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DEVICE FOR WINDING COTTON WOOL FLEECE AND WADDING

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Fig. 1

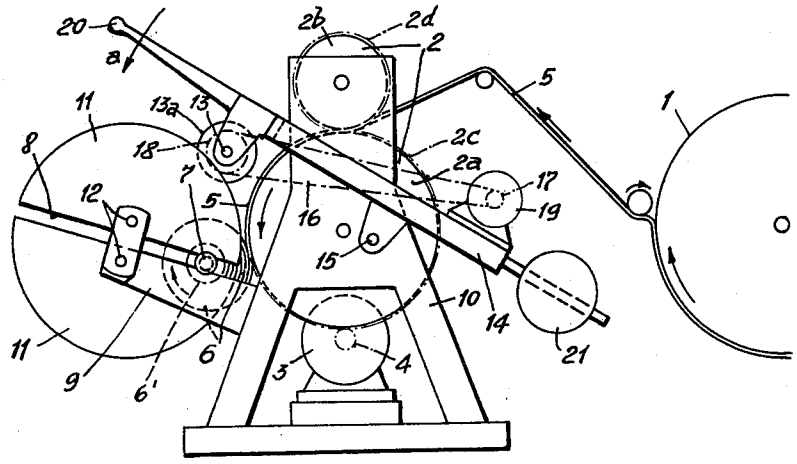
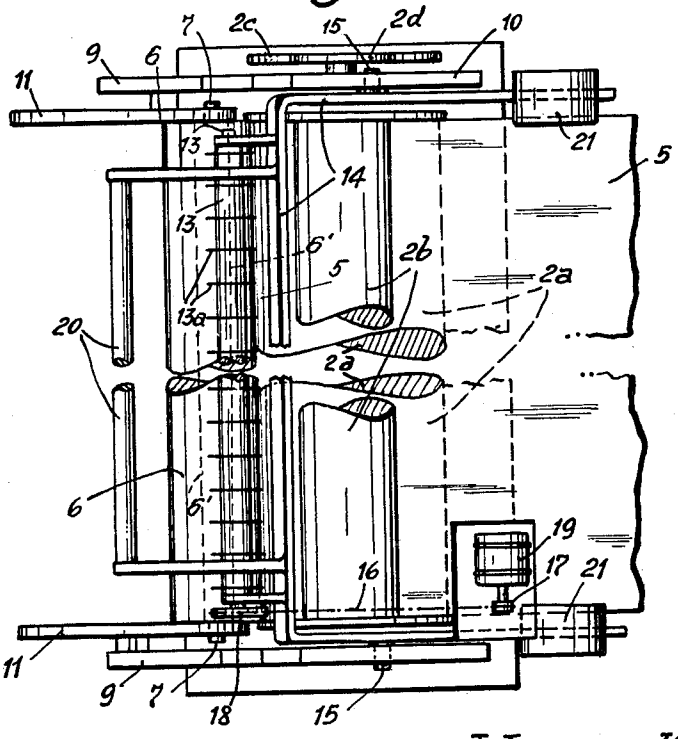


Fig. 2



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DEVICE FOR WINDING COTTON WOOL FLEECE AND WADDING

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Small rolls of cotton wool are made in such a way that the fleece of cotton wool coming from the calender is subdivided, before or after passing the calender, and is wound in the form of several individual units. In the past it was not possible to cut a wide roll, with a diameter of more than 10 cm., into small rolls, by means of either reciprocating or rotary knives. The knives would quickly become hot and the action of the heat would produce a very rough cut, and cause the cut faces to be burnt. It is therefore nowadays normal practice in the manufacture of cotton wool fleece to wind the cotton wool in the form of commercial rolls, about 10 to 30 cm. long. This method not only takes up much time, and is very inefficient, but the resulting rolls have frequently irregular or inclined faces, because they are wound separately.

The object of the present invention is the production of a device for the continuous winding of fleeces of cotton wool and wadding.

The device according to the invention is characterised in that immediately after both surfaces of the cotton wool fleece have been smoothed, after passing through the heated smoothing calender, knives pushed intermittently during the winding process against the winding roll cut the roll in stages, as it builds up, so that the cutting process continues from the inside to the outside in stages.

The device is characterised in that rotary knives are provided in the neighbourhood of the winding roll, the knives rotating in a support arranged perpendicular with respect to the centre-line of the roll, and the knives can be pushed at intervals against the circumference of the winding roll, in consecutive stages, progressing from the inside to the outside, in order to obtain a through cut.

The drawing shows diagrammatically an example of an embodiment of the invention, and in the drawing:

FIG. 1 is a side view of the device, and

FIG. 2 is a plan view to FIG. 1.

1 denotes a known type of card, and **2** denotes its smoothing calender. Electric heating is provided in the usual way in the roll **2***a* of the calender, so that the calender is kept during operation at a constant temperature of about 120°–130° C. The roll **2***b* resting against the heated roll **2***a* is connected to it by means of gear wheels **2***c*, **2***d*, the gear wheel **2***c* being driven by the drive wheel **4** of an electric motor **3**. The cotton wool fleece **5** coming from the card **1** is to be wound by a roll **6'**, whose shaft **7** is guided at both ends, each end in an inclined guide slot **8** of two guide plates **11** along the faces of the roll. The roll **6'** with the cotton wool fleece **5** wound on it will be called hereinafter the wound coil **6**. The shaft **7** of the roll **6'** can move parallel to its axis in the guide slots **8**, while its circumference rests on the heated roll **2***a*. The guide plates **11** at the roll faces are mounted on brackets **9** fixed to the machine frame, while one of the guide plates **11** can be axially displaced by means of screws **12**, in order to set the distance of the plates governing the width of the cotton wool fleece **5**.

In order to slit the cotton wool fleece **5** on the wound coil **6** during the winding process, rotary cutters **13***a* are employed, arranged with equal spacing on the cutter roll **13**. The cutter roll is supported on the left in a bearing-lever frame **14** so that it can rotate, the frame **14** being supported by means of trunnions **15** in the machine frame **10** in the vertical plane, that is to say, so

that it can be swivelled about an axis in spaced parallel relation to the shaft of the wound coil **6**.

An electric motor **19** arranged on the bearing lever frame **14** drives the roll **13** by means of a transmission belt **16** or a chain and appropriate drive wheels **17**, **18**. The bearing-lever frame **14** is arranged so that it can be moved upward and downward, in the direction of the arrow *a*, against the action of a counterweight **21** arranged at the other end of the bearing-lever, by means of a handle **20**. When the handle **20** is pushed down, the knives **13** are pushed against the circumference of the wound coil **6**.

The wound coil **6** is driven by the calender roll **2***a*, in the direction shown by the arrows in the illustration. The roll **13** is driven by an electric motor **19** at a much higher speed of rotation than the wound coil **6**. The counterweights **21** are arranged on the right side of the bearing-lever frame **14**, so that they can be displaced, and retain the frame **14** in the rest position shown in FIG. 1. Everytime a layer of convolutions about 15 mm. thick has been wound on the wound coil **6**, the handle **20** is pulled down, and the knife disks are pushed against the circumference of the coil, so that a further stage of the wound mass is cut through. Then the handle **20** is released, so that the bearing lever frame **14** moves back into its initial position shown in FIG. 6, while the knives **13***a* are moved away from the neighbourhood of the wound coil. When new layers of material have been wound, to a thickness of about 15 mm., over the stage already cut, a process which may take, say, 5–6 minutes, this further stage is again cut as explained above. Due to the intermittent action of the rotary knives, the wound coil **6** is cut in stages, or steps, consecutively from the inside to the outside, as it builds up, with definite intervals, so that small individual rolls are formed. The cotton wool fleece **5** coming from the calender and just wound up is still warm, and in conjunction with the rotary knives **13***a* and the fact that they only cut in definite stages, a very clean cut is achieved. The cut faces are perfectly straight and smooth, and the cotton wool is not damaged by the action of the heat during the cutting process. The cutting process is also facilitated by the relative motion of the wound coil and the rotary knives. Since the cutting takes place immediately after both surfaces of the cotton fleece have been smoothed by the calender **2**, and during the winding process on the wound coil **6**, and since it takes place intermittently at definite intervals in stages, in the form of consecutive steps progressing from the inside to the outside, wound rolls with a diameter of about 100 cm. and more can be cut comparatively quickly and cleanly, without any danger of the side edges adhering together.

Naturally, the bearing-lever frame **14** can be moved also automatically, at definite intervals, instead of being moved by hand, to cause these rotary knives **13***a* to be placed in their working and rest positions, as described above.

While the invention has been described in detail with respect to a now preferred example and embodiment of the invention it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended, therefore, to cover all such changes and modifications in the appended claim.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

Apparatus for continuously winding a continuous web of fleece material and forming a plurality of adjacent coils of convoluted strips from said continuous web comprising heated and power driven pressing roll means for

receiving, compacting and moving the continuous web of fleece material, wind-up roll means on an axis of rotation parallel to said pressing roll means and driven thereby at the point of transfer of the web from said pressing roll means to said wind-up roll means for convolutely receiving said continuous web thereon in a heated condition, a support frame pivotally mounted on a pivotal axis of rotation spaced from and parallel to the axis of rotation of said wind-up roll means, cutter elements on said frame on one side of said pivotal axis, means on said frame on the opposite side of said pivotal axis for independently driving the cutter elements on an axis of rotation parallel to that of said windup roll means and in spaced relation from said pivotal axis for engagement with the fleece material convoluted upon said wind-up roll means for forming independent coils from said convoluted roll, said cutter elements comprising disc elements disposed in longitudinally spaced relation, said support frame including counter-balance means spaced from the pivotal axis of said support frame and adjacent said driving means for counter-balancing said cutter elements and urging said cutter elements away from said wind-up roll, and said support frame including manually engageable handle means for moving said cutter elements into engagement with said convoluted roll.

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