adapted to limit the insertion of another ferrule in said ferrule, so as to prevent their mutual interlocking, the correlation between the distance of said one or more protrusions from the smaller end face of said ferrule, the height of said ferrule, the diameter of said smaller end face and the diameter of the larger end face of said ferrule being given in the accompanying table 1.
3. A ferrule, particularly for providing a brush, which is substantially frustum-shaped and hollow, **characterized in that** it has one or more protrusions which protrude radially from its inner lateral surface by such an extent as to form a free internal opening for said ferrule which is approximately equal to, or smaller than, the diameter of said ferrule proximate to said smaller end face thereof.
4. A ferrule, particularly for providing a brush, which is substantially frustum-shaped and hollow, **characterized in that** one or more protrusions protrude radially from its inner lateral surface and are adapted to limit the insertion of another ferrule within said ferrule, so as to prevent their mutual interlocking, the arrangement of said one or more protrusions being such that by ideally dividing said ferrule into three sectors of equal height, formed by two planes which are substantially parallel to each other and to the smaller and larger end faces thereof, said one or more protrusions are arranged in the intermediate sector.
5. The ferrule according to one or more of the preceding claims, **characterized in that** said one or more protrusions all lie on a same plane, which is approximately parallel to the plane which passes through said larger and smaller end faces of said ferrule.
6. The ferrule according to claim 5, **characterized in that** there are at least two of said one or more protrusions.
7. The ferrule according to claim 6, **characterized in that** said one or more protrusions are two and are arranged in diametrically opposite positions.
8. The ferrule according to one or more of the preceding claims, **characterized in that** said one or more protrusions are obtained by punching so that each one forms a stud which has a chosen shape.
9. The ferrule according to claim 8, **characterized in that** said studs have an approximately cylindrical shape which is rounded at their free end.
10. The ferrule according to claim 8, **characterized in that** said studs have a hemispherical or frustum-like or pyramid-like shape.
11. The ferrule according to claim 5, **characterized in that** it has a single protrusion which is constituted by an annular tab which protrudes radially from the internal surface of said ferrule and can engage at, or proximate to, the perimetric edge of the smaller end face of an additional ferrule.

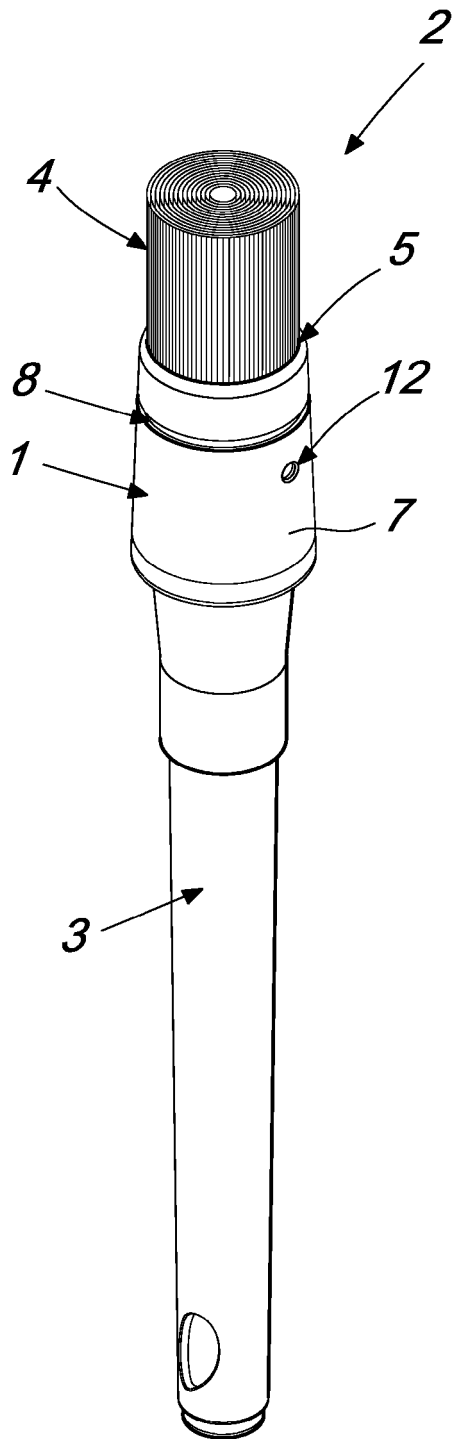


Fig. 1

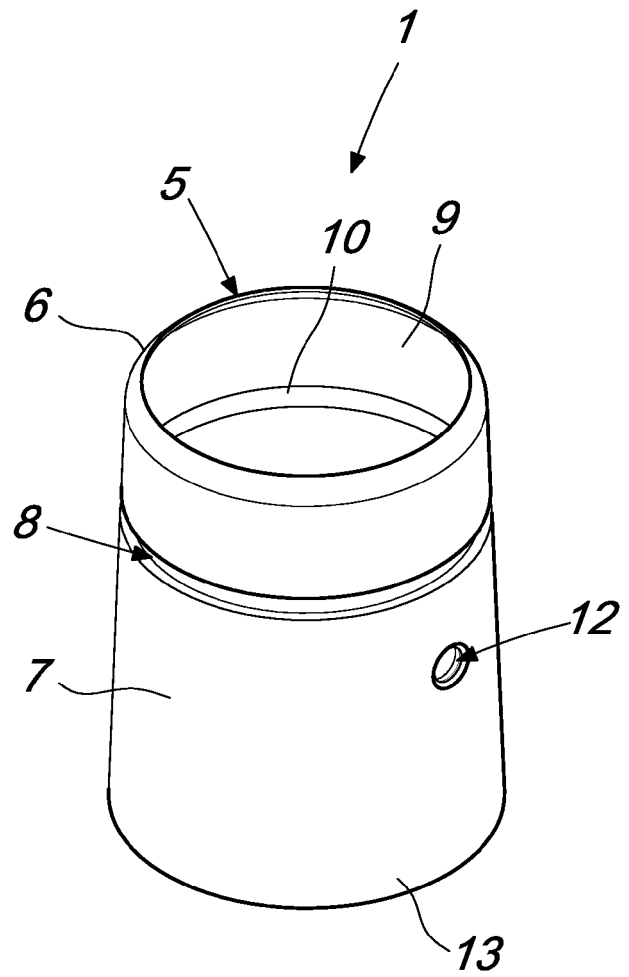
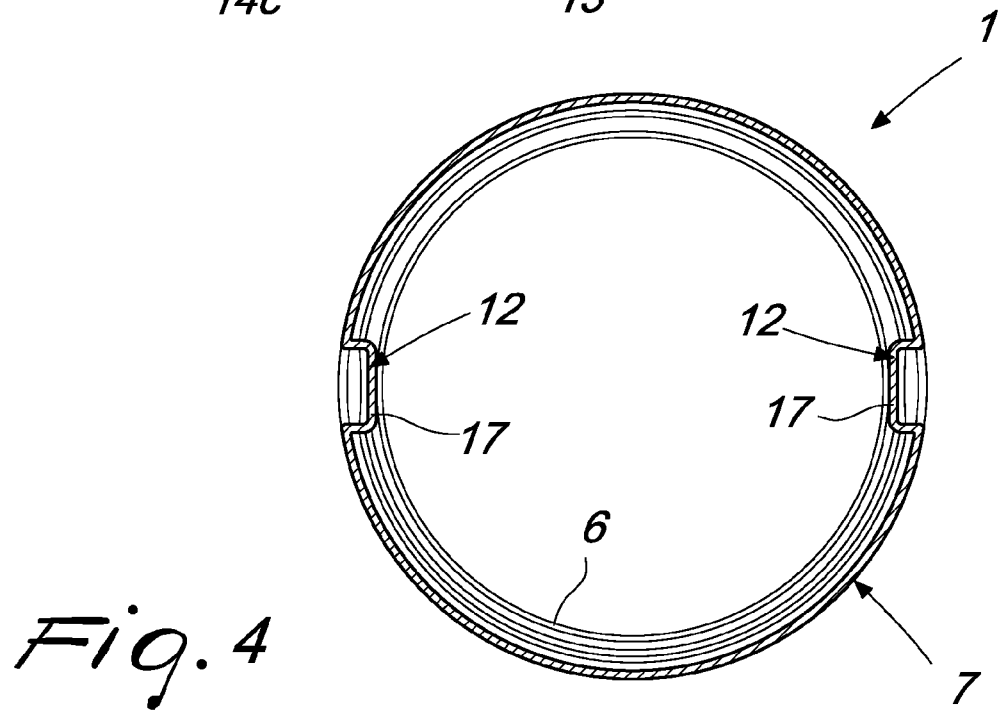
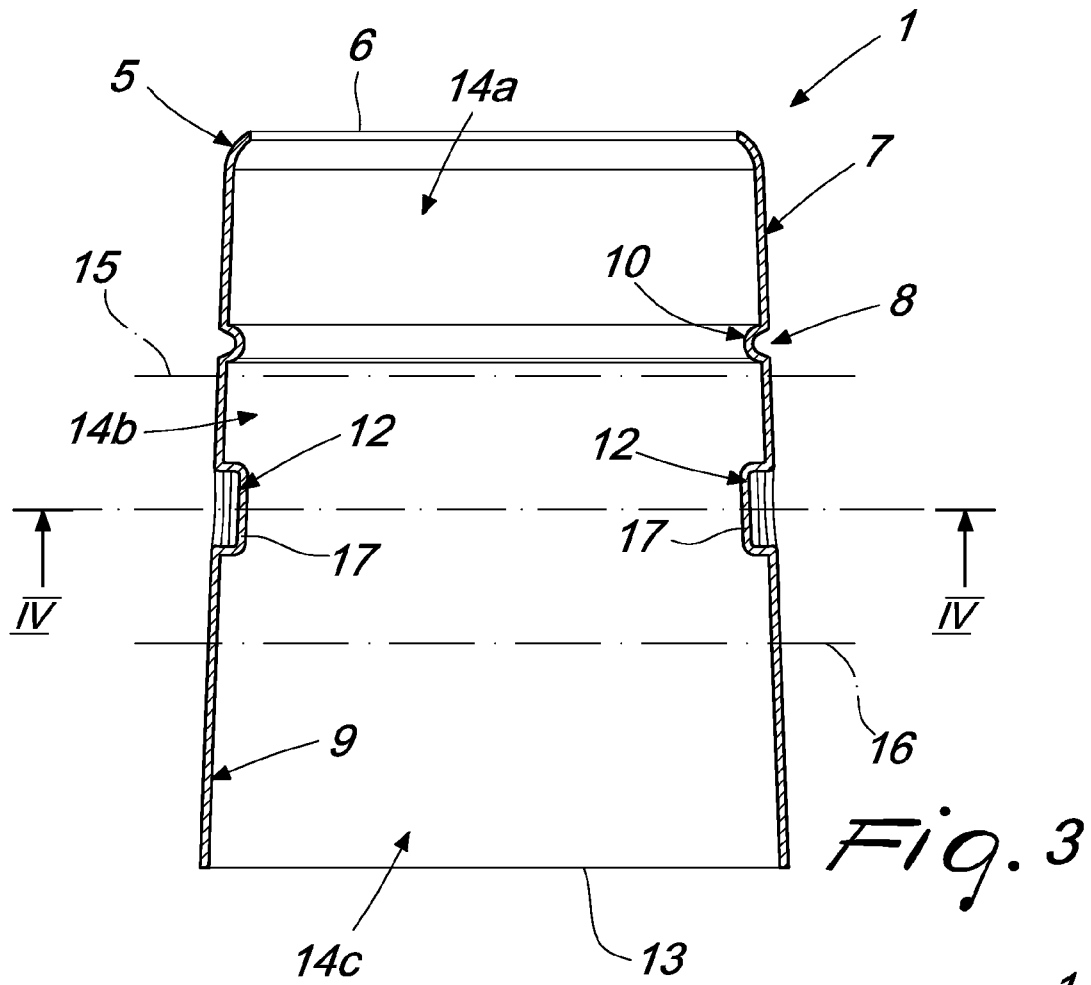


Fig. 2



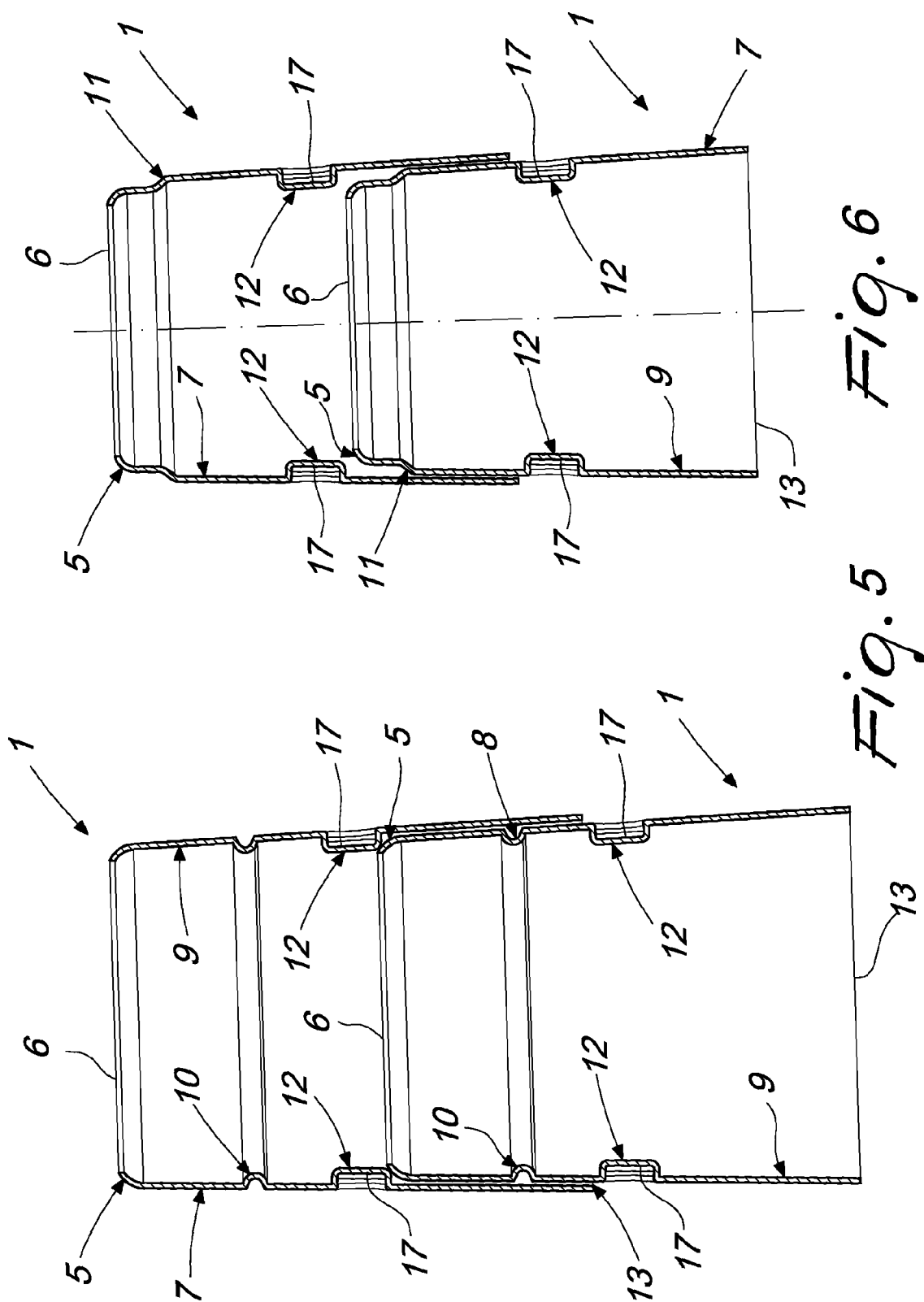


TABLE 1

Ø1-DIAMETER OF SMALLER END FACE (mm)	11.5	14	18.3	21	23.3	27	30.5	33
Ø2-DIAMETER OF LARGER END FACE (mm)	13.7	16.5	21.3	24	27	30.2	34.3	37
H - FERRULE HEIGHT (mm)	20	23	25	27	29	31	33	35
D - DISTANCE FROM SMALLER END FACE TO PROTRUSIONS (mm)	6.5	10	11	16	16	16	15	17

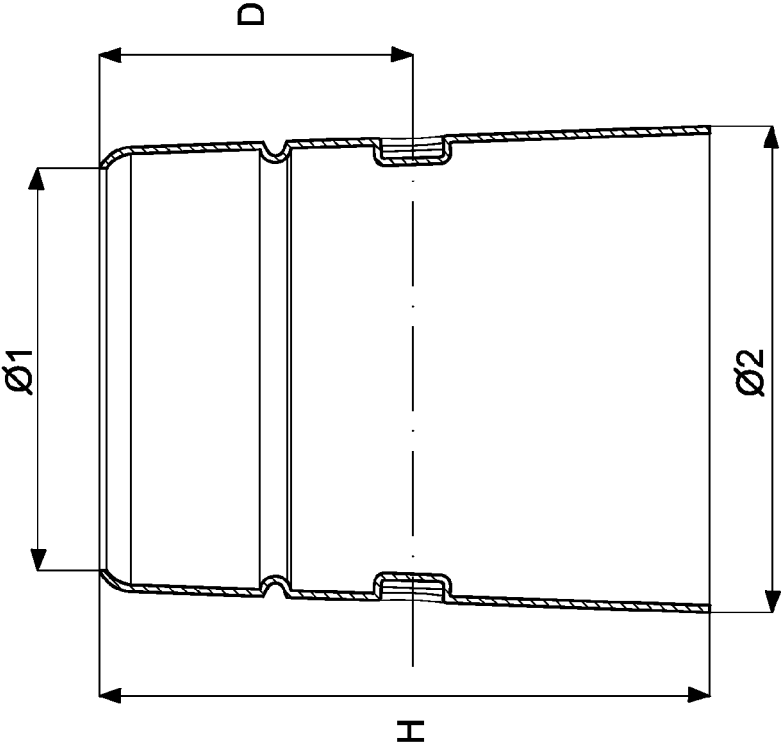


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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