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DEVICE FOR LIMITING THE DIAMETER OF BOBBINS BEING WOUND

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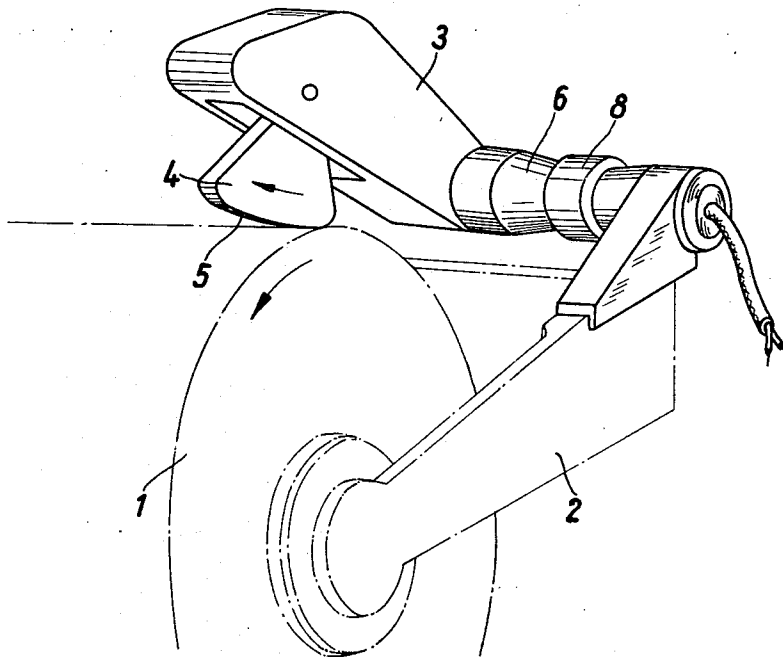


Fig. 1

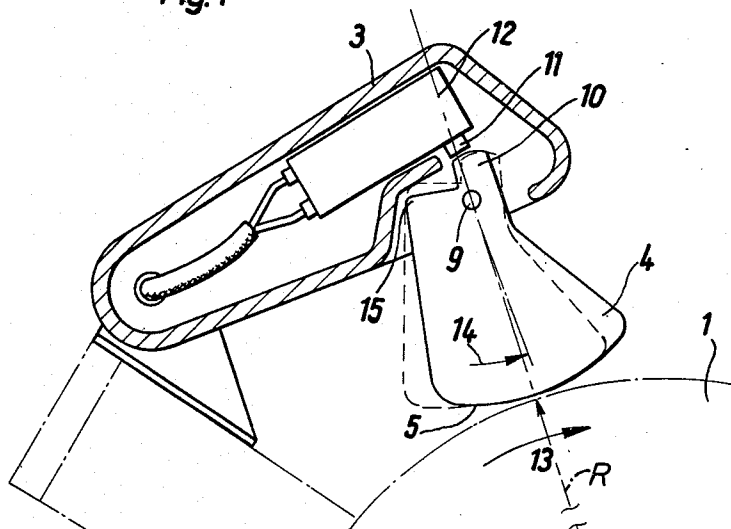


Fig. 2

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DEVICE FOR LIMITING THE DIAMETER OF BOBBINS BEING WOUND

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3 Claims

ABSTRACT OF THE DISCLOSURE

A device for limiting the diameter of bobbins being wound comprising a feeler for engaging the bobbin, the feeler being carried by an adjustable hollow arm in which is provided an electrical contact for actuation by the feeler for operating a circuit with the growth of the bobbin to the desired extent, the feeler being displaceable by the bobbin substantially tangentially at the region of contact of the bobbin periphery therewith so that a quick making of electrical contact follows the initial driving contact of the bobbin periphery with the feeler to stop winding. The feeler may be a lever with an arcuate surface, circular or eccentric, to engage the surface of the bobbin for operation thereby to actuate the switch.

The invention relates to a device for limiting the diameter of increasing bobbins. For this purpose, rollers are used which come into contact with the surface of the bobbin when a predetermined bobbin-diameter is attained. With known arrangements of this kind, an acoustic signal is tripped in a purely mechanical way by the roller which is placed in rotation on contact with the surface of the bobbin, or the operating personnel will be notified of the ending of the winding process by the appearance of a coloured marking on the circumference of the roller when this is set in rotation.

Such arrangements are unsuitable for the production of bobbins with an exactly defined diameter, as, for example, for colour bobbins, because the timely stopping of the winding—and/or twisting-position, the bobbin of which has increased to the desired diameter, depends on the vigilance of the operating personnel and because, even with adequate vigilance, the operating personnel is overtaxed if bobbins have reached their desired diameter at several points simultaneously.

It is further known, by means of a feeler arrangement, for example a feeler-blade, to bring the winding-position directly to a stop automatically when a prescribed bobbin-diameter is sensed. Compared with the roller devices this is disadvantageous in that the blade exerts sliding friction on the bobbin-windings which, particularly with soft bobbins, can be detrimental.

The purpose of the invention is to provide a device for limiting the diameter of bobbins which avoids these disadvantages and, moreover, works automatically.

This problem is solved by the device according to the invention in that a feeler, for example a roller, is carried by an adjustable hollow arm in which electrical contact is provided for actuation by the feeler. The electrical contact operates a circuit which effects the stopping of the winding—or twisting—position.

By these means of this device, the winding—and/or twisting-position can be stopped directly on attaining the predetermined diameter of the bobbin. The device is independent of the vigilance of the operating personnel and is fully functional even when the desired bobbin-diameter is attained at a number of winding-positions simultaneously. Careful handling of the bobbin-windings is ensured.

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In order to allow the stopping of the winding—or twisting-position to take place immediately at the instant of the growth of the winding bobbin to a predetermined diameter, it is proposed to use as feeler a lever with a curved feeler-surface which runs on the surface of the increasing bobbin. The feeler-surface can be curved in an arc or eccentrically and in consequence a pronounced thrust in the direction of the required switching direction is produced by the line-contact between the curved surface and the bobbin surface.

In the drawing is represented a preferred embodiment of the invention.

FIGURE 1 is a perspective representation of the arrangement in the operating position and

FIGURE 2 is a section through the hollow arm with the hinged feeler-lever.

The bobbin 1 is mounted in bobbin-frame 2. In order to limit the growth of the bobbin, a hollow arm 3 is provided with a feeler 4. In the chosen example, the surface 5 of the feeler has the form of an arc. This surface 5 of the feeler contacts with the surface of the bobbin 1 when the bobbin has grown to the desired amount. The hollow arm 3 is fixed adjustably at 6 and clamped by means of a knurled nut 8 in the set position.

From FIGURE 2 it is apparent that the feeler 4 is mounted pivotably at 9 in the hollow arm 3 and can operate by means of a projection 10 on the button 11 of the microswitch 12 which is accommodated in the hollow interior of the arm 3. The protrusion 15 provides that the feeler 4 takes up in each case a well-defined starting position which is shown in dashed line in FIGURE 2.

It will be clear from the illustration that, on the movement of the increasing bobbin 1 in the direction of the arrow 13, and on contact between the surface of the bobbin 1 and the surface 5 of the feeler 4, a powerful movement in the direction of the arrow 14 occurs, which has as a consequence an immediate, comparatively large switching movement. As shown in FIGURE 2 by the extension of radial line R, the point of contact between the surface of the bobbin 1 and the surface 5 of the feeler 4 lies substantially in the same plane as the axes of the bobbin and the pivotal mounting 9 of the feeler.

It may be desirable to form the feeler-surface 5 as a ball or ridge, in order in this way to arrive at an approximate point-contact between the bobbin surface and the feeler-surface 5.

Instead of a part-circular shape, the feeler surface 5 may be given an eccentric shape. In this way, the switching-time can be varied as desired.

What I claim is:

1. A device for limiting the diameter of a bobbin being wound comprising: an adjustable arm supporting a feeler lever so that the lever can be contacted by the periphery of the bobbin when the bobbin is wound to a predetermined diameter, an electrical switch carried by said adjustable arm, said electrical switch having a contact adapted to be actuated by said lever for operating a circuit for stopping winding of the bobbin, said lever being freely pivotally carried on said adjustable arm on an axis substantially parallel to the axis of the bobbin, said lever having means for setting its initial position, said lever having actuating means for actuating said electrical switch contact when said lever is pivoted about its axis, and said lever having a curved surface for co-operating with the peripheral surface of the growing bobbin with the point of tangential contact between said lever and the peripheral surface of the bobbin and the axes of said lever and bobbin lying substantially in one plane and with the tangential contact between the peripheral surface of the growing bobbin and the curved surface causing pivotal movement of said lever about its axis from said initial position to a

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second position wherein said actuating means actuates said electrical switch contact to operate the circuit for stopping winding.

2. A device according to claim 1, in which the said feeler surface is of a substantially constant radius.

3. A device according to claim 1, in which the said feeler surface is curved eccentrically with respect to the fulcrum of the lever.

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2,572,854	10/1951	Guion	242—39
2,639,865	5/1953	Guion	242—39
3,081,958	3/1963	Kegg	242—57
3,082,969	3/1963	Burnell	242—39

FOREIGN PATENTS

952,571	5/1949	France.
1,192,766	4/1959	France.
528,902	6/1955	Italy.

References Cited

UNITED STATES PATENTS

2,224,128 12/1940 Abbott ----- 242—39 X

10 STANLEY N. GILREATH, Primary Examiner