

Sept. 26, 1950

R. DEWAS

2,523,502

APPARATUS FOR UNWINDING RAYON CAKES

Filed May 18, 1945

2 Sheets-Sheet 1

Fig. 1

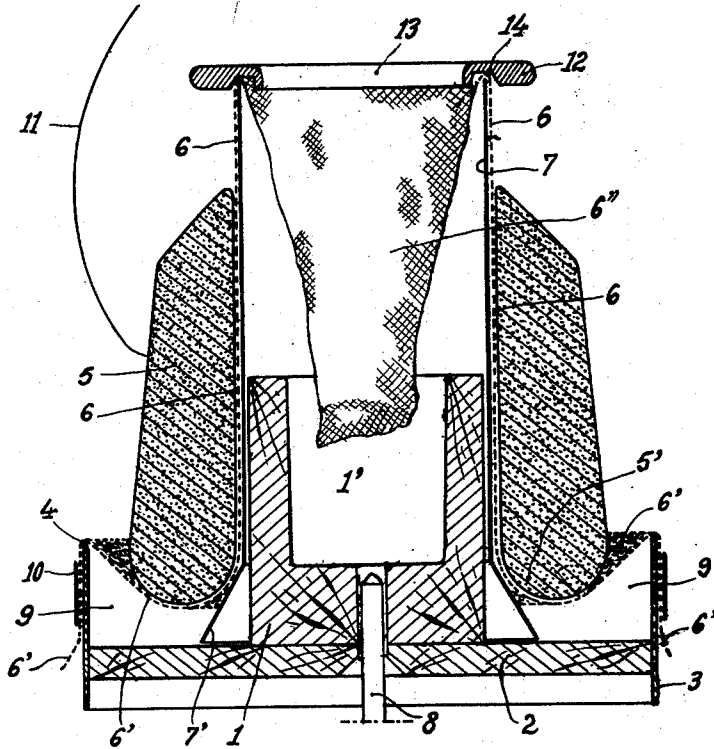
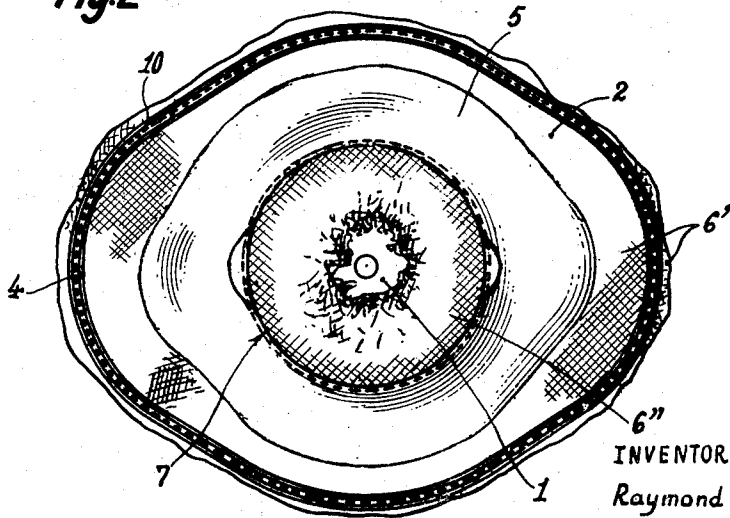


Fig. 2



INVENTOR:
Raymond Dewas
89

Richard & Geier
ATTORNEYS

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R. DEWAS

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Fig. 3

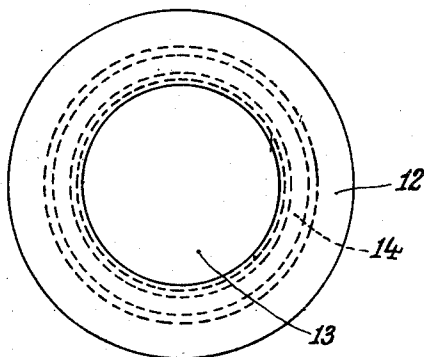


Fig. 4

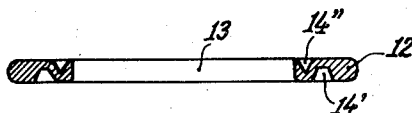


Fig. 5

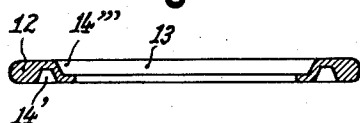
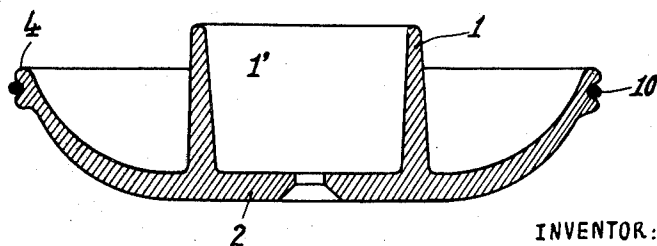


Fig. 6



INVENTOR:

Raymond Deras

BY

Richards & Geier

ATTORNEYS

UNITED STATES PATENT OFFICE

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APPARATUS FOR UNWINDING RAYON
CAKES

Raymond Dewas, Amiens, France

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In France June 13, 1942Section 1, Public Law 690, August 8, 1946
Patent expires June 13, 1962

3 Claims. (Cl. 242-128)

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This invention relates to the unwinding of cakes of rayon or other yarns which are used directly as they come from the spinning mill, enveloped in a protecting tissue (knitted material or linen) for winding, weft spooling, warping, feeding hosiery knitting machines or looms provided with fixed weft bobbins etc., and which cakes, in view of putting them on an unwinding creel, are usually mounted on sleeves of plastic material, said sleeves being then generally covered with a hood or head, for off top unwinding.

It has been found that most of the unwinding apparatus present certain drawbacks: inter alia that of being unable to prevent condensing or collapsing of the cake, generally caused by vibrations of the machine to be fed, which leads to catching or wedging the yarn by the cake base during unwinding, which is effected endways, i. e. over the top of the bobbin, this resulting in a broken yarn. On the other hand, with regard to the heads of the kind such as are presently designed, these, inter alia, after being mounted, do not permit an easy and quickly effected arrangement of the projecting part of the protecting tissue and, besides, their handling is neither convenient nor safe.

This invention aims to remedy the aforementioned drawbacks and to provide, besides, a number of additional advantages. In view thereof, said invention has for its object an apparatus for unwinding rayon cakes or the other yarns, said apparatus resulting of the combination of the following means:

1. A central support adapted to receive, hold and center the cake, slipped on its sleeve, with its protecting tissue.

2. An annular member surrounding, at a given space therefrom, the lower portion of the central support so as to leave an annular space free the width of which is greater than the usual thickness of the lower portion or base of the cake when the latter is placed on said central support, said annular member comprising at its upper portion an annular projection whose edge is preferably located above the level of the cake base.

3. Using that portion of the protecting tissue which projects skirt-like underneath the lower part of the cake as a means for helping to spread or disengage the inner convolutions of the cake base and, at the same time, for sustaining said base in a yielding manner, said sustaining means lending itself to the multiple and successive distortions thereof during unwinding, while counteracting the condensing and collapsing tendency of the cake, under any vibrations whatever of the machine to be fed, thus permitting the yarn to

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disengage itself without effort, said means consisting, once the cake is mounted with its sleeve on the central support, in slipping the skirt over the projection or edge of the annular member, then, in submitting the free portion of said skirt to a tension, so as to stretch the same over the annular space left between the central support and the annular projection, and in holding said portion thus tensioned during unwinding.

4. Tightening, gripping, clamping, fastening, hooking, drawing or other means acting on the free portion of the skirt, after the same has been tensioned on the annular member, so as to maintain under tension that part of the skirt overhanging the annular space left between the central support and the annular projection, i. e. the part on which the cake base rests.

This invention has further for its object a head adapted to be used either in combination with the apparatus for unwinding the cakes of rayon presenting the above-stated features 1 to 4, or in combination with other unwinding apparatus.

This head is characterized in that it consists of a heavy annular member whose central opening has a sufficient area to permit the fingers of the operator to pass easily therethrough in view of catching and drawing out the projecting part of the cake protecting tissue, turned off inside the upper part of the sleeve, so as to stretch said tissue, whose tension is then maintained by the head, which falls down again upon the upper edge of the sleeve as soon as the operator stops drawing said projecting part, which is then turned off again into the sleeve. The central opening further allows of a convenient and secure handling of the head.

The head is preferably provided, on its lower side, with a groove adapted to cover the upper end of the sleeve, said groove having a profile and dimensions such as to enable the same to adapt itself to the various diameters the sleeves are liable to possess, while insuring a correct centering.

A groove may even be formed on both sides of said head, the two grooves thus provided having different diameters to adapt themselves to the various diameters the sleeves may happen to have.

In view of a clear understanding of the invention, and as examples of the manner in which it may be achieved, several embodiments of an unwinding apparatus and the head thereof will be described as set forth and shown on the annexed drawings on which.

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Fig. 1 is a diametrical sectional view, showing an unwinding apparatus provided with a rayon cake and its knitted tissue, slipped on a sleeve and in over top unwinding position, together with the annular head thereof;

Fig. 2 being a plan view seen from above, an oval shape being preferably given, as shown, to the annular member in case it is required to unwind cakes which, after being mounted, maintain their oval shape due to the packing they have been submitted to; the head being assumed as having been removed in view of clearness and a part only of skirt of the protecting tissue being shown;

Fig. 3 is a plan view of the annular head shown on Fig. 1;

Fig. 4 is a diametrical sectional view of an annular head having two circular grooves of different diameters, one on each side;

Fig. 5 is a similar view of a modified head provided with two grooves;

Fig. 6 is a diametrical side view of an embodiment of the unwinding apparatus constituted by a one-piece pressed member of plastic material.

According to these drawings and with regard to the unwinding apparatus, the latter consists of a central support comprising a shaft 1, of cylindrical or truncated cone shape, either solid or entirely or partly hollowed, integrally connected, at the bottom thereof, with a circular or oval plate 2 which is peripherically surrounded by a likewise circular or oval annular member 3, formed of a band fastened to said plate and the upper edge 4 of which, of any suitable thickness, rises above the plate 2, as shown on Fig. 1, so that said upper edge 4 be located in a plane above the base 5' of the cake 5, mounted, with its knitted tissue 6, on a sleeve 7, which may be provided with a flange 7', centered on the shaft 1, the whole assembly being put on a spindle 8 or any other kind of bobbin carrier; 11 indicates the yarn being unwound.

The shaft 1, the plate 2 and the annular band 3, with its edge 4, may be formed of any suitable materials: wood, metal, plastic substance, etc.; the shaft and the plate, or the plate and the annular member, or again the shaft, the plate and the annular member, may be formed of an integral member, more particularly by casting or pressing if the whole is made from a plastic substance; and the plate may be flat, as shown on Fig. 1, or concave, having, as shown on Fig. 6, the shape of a cup or of an annular channel whose periphery or edge constitutes the annular projection 4 adapted to receive the stretched shirt-like portion 6' of the knitted tissue, on which the base 5' of the cake 5 rests above the annular space 9 that remains between said projection 4 and the flange 7'.

With regard to maintaining the skirt 6' under tension, one of the simplest methods of insuring this consists in clamping the fall-down portion of the skirt, around the whole periphery, against the outer surface of the annular member 3 or the annular projection 4, by means of an india-rubber ring 10. Another means may consist of an annular cover fitting on the edge 4.

With regard to the annular head 12, as shown on Figs. 1 and 3, 4, 5, the central opening thereof is of a size permitting the easy passage of the operator's fingers therethrough for the purpose of operating, as above set forth, on the projecting portion 6'' of the protecting tissue.

The form of head shown on Figs. 1 and 3 is provided on its lower side, adapted to rest on the

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upper end of the sleeve 7, a circular groove 14, formed in the thickness of the ring, one side or both sides of which may be inclined in order to allow of the correct centering of the head, whatever differences there may be in the diameters of the cakes to be unwound.

According to another embodiment, the head presents two circular grooves, one on each face, of different diameters. Fig. 4 shows two grooves 14' and 14'' and Fig. 5 shows one two-sided groove 14' and one one-sided or half-groove 14'''.

Eventually, in case it is required to unwind oval cakes, the heads may be given an oval shape. Likewise, instead of leading the yarn 11 from the cake through an eyelet having the usual circular shape, it may be passed through a guide of elongated shape, said guide being eventually of an oval shape on the whole periphery or only a part thereof.

As will be obvious, improvements, modifications or additions may be resorted to without departing from the spirit of the invention; likewise, the use of equivalent means may be considered.

Thus, for instance, the central member 1 receiving the cake 5 and maintaining the same centered might consist of three, four or more fingers, arranged at spaced intervals on a common circle, which would permit of obtaining a higher tolerance in the inner diameter of the sleeves 7, varying according to the cakes.

The central part 1 might have a section or outline of oval shape.

On the other hand, the shaft 1, hollowed as shown at 1', might have a height exceeding greatly that of the cake 5 (which would permit eventually to dispense with the sleeve), in which case the upper edge of the hollowed shaft would be covered directly by the head 12.

Further, the head, provided with a central opening sufficiently large to permit the easy passage of the fingers therethrough, might either consist of a flat ring more or less thick, as shown, or have the shape of a truncated cone, one side or both sides of such a ring being eventually provided with grooves arranged step-fashion.

What I claim is:

1. An apparatus for rewinding rayon cakes or other yarns, said apparatus comprising in combination, a central support, a protective tissue supported upon said central support for receiving the cake to be unwound, an annular member surrounding the lower portion of the said support at a distance therefrom sufficient to provide an annular space of a greater width than the base of the supported cake, said annular member projecting at its upper end above the level of the said cake base, a skirt at the lower end of the protective tissue, a portion of said skirt underlying the base of the cake and forming an elastic carrier therefor, and the remainder thereof extending over the upper end of the said annular member and depending therebelow, and means for holding the said skirt tightly about the said annular member with the skirt portion underlying the base of the cake under tension.

2. A device according to claim 1 for rewinding a cake of oval shape, wherein the annular member is of oval outline and said annular space is substantially constant.

3. An apparatus for unwinding rayon cakes or other yarns, said apparatus comprising in combination, a support, a central tubular portion extending upwardly thereof, a protective tissue supported on said tubular portion for receiving

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a cake to be unwound, a portion of said protective tissue bent inwardly over the top edge of the tubular portion, a substantially heavy head resting upon the inwardly bent tissue portion and provided with a central hand admitting opening, 5 an annular member surrounding the lower portion of the said support at a distance therefrom sufficient to provide an annular space of a greater width than the base of the supported cake, said annular member projecting at its upper end above 10 the level of the said cake base, a skirt at the lower end of the protective tissue, a portion of said skirt underlying the base of the cake and forming an elastic carrier therefor, and the remainder thereof extending over the upper end 15 of the said annular member and depending therebelow, and means for holding the said skirt

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tightly about the said annular member with the skirt portion underlying the base of the cake under tension.

RAYMOND DEWAS.

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