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WINDING MACHINE TRAVERSE DEVICE

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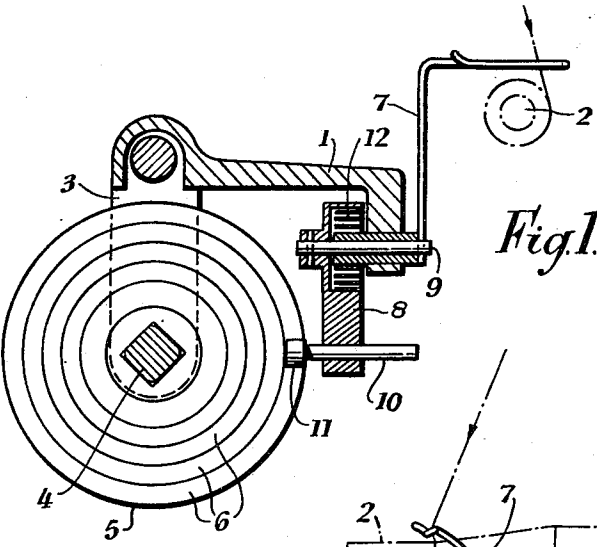


Fig. 2.

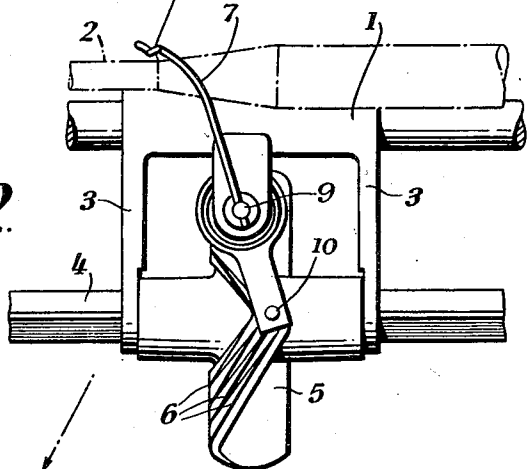
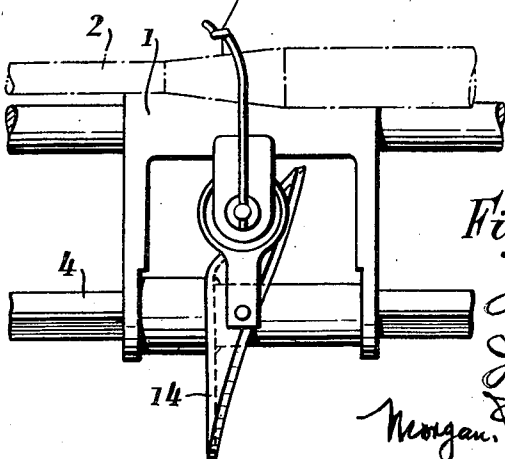


Fig. 3.



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WINDING MACHINE TRAVERSE DEVICE

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2 Claims. (Cl. 242—31)

The present invention relates to winding machines and particularly to variable traverse yarn guides for such machines.

Various forms of mechanism have been proposed for providing a yarn guide with a variable traverse mechanism for machines of this kind. These have all been more or less complex in construction and have usually included one or more pivoted links. The pivots so included are, of course, subject to wear and so eventually lend to inaccuracy in operation.

It is an object of the present invention to provide a variable yarn guide traverse mechanism for winding machines of simple construction in which the use of links is eliminated and the number of moving parts is kept as small as possible.

According to the present invention a variable yarn guide traverse mechanism includes a rotatable face cam, the throw of the cam being different at different radial distances from its centre, a yarn guide mounted on a pivot substantially at right angles to the axis of the cam and a cam follower attached to the yarn guide, said cam follower being adjustable to contact the face cam at varying distances from its centre, thereby allowing the traverse distance of the yarn guide to be adjusted.

It will be apparent that the shape of the face cam must be such as to cause the yarn guide to be traversed at substantially constant speed to lay the yarn evenly in winding.

In its simplest form the cam comprises a conical plate set on a rotatable shaft, so that the axis of the cone makes a small angle with the axis of rotation. The cam is preferably arranged on the shaft so that the surface of the cam at the limit of throw in one direction is substantially at right angles to the axis of rotation, so that the limit of throw in this direction is constant, whilst the limit of throw in the other direction, occurring when the cam has been turned through 180°, is variable according to the distance from the axis that the cam is contacted by the cam follower.

Similarly, where the yarn guide is to be traversed several times for each revolution of the cam the cam may take the shape of an equally crimped or corrugated disc, the distance between the crest and trough of each corrugation varying with the radial distance from the centre; again it is preferred that the crest of the corrugations should be substantially at right angles to the axis of the cam, so that the limit of traverse in one direction remains constant.

The preferred form of face cam for use in connection with the present invention comprises a crimped disc having concentric flat surface, circular paths formed on the face of the cam member, the crest of all the paths being substantially level and the troughs all at different levels. Alternatively the troughs may all be level and the crests all at different levels.

The yarn guide and cam follower are preferably formed as one unit which is pivoted centrally, the yarn guide forming one arm of the unit and the cam follower the other arm, having the portion which actually contacts the cam mounted on a pin slidable parallel to the pivot. The contour of the contact portion will be cylindrical where a cam with separate flat surface cam paths is used or spherical if using a cone or plain crimped disc.

In order that the invention may be more clearly understood reference is made to the accompanying drawings, wherein:

Figure 1 is an end view partly in section of one form of yarn guide traverse mechanism,

Figure 2 is a front view of the mechanism,

Figure 3 is a front view of a modified form of construction.

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The present construction of yarn guide traverse mechanism is primarily intended to be attached to the movable carriage of a cap or pirn winder and is so shown in the drawings.

A pirn winding machine includes a carriage 1 for the traversing yarn guide which is movable parallel to the axis of the pirn core 2, which may be rotated by any known means. The carriage 1 has two downwardly projecting apertured bosses 3, through which passes a square section drive shaft 4 on which a face cam 5 is mounted between the bosses with substantially no lateral clearance, so that the cam 5 moves along its drive shaft with the carriage, being captive between the bosses 3.

The face of the cam 5 is formed with four separate concentric wavy cam paths 6, each having two crests and two troughs. The crests of all the cam paths are on the same level and the troughs are at different levels, the depth of the troughs being increased progressively with the diameter of the path, so that each cam path will transmit a different throw to a cam follower, whilst at the beginning of each winding operation the right hand limit of throw of the yarn guide will always be the same, irrespective of the magnitude of the throw.

The yarn guide structure comprises a yarn guide member 7 rigid with a cam follower arm 8 mounted on a pivot 9 located in the carriage 1. In the end of the cam follower arm 8 is mounted a contact member 10 having a cylindrical contact head 11, adapted to roll on the cam face. The contact member 10 is longitudinally movable in its mounting so that it can be adjusted for its head to contact a desired cam path 6 and thus select the traverse distance imparted to the yarn guide 7.

A spring 12 is mounted round the yarn guide pivot to urge the cam follower into engagement with the cam, and thus ensure that the contact member correctly follows the cam contour.

In the modified structure shown in Figure 3 the face cam is formed as a conical disc 14, whose axis is oblique to the shaft 4, on which it is mounted for drive. The construction is identical in other respects with that shown in Figures 1 and 2, save that the contact head will be formed with an appropriate contour.

What we claim is:

1. In a variable yarn guide traverse mechanism for a light movable winding carriage of a cop winder and the like, wherein a rotary cam for actuating the traverse is mounted on the carriage and rotated by a driven shaft on which it is slidably keyed, wherein a pivot shaft having an axis at right angles to the axis of a cop being wound is mounted on the carriage between said driven shaft and said cop and wherein said shaft carries a light wire-weight yarn guide at one end thereof for pivotal movement therewith, that improvement which comprises a plurality of concentric radially-spaced cam faces extending axially from said cam, each of said faces defining one separate traverse pattern, a feeler arm fixed on the end of said pivot shaft opposite said guide, a cam feeler shaft slidably mounted in said arm and a cam feeler on said shaft, the cam feeler shaft extending along one radius of said driven shaft in each position thereof and being movable along said radius to a plurality of positions, each of which will position the cam feeler on a separate cam face, whereby adjustment of said feeler shaft in said feeler arm predetermines the traverse pattern of said mechanism.

2. The device as set forth in claim 7 wherein one end axial position of each of said cam faces is the same along one radial line for making one end of each traverse pattern identical.

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