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54	TITLE OF INVENTION

Device for discharging a spreadable material

57	ABSTRACT (NOT MORE THAN 150 WORDS)

NUMBER OF SHEETS	17

The sheet(s) containing the abstract is/are attached.

If no classification is furnished, Form P.9 should accompany this form.
The figure of the drawing to which the abstract refers is attached.

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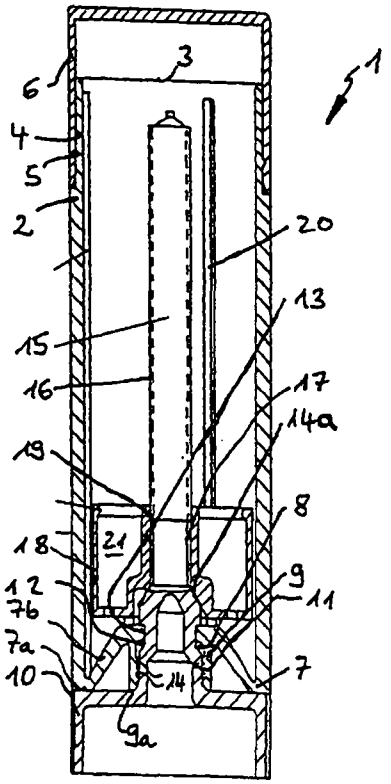
[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR DISCHARGING A SPREADABLE MATERIAL

(54) Bezeichnung: VORRICHTUNG ZUR ABGABE EINES STREICHFÄHIGEN MATERIALS



(57) Abstract: The invention relates to a device (1) for receiving and discharging a spreadable material. Said device comprises a tubular receiving element (2) in which a piston-type element (18) provided with an inside thread (19), locked against rotation, and carrying the spreadable material is arranged in such a way that it can be displaced in the longitudinal direction from the bottom (7) of the tube of the receiving element (2) to the discharge end (3) and back. Said piston-type element can be displaced by an externally operable base-type twist grip (10) which is provided on the other end of the receiving element (2). Said twist grip (10) comprises a screw rod (15) which is rotatably positioned in a through hole (8) of the bottom (7) of the tube and is held in the axial direction. Said screw rod co-operates with the inside thread (19) of the piston-type element (18). The aim of the invention is to improve one such device in such a way that torsional stress of the rod (15) is also avoided during misoperation. To this end, the outside thread (16) of the screw rod (15) in the region adjacent to the bottom (7) of the tube merges into a thread-free region (17) of the rod (15), said thread-free region having a smaller outer diameter in relation to the inner diameter of the inside thread (19) of the piston-type element (18), in such a way that the rod (15) can slide through in the lowest position of the piston-type element (18) during further rotation in relation to the piston-type element (18).

(57) Zusammenfassung: Eine Vorrichtung (1) zur Aufnahme und Abgabe eines streichfähigen Materials mit einem hülsenförmigen Aufnahmeelement (2), in welchem in Längsrichtung vom Hülsenboden (7) des Aufnahmeelementes (2) bis zum Abgabeende (3) und zurück verschiebbar verdrehsicher ein mit einem Innengewinde (19) versehenes, das streichfähige Material tragendes kolbenförmiges Element (18) angeordnet ist, welches von einem von aussen bedienbaren, am anderen Ende des Aufnahmeelementes (2) vorgesehenen sockelförmigen Drehgriff (10) verschiebbar ist, wobei der Drehgriff (10) eine in einer Durchtrittsöffnung (8) des Hülsenbodens (7) drehbar gelagerte und in Axialrichtung gehaltene Schraubspindel

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Device for Discharging a Spreadable Material

This invention relates to a device for dispensing a spreadable (i.e. highly viscous) material comprising a tube-like holding element in which is arranged an internally screwthreaded, non-rotatable piston-like element which carries the spreadable material and which is designed for displacement longitudinally of the tube base of the holding element to the dispensing end by an externally operated pedestal-like control wheel provided at the other end of the holding element, the pedestal-like control wheel comprising an axially supported screwthreaded spindle which is mounted for rotation in an opening in the tube base and which co-operates with the internal screwthread of the piston-like element.

A device of the type in question has been known for some time, for example from applicants' **DE 195 01 213 C2** which describes an adhesive stick comprising a cylindrical tube of which the open dispensing end is provided with a removable closure cap to stop the adhesive paste accommodated in the tube from drying out when the adhesive stick is not in use. The adhesive paste in the tube is poured into a piston-like element and, together with this piston-like element, is held non-rotatably in the tube and designed for longitudinal displacement in both directions in the tube, the piston-like element being provided – for displacement – with an internally screwthreaded bore in which engages a screwthreaded spindle that extends over the entire length of the tube and hence through the adhesive paste and, at its end, merges integrally into a pedestal-like control wheel which resembles a knurled nut and which, at the other end of the tube, is mounted for rotation and projects outwards from the tube at the base thereof and enables the device to be operated by turning the pedestal-like control wheel in one direction or the other while the tube is held firmly so that the piston-like element and the adhesive paste joined to

it are moved in one direction or the other relative to the tube and adhesive is either dispensed or the adhesive paste is drawn back into the tube.

This known device has been successfully used for some time because it constitutes an easy-to-handle and, at the same time, very stable article. However, it has been found in practice that, unless the device is used properly, the spindle is subjected to such serious torsion if it is turned any further when the piston is in its lowermost position that it breaks off. This results in destruction of the device which thus becomes unusable. The same unwanted effect can also sometimes occur before the filling step of the automated assembly of the device if the tube-like element is moved into the lowermost position by corresponding rotation of the spindle before the device is filled with the spreadable paste.

The problem addressed by the present invention was to improve a device of the type mentioned at the beginning in such a way that torsion of the spindle would be reliably avoided even in the event of incorrect operation and resulting breakage of the spindle.

In a device of the type mentioned at the beginning, the solution to this problem as provided by the invention is characterized in that the external screwthread of the screwthreaded spindle merges in the region adjoining the tube base into a non-screwthreaded region of the spindle which has an external diameter smaller than the internal diameter of the internal screwthread of the piston-like element so that, in the lowermost position of the piston-like element, the spindle is able to slip through relative to the piston-like element if it is rotated any further.

Since the external screwthread of the screwthreaded spindle no longer extends over the entire displacement path of the piston-like element in the device according to the invention, but is missing in the lowermost region so that a screwthread-free region with a smaller external diameter is formed, the spindle is able to slip through relative to the piston-like element if it is rotated any further in the lowermost position of the piston-like

element. In this way, the spindle is not longer subjected to torsion and cannot break off, even in the event of incorrect operation, so that the device as a whole remains reliably usable.

In order to prevent the piston-like element or its internal screwthread from moving completely out of contact with the screwthreaded region of the spindle when the piston-like element is in its lowermost position, the length of the screwthread-free region of the spindle is shorter than the length of the internal screwthread of the piston-like element. If then the spindle is turned in the other, opposite direction, the piston-like element can readily be displaced back to the dispensing end because it does not move completely out of contact with the external screwthread of the spindle.

In a particularly preferred embodiment, the height of the screwthread-free region of the spindle is such that, in the lowermost position of the piston-like element, the internal screwthread of the piston-like element remains in contact with the lowermost thread of the spindle. This ensures that the spindle is able to slip through freely relative to the piston-like element and also guarantees that the screwthreads of the piston and spindle do not move completely out of contact.

An exemplary embodiment of the invention is described in more detail in the following with reference to the accompanying drawings, wherein:

Figure 1 is a section through a device according to the invention.

Figure 2 is a simplified view of the lower part of the spindle with the piston-like element.

A device according to the invention for dispensing a spreadable material is generally denoted by the reference numeral 1 in the drawings and, in the illustrated embodiment, is in the form of an adhesive stick, i.e. the material is an adhesive paste. The device may of course also be designed as a lip-care stick; other applications are also possible.

The device 1 according to the invention firstly comprises a tube-like

holding element 2 of which the upper end – open in the in-use position – is denoted by the reference numeral 3. Provided externally on the tube-like holding element 2 at the dispensing end 3 is a taper 4 with an encircling stop bead 5 which enables a removable closure cap 6 to be held tightly in place.

At its end opposite the open dispensing end 3, the tube-like holding element 2 comprises a tube base 7 with a central opening 8. The tube base 7 has a horizontal base region 7a and a conical opening region 7b which borders the opening 8 and which merges into a tubular region 9 surrounding the opening 8.

In the opening 8 or in the tubular region 9 of the tube base 7, a pedestal-like control wheel 10 is mounted on the holding element 2. To this end, the pedestal-like control wheel 10 is provided on top with a tubular extension 11 provided with an encircling groove 12 in which engages an encircling stop bead 13 of the tube base 7 that borders the opening 8. In addition, guide beads 14 may be provided for further guiding or holding the pedestal-like control wheel 10 in the tubular region 9.

In the position shown in Fig. 1, the pedestal-like control wheel 10 is held axially, but able to rotate, between the stop bead 12 and the free end 9a of the tubular region.

The tubular extension 11 of the pedestal-like control wheel 10 merges into a conically tapered region 14a and opens, preferably integrally, into a screwthreaded spindle 15 of which the length substantially corresponds to the height of the interior of the holding element 2. The screwthreaded spindle 15 is provided with an external screwthread 16. However, between its externally screwthreaded region 16 and the tapered part 14 of the pedestal-like control wheel 10, the spindle 15 has a screwthread-free section 17 of which the external diameter substantially corresponds to the internal diameter of the external screwthread 16.

If the pedestal-like control wheel 10 with the spindle 15 is mounted

in the holding element 2 by press fitting, a piston-like element 18 with an internal screwthread 19 is introduced from the free dispensing end 3 and screwed onto the screwthreaded spindle 15. The piston-like element 18 is provided externally with a protuberance which engages in a groove 20 extending over the height of the holding element 2 so that the piston-like element 18 is prevented from rotating relative to the holding element 2. By rotation of the screwthreaded spindle 15, the piston-like element 18 is thus longitudinally displaced in one direction or the other relative to the holding element 2.

Internally, the piston-like element 18 comprises a holding region 21 which carries the material (not shown), for example adhesive.

As can be seen from Figs. 1 and 2, the screwthread-free region 17 of the spindle 15 is of such a height that, in the lowermost position of the tube-like element 18, the spindle 15 is able to slip through relative to the tube-like element 18 if it is rotated any further. The height of the screwthread-free region 17 of the spindle 15 is smaller than the height of the internal screwthread 19 of the piston-like element 18 and is preferably such that, in the lowermost position of the piston-like element 18, the internal screwthread 19 of the piston-like element 18 remains in contact with the lowermost thread of the spindle 15.

If, now, the piston-like element 18 is turned into the lowermost position by rotation of the pedestal-like control wheel 10 and if the spindle 15 is rotated further in the same direction in the event of incorrect operation, the spindle 15 is able to slip through freely relative to the piston-like element 18 so that it is not subjected to torsion and, in particular, cannot be broken away from the pedestal-like control wheel 10.

The invention is not of course confined to the illustrated embodiment. Other embodiments are possible without departing from the basic concept of the invention. Thus, the tube base 7 may of course be differently designed and the spindle 15 differently mounted, the only

important requirement being that the spindle 15 should have a substantially screwthread-free region 17 at its lower end, as mentioned above.

CLAIMS

1. A device for dispensing a spreadable material comprising a tube-like holding element in which is arranged an internally screwthreaded, non-rotatable piston-like element which carries the spreadable material and which is designed for displacement longitudinally of the tube base of the holding element to the dispensing end by an externally operated pedestal-like control wheel provided at the other end of the holding element, the pedestal-like control wheel comprising an axially supported screwthreaded spindle which is mounted for rotation in an opening in the tube base and which co-operates with the internal screwthread of the piston-like element, characterized in that the external screwthread of the screwthreaded spindle merges in the region adjoining the tube base into a non-screwthreaded region of the spindle which has an external diameter smaller than the internal diameter of the internal screwthread of the piston-like element so that, in the lowermost position of the piston-like element, the spindle is able to slip through relative to the piston-like element if it is rotated any further.

2. A device as claimed in claim 1, characterized in that the length of the screwthread-free region of the spindle is smaller than the length of the piston-like element with its internal screwthread.

3. A device as claimed in claim 2, characterized in that the height of the screwthread-free region of the spindle is such that, in the lowermost position of the piston like element, the internal screwthread of the piston-like element remains in contact with the lowermost thread of the spindle.

4. A device as claimed in claim 1, substantially as herein described and illustrated.

5. A new device, substantially as herein described.

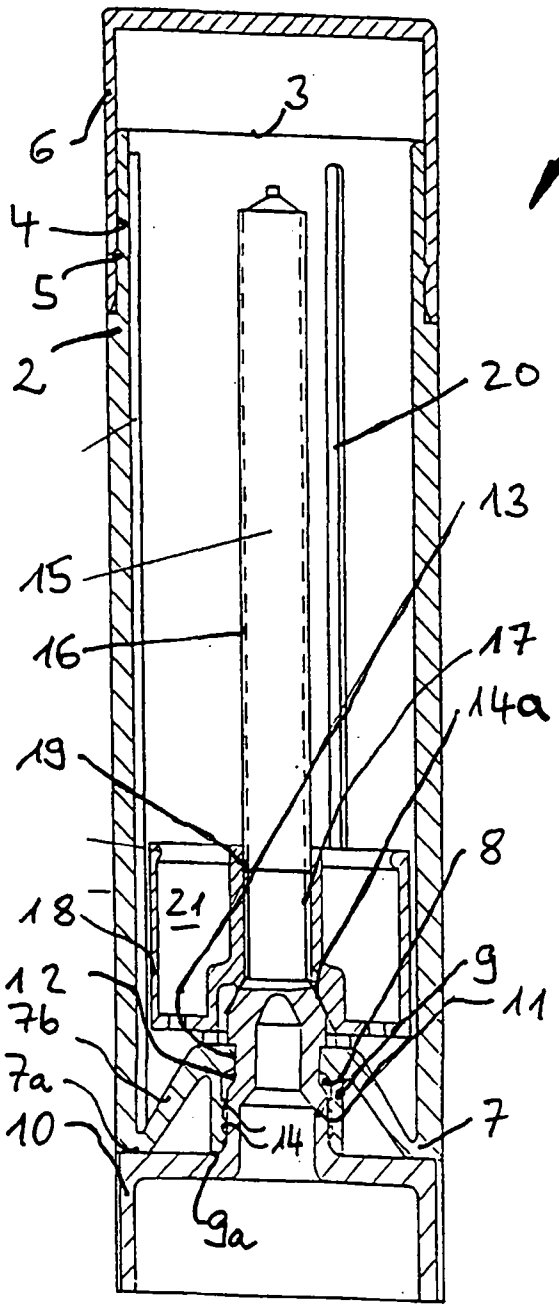
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Fig. 1

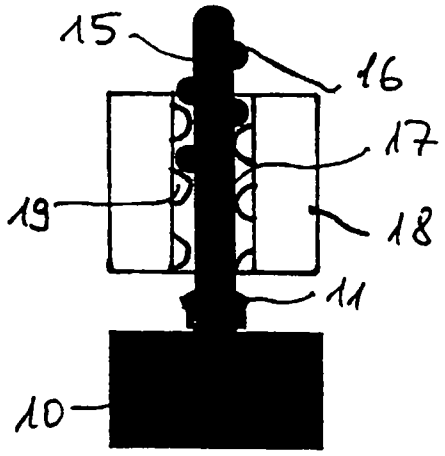
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Fig. 2