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(54) Unwinding device

(57) Unwinding device, particularly for films wound in reels, suitable for being inserted in the axial cavity (2) of the reel (3), comprising at least one first inner tubular body (4) and at least one second outer tubular body (5) coaxial and able to rotate with respect to said first inner tubular body (4), said second outer tubular body (5) comprising at least one coupling surface (6) with the inner surface of said axial cavity (2).

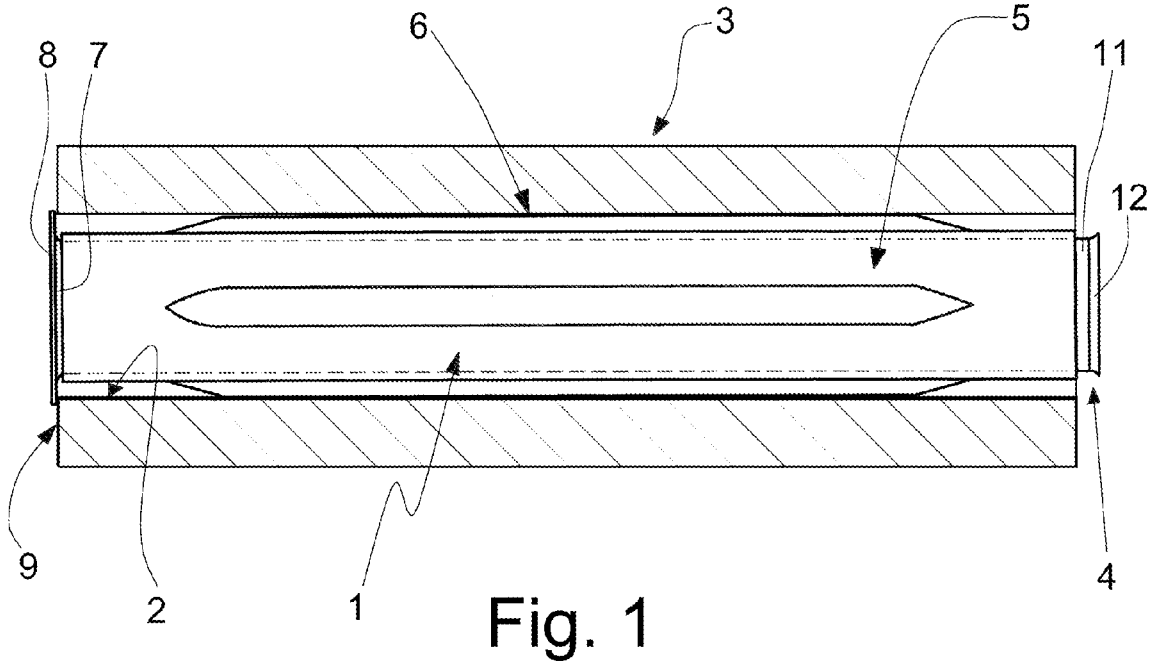

Fig. 1

EP 2 319 789 A1

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention refers to an unwinding device.

[0002] More in particular, the present invention concerns a manual unwinding device for films available in the form of cylindrical reels.

PRIOR ART

[0003] Currently, and especially in the field of packaging, reels of film, for example in extensible material, or even of different nature, according to the specific application requirements, are used for packing products.

[0004] Modem manufacture technologies make it possible to obtain reels of film without an inner core, which are more cost-effective and easier to manage, even though they have the same mechanical and functional characteristics as conventional ones with a cardboard core.

[0005] In order to wind and package products with such a film, machines can be used which automatically carry out the operations, or alternatively, for products of a limited number and with small dimensions, packaging can be carried out manually : in this last case, the film is progressively unwound from the reel and is wound around the product, for example walking around it while holding the reel itself.

[0006] In order to carry out the manual packaging method correctly, tubular cores are usually used, for example made of a plastic type material, which are inserted in the axial cavity of the reel and that act as a manual support for unwinding them.

[0007] A tubular core of this kind is usually inserted in the axial cavity of the reel so that the reciprocal rotation is prevented. In practical use, therefore, the worker holds the tubular core by its two ends, partially inserting his fingers, and lets the core itself rotate together with the reel by an amount necessary so as to unwind a certain length of film.

[0008] This operation obviously requires a certain amount of work skills, since the worker must alternatively release and lock the rotation of the tubular core with his fingers; it is easy to understand that, when this operation is carried out over long periods of time, it is particularly awkward and annoying for the worker himself.

[0009] In order to avoid this drawback, tubular cores have been developed that have a central part - which in turn can be made up of many elements - which is inserted in the cavity of the reel so that there is no reciprocal rotation, and two end portions which can rotate with respect to the aforementioned central part. The worker, then, inserts his fingers in the two end portions and holds them, so that the central part can rotate with respect to them so as to unwind the film.

[0010] Although this solution helps preserve the skill and the integrity of the worker to a greater extent, it is nowadays exceedingly costly, both due to the fact that it comprises numerous parts made of plastic usually obtained through injection moulding, and to the fact that such parts must all be assembled so as to obtain the finished tubular core. It should then be noted that, in practical use, the worker must each time separate the end portions from the central part so as to insert the latter in the axial cavity of the reel.

PURPOSES OF THE INVENTION

[0011] The technical task of the present invention is therefore that of improving the current state of the art.

[0012] Within such a technical task, one purpose of the present invention consists of implementing an unwinding device for films having efficient and practical use, as well as that of not tiring the worker.

[0013] Another purpose of the present invention is that of making an unwinding device for films that allows the reel to be unwound to be inserted quickly. Yet another purpose of the present invention is that of providing an unwinding device for films that is characterised in that it has an extremely low cost.

[0014] A further purpose of the present invention is that of making an unwinding device for films consisting of a small amount of parts.

[0015] These and other purposes are all achieved with an unwinding device according to one or more of the attached claims.

[0016] An important advantage achieved by the unwinding device for films according to the present invention consists in the fact that it can be used in a simple, practical and efficient manner by all workers, even the most unskilled, without jeopardising their manual dexterity and their working ability over time; moreover, the reel can be inserted quickly with a few rapid movements.

[0017] Another advantage achieved with the unwinding device according to the present invention, consists in the fact that the unwinding device for films can be manufactured with conventional technologies and at much lower costs with respect to devices that are currently known and available.

[0018] Yet another advantage achieved with the unwinding device for films according to the present invention consists of the fact that it is made up of a number of parts that is lower than that of known devices; moreover, it also makes it possible to reduce the assembling costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] These and further advantages shall be made clearer to a man skilled in the art with the following description and with the attached drawing table, given as a non limiting example, in which:

- figure 1 is a side view of the unwinding device according to the present invention, inserted in a reel of

film;

- figure 2 is a perspective view of the same unwinding device;
- figure 3 is a partially sectioned perspective view of the unwinding device;
- figure 4 is a diametrical section view of the unwinding device inserted in a film reel;

EMBODIMENTS OF THE INVENTION

[0020] With reference to the attached figure 1, an unwinding device according to the present invention is wholly shown with reference numeral 1.

[0021] The device can be used to unwind reels of film of any nature, like for example extensible packaging film, but also other types of film intended for other applications.

[0022] Moreover, the device can also be used for winding up the reels.

[0023] Furthermore, when the device is suitably sized with respect to the specific requirements, it can be used to unwind reels of film having any dimensions, in particular of any length and/or diameter, of course bearing in mind the working ability of the worker.

[0024] The unwinding device 1, as illustrated in particular in figure 1, is intended to be inserted in the axial cavity 2 of a reel 3 of film, which defines a substantially cylindrical inner surface. More in detail, in the case in which the reel 3 is of the type without a central core, the geometry of the inner surface of the axial cavity 2 can also be slightly irregular, without for this reason jeopardising the correct operation of the device.

[0025] The dimensions of the reel represented in figure 1 are purely given as an example and not for limiting purposes. Moreover, as already mentioned, the material with which the film of the reel 3 is made can be any, without any limitation.

[0026] The reel 3 can also be of the type provided with a central core; in such a case, the inner surface should be considered that of the cavity of the central core itself.

[0027] The unwinding device, according to the invention, comprises a first inner tubular body, wholly indicated with reference numeral 4, and a second outer tubular body, wholly indicated with reference numeral 5.

[0028] The second outer tubular body 5 is coaxially mounted and is able to rotate with respect to the first tubular body 4.

[0029] The second outer tubular body 5 comprises at least one coupling surface 6 with the inner surface of the axial cavity 2 of the reel 3 of film.

[0030] Both the first inner tubular body 4 and the second outer tubular body 5 can be made, of plastic type material, like for example PVC, or of other materials having equivalent characteristics. The preferred requirements of materials for the construction of tubular bodies 4, 5, include, of course, very low cost and weight.

[0031] Both the first inner tubular body 4 and the second outer tubular body 5 can be made, for example, with known extrusion methods of plastic materials. The thickness of the tubular bodies 4, 5, can be any, even if it may be preferable to keep it quite low for reasons concerning the overall cost and weight of the device.

[0032] More in detail, the first inner tubular body 4, at a first end 7, comprises a first flange 8 for the abutment and resting of one base 9 of the reel 3. The first flange 8, when suitably sized, can also act as a vertical resting base of the reel 3 on the ground.

[0033] The first flange 8 comprises a countersunk inner surface 10 for the worker to manually grip, in an easy and comfortable fashion; in particular, the countersunk inner surface 10 is sized so as to allow the fingers of the worker to firmly hold the first inner tubular body 4 during the unwinding of the reel 3, as shall be made clearer in the rest of the description.

[0034] The first inner tubular body 4, at its second end 11 opposite the first end 7, also comprises a second flange 12; even the second flange 12 has a countersunk inner surface 10 so as to be manually grasped by the worker, in the same way as that described for the first flange 8.

[0035] The coupling surface 6 of the second outer tubular body 5 with the inner surface of the axial cavity 2 of the reel 3 comprises, as visible in figures 2, 3, 4, at least one ridge 13 foreseen along the outer surface 14 of the aforementioned second outer tubular body 5.

[0036] More in detail, such a coupling surface 6 even more advantageously comprises a plurality of said ridges 13.

[0037] As can be observed in figures 2, 3, such ridges 13 are equally angularly spaced apart.

[0038] The presence of the aforementioned ridges 13 makes it possible to insert the unwinding device 1 in the axial cavity 2 of the reel 3 in a way such as to not have any rotation of the latter with respect to the second outer tubular body 5; it can thus be advantageous for the insertion of the device into the axial cavity 2 of the bobbin 3 to occur with a certain amount of interference, even if minimal.

[0039] Each of the ridges 13 is substantially longitudinal with respect to the axis of the unwinding device, and is made in the central portion 15 of the second outer tubular body 5.

[0040] Each of the ridges 13 also comprises end portions 16 joined to the outer surface 14 of the second outer tubular body 5. Such end portions 16 make it possible to obtain a facilitated insertion of the unwinding device 1 into the axial cavity 2 of the reel 3.

[0041] As can be observed, in particular, in figures 3 and 4, the ridges 13 are made with the same thickness of the remaining parts of the second outer tubular body 5, by advantageously using conventional methods, for example through forming obtained with pressurised air.

[0042] In practical use, therefore, the worker in charge of unwinding the reel 3 in order to, for example, carry out the packaging of a product or of a group of products, completely inserts the unwinding device 1 in the axial cavity 2 of the reel 3, until one of the bases 9 of the reel

3 itself is brought into contact with the first flange 8 of the first inner tubular body 4.

[0043] Subsequently, the worker grasps the group made up of the unwinding device and reel at the flanges 8, 12 of the first inner tubular body 4, and firmly holds the latter by inserting his fingers in the inner countersunk surfaces 10. Finally, in order to unwind the film from the reel 3 and then wind it around the product or products, the worker carries out suitable movements with his arms and/or walks around the product, in relation, of course, to the type of product and to the packaging method. In this manner, the second outer tubular body 5, fixedly attached to the reel 3, rotates with respect to the first inner tubular body 4, and makes it possible to unwind the film without the unwinding device directly rotating in the hands of the worker.

[0044] With this solution there are clearly important technical advantages, as can be seen clearly from the detailed description above.

[0045] One first technical advantage consists in the fact that the unwinding device according to the present invention is practical, easy and effective to use, especially due to the fact that it allows the worker to hold his fingers tightly in contact with the flanges of the first inner tubular body, and to unwind the reel of film without having to make the latter rotate directly in the hands of the worker.

[0046] A further technical advantage consists in the fact that the rotatable coupling between the first inner tubular body and the second outer tubular body is particularly reliable and safe, that is to say it is not affected by risks of accidental detaching of parts.

[0047] Yet another technical advantage consists in the fact that the unwinding device according to the present invention foresees the insertion of the reel inside the axial cavity without having to remove and reattach parts of the device in order to lock the reel itself.

[0048] Yet a further technical advantage consists in the fact that the device has a much lower production and assembly cost with respect to known devices; moreover, it only comprises two components, which once assembled cannot be separated from one another.

[0049] It has thus been seen how the invention achieves the aforementioned purposes.

[0050] The present invention has been described according to preferred embodiments, but equivalent variants can be conceived without for this reason departing from the scope of protection offered by the following claims.

Claims

1. Unwinding device, particularly for films wound in reels, suitable for being inserted in the axial cavity (2) of the reel (3), **characterised in that** it comprises at least a first inner tubular body (4) and at least a second outer tubular body (5) coaxial and able to rotate with respect to said first inner tubular body (4), said second outer tubular body (5) comprising at least one coupling surface (6) with the inner surface of said axial cavity (2).

2. Device according to claim 1, wherein said first inner tubular body (4), at a first end (7), comprises a first abutment flange (8) of one of the bases (9) of the reel (3).

3. Device according to claim 2, wherein said first flange (8) comprises a countersunk inner surface (10) for the operator to manually grip.

4. Device according to one of the previous claims, wherein said first inner tubular body (4), at a second end (11), comprises a second flange (12) with a countersunk inner surface (10) for the operator to manually grip.

5. Device according to one of the previous claims, wherein said coupling surface (6) with said inner surface of said axial cavity (2) comprises at least one ridge (13) foreseen along the outer surface (14) of said second outer tubular body (5).

6. Device according to claim 5, wherein said ridge (13) is substantially longitudinal.

7. Device according to claim 5, wherein said longitudinal ridge (13) is foreseen in the central portion (15) of said second outer tubular body (5).

8. Device according to claim 7, wherein said longitudinal ridge (13) comprises end portions (16) fitted to the outer surface (14) of said second outer tubular body (5).

9. Device according to claim 5, wherein said coupling surface (6) comprises a plurality of said ridges (13), foreseen along the outer surface (14) of said second outer tubular body (5).

10. Device according to one of claims 5 to 9, wherein said ridges (13) are substantially equally spaced apart.

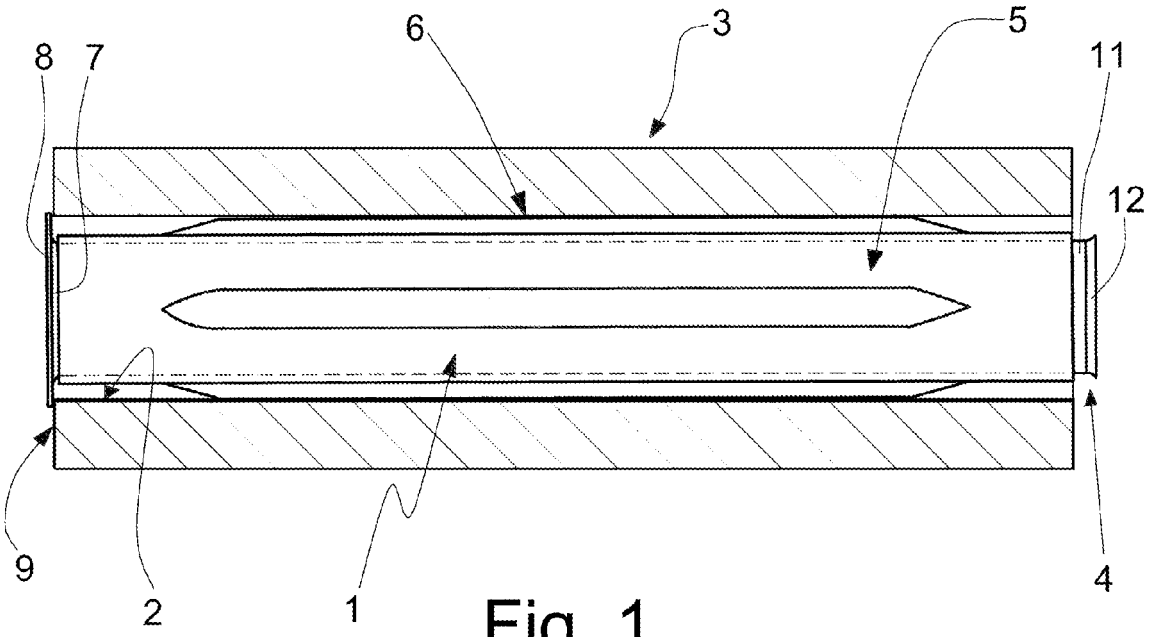

Fig. 1

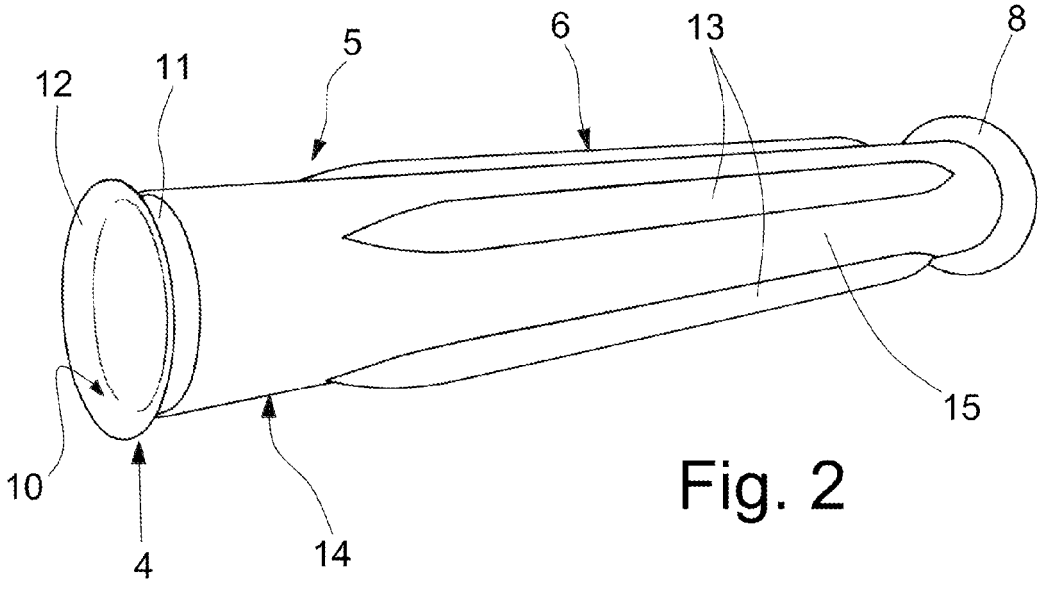

Fig. 2

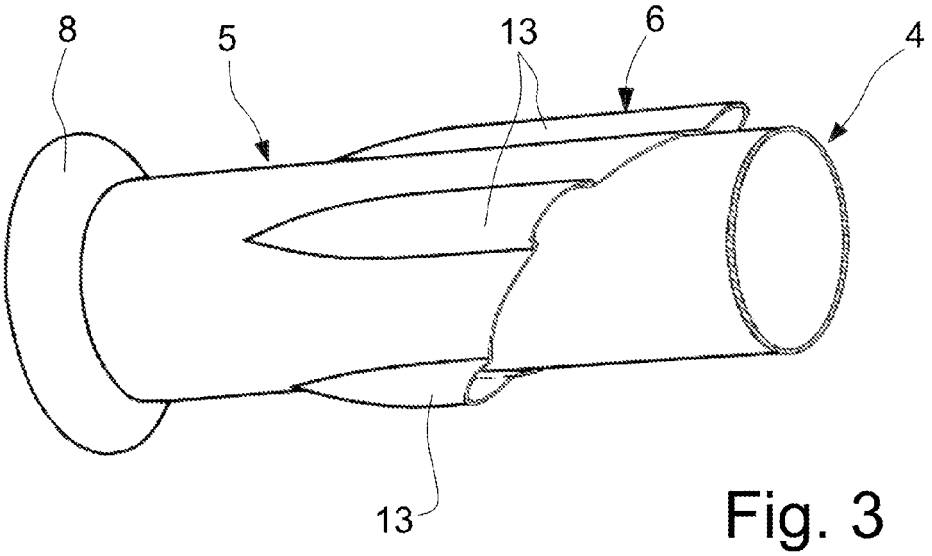

Fig. 3

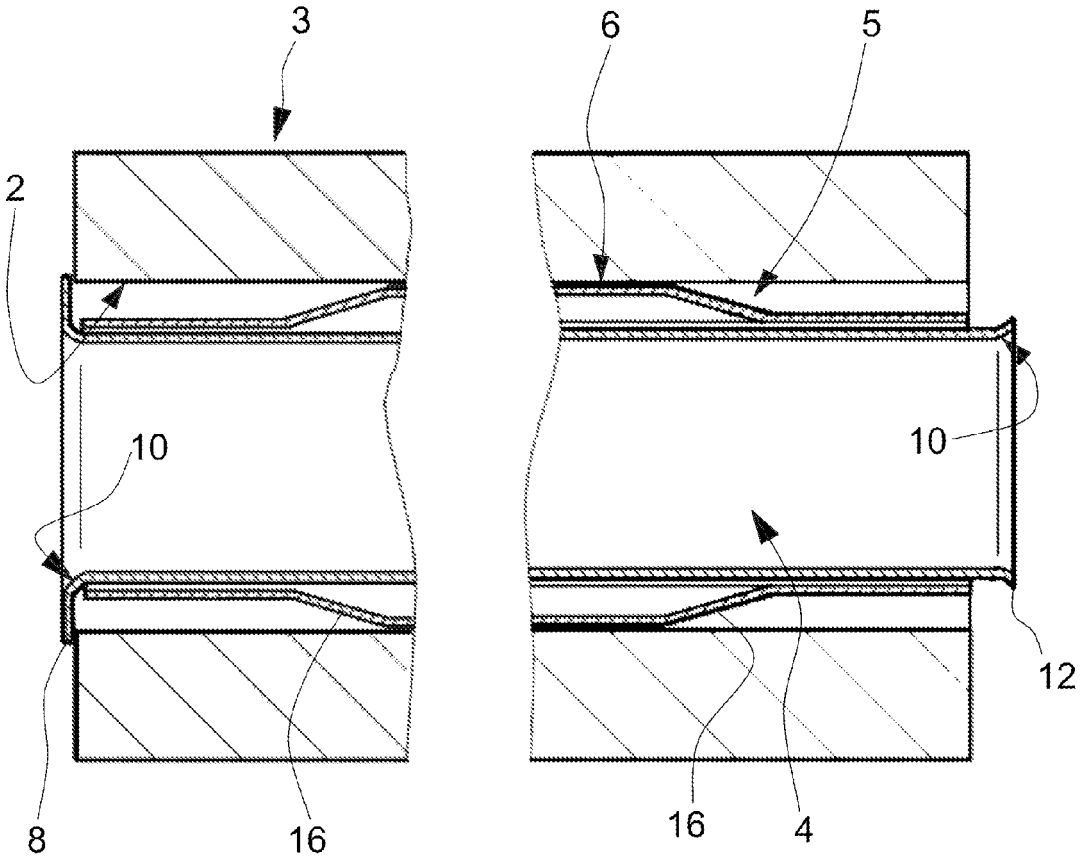

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 10 18 9906

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TECHNICAL FIELDS SEARCHED (IPC)

B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 February 2011	Haaken, Willy

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 18 9906

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