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(54) CLEANING IMPLEMENT

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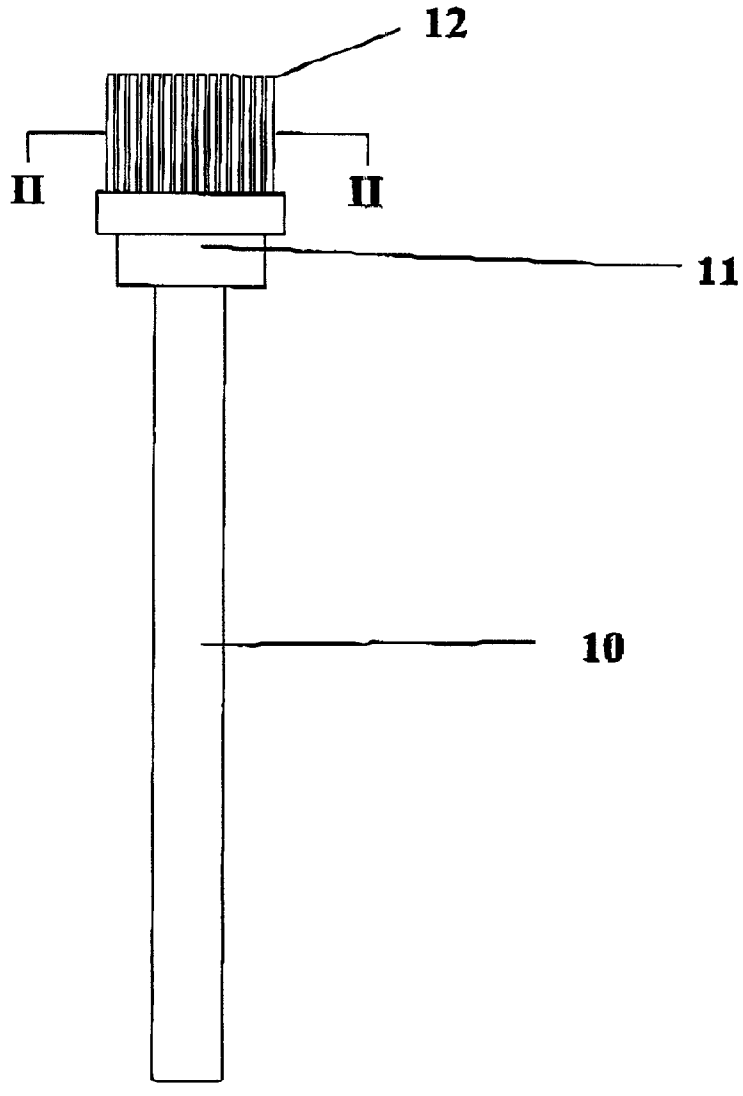
(57) **ABSTRACT**

A one-piece toothbrush or other cleaning implement formed of plastics material by injection moulding comprises an elongated handle **10**, a head **11** at one end of the handle and a group of at least thirty resiliently flexible bristles **12** of a small diameter extending from the head generally axially of the handle, the bristles **12** in the group being laterally spaced apart from each other.

The cleaning implement is a one-piece member of injection moulded plastics material and as such is cheap to manufacture from waste plastics.



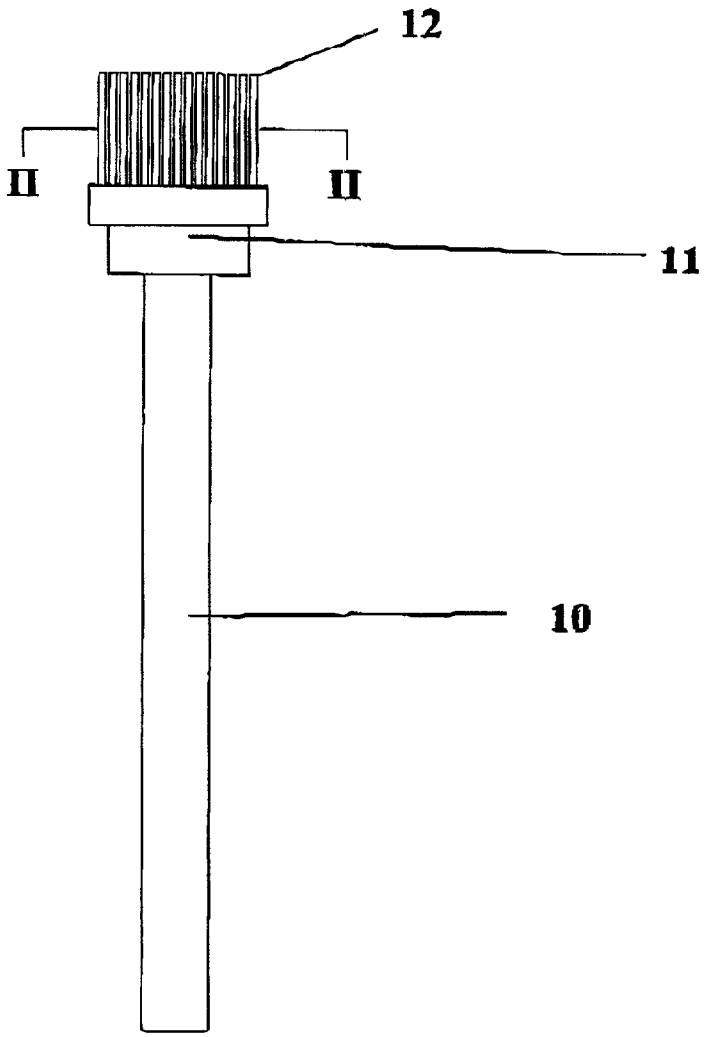


Figure 1

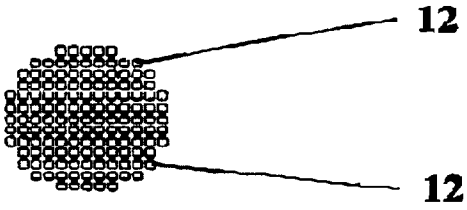


Figure 2

CLEANING IMPLEMENT

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a cleaning implement and more particularly but not solely to a brush.

[0003] 2. Related Background Art

[0004] Brushes are well known implements for cleaning a wide variety of items and surfaces. Typically, brushes comprise a head portion and an integral or separate handle extending from the head. A plurality of bristles are attached to the head.

[0005] Such brushes are expensive to manufacture and are thus unsuitable for use as cleaning implements intended to be used only once or twice.

[0006] Brushes having bristles or groups of bristles axially spaced apart are more suited to cleaning than brushes in which all of the bristles are side-by-side. A disadvantage of known brushes is that it is difficult to make very small cleaning brushes in which the bristles or groups of bristles are laterally spaced apart.

[0007] When forming injection moulded plastics articles, there is often a large amount of waste plastics material. Hitherto, such waste material has been discarded and it will be appreciated that this is costly.

[0008] We have now devised a clearing implement which alleviates the above-mentioned problems.

SUMMARY OF THE INVENTION

[0009] In accordance with this invention there is provided a one-piece cleaning implement formed of plastics material by injection moulding, the implement comprising an elongated handle, a head at one end of the handle and a group of at least thirty resiliently flexible bristles extending from the head generally axially of the handle, the bristles in the group being laterally spaced apart from each other, wherein each bristle is less than 2 mm in diameter.

[0010] The cleaning implement is a one-piece member of injection moulded plastics material and as such is cheap to manufacture from waste plastics.

[0011] Preferably the group of bristles is substantially circular in cross-section.

[0012] In one embodiment each bristle is the same length, with each bristle being between 4 and 15 mm in length.

[0013] In an alternative embodiment, the bristles around the outside of the group are shorter than the bristles in the centre of the group, with the longest bristles being between 4 and 15 mm in length.

[0014] Preferably, the length of the bristles in the group increases in a stepwise manner towards the centre of the group.

[0015] Preferably, the bristles extend from a surface of the head which lies in a plane normal to the longitudinal axis of the handle.

[0016] The gap between adjacent bristles of the implement may contain a cleaning material such as toothpaste.

[0017] Preferably, the bristles are sufficiently flexible to enable opposite ends of the bristle to be brought end-to-end.

[0018] Preferably, the cleaning implement is arranged as a toothbrush, preferably of the type for single use only.

[0019] Preferably, the opposite end of the handle to the head is pointed, so that it can be used as a toothpick.

[0020] Preferably, the plastics material is polypropylene or polyethylene, which respectively form hard and soft bristles.

[0021] Preferably, the maximum distance between any two bristles is less than 10 mm.

[0022] These and other objects, features and advantages of the present invention will be clearly understood through consideration of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, in which:

[0024] **FIG. 1** is a side view of a cleaning implement in accordance with this invention; and

[0025] **FIG. 2** is a sectional view along the line II-II of **FIG. 1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Referring to the drawings, there is shown a one-piece cleaning implement moulded from plastics material, such as polypropylene or polyethylene and comprising an elongated handle **10**, an enlarged head **11** at one end of the handle **10** and a plurality of resiliently flexible bristles **12** extending from the head **11**, axially of the handle **10**.

[0027] The bristles **12** extend parallel to each other and are spaced apart by a gap which is less than the width of one bristle **12**. Each bristle **12** is circular in section and has a diameter of approximately 0.5 mm.

[0028] In the present embodiment, each bristle **12** is of the same length to form a flat tip, although the tip of the implement could be convex.

[0029] The bristles **12** extend from a flat surface of the head **11**, which lies in a plane normal to the axis of the elongated handle **10**. The bristles **12** are arranged in a circular group having a diameter less than 10 mm.

[0030] In use, the cleaning implement can be used to clean a wide variety of surfaces, such as the inside of a nozzle of a baby's feeding cup. Alternatively, the cleaning implement would be arranged as a single use toothbrush which can be provided in restaurants etc. for cleaning teeth after a meal. In this embodiment, the opposite end of the handle **10** to the head **11** may be pointed, so as to form a toothpick.

[0031] It will be appreciated that a cleaning implement in accordance with this invention is simple and inexpensive to manufacture and yet forms an ideal implement for cleaning a wide variety of surfaces.

[0032] While the preferred embodiment of the invention have been shown and described, it will be apparent to those skilled in the art that changes and modifications may be

made therein without departing from the spirit of the invention, the scope of which is defined by the appended claims.

We claim:

1. A one-piece cleaning implement formed of plastics material by injection moulding, the implement comprising an elongated handle, a head at one end of the handle and a group of at least thirty resiliently flexible bristles extending from the head generally axially of the handle, the bristles in the group being laterally spaced apart from each other, wherein each bristle is less than 2 mm in diameter.

2. A one-piece cleaning implement as claimed in claim 1, in which the group of bristles is substantially circular in cross-section.

3. A one-piece cleaning implement as claimed in claim 1, in which each bristle is the same length, with each bristle being between 4 and 15 mm in length.

4. A one-piece cleaning implement as claimed in claim 1, in which the bristles around the outside of the group are shorter than the bristles in the centre of the group, with the longest bristles being between 4 and 15 mm in length.

5. A one-piece cleaning implement as claimed in claim 4, in which the length of the bristles in the group increases in a stepwise manner towards the centre of the group.

6. A one-piece cleaning implement as claimed in claim 1, in which the bristles extend from a surface of the head which lies in a plane normal to the longitudinal axis of the handle.

7. A one-piece cleaning implement as claimed in claim 1, in which a gap between adjacent bristles of the implement contains a cleaning material.

8. A one-piece cleaning implement as claimed in claim 1, in which the bristles are sufficiently flexible to enable opposite ends of the bristle to be brought end-to-end.

9. A one-piece cleaning implement as claimed in claim 1, in which the maximum distance between any two bristles is less than 10 mm.

10. A one-piece toothbrush formed of plastics material by injection moulding, the toothbrush comprising an elongated handle, a head at one end of the handle and a group of at least thirty resiliently flexible bristles extending from the head generally axially of the handle, the bristles in the group being laterally spaced apart from each other, wherein each bristle is less than 2 mm in diameter.

11. A one-piece toothbrush as claimed in claim 10, in which the opposite end of the handle to the head is pointed.

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