Aug. 4, 1936. E. GMINDER 2,049,905

METHOD OF DRAWING BAST FIBER ROVING

Filed July 3, 1930

Fig. 1

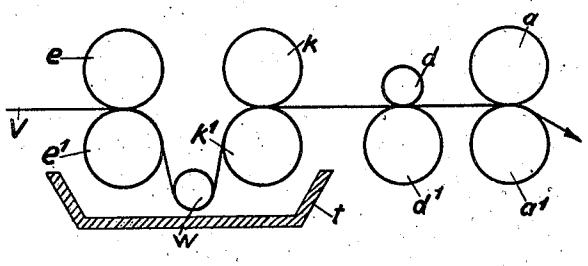

Fig. 2

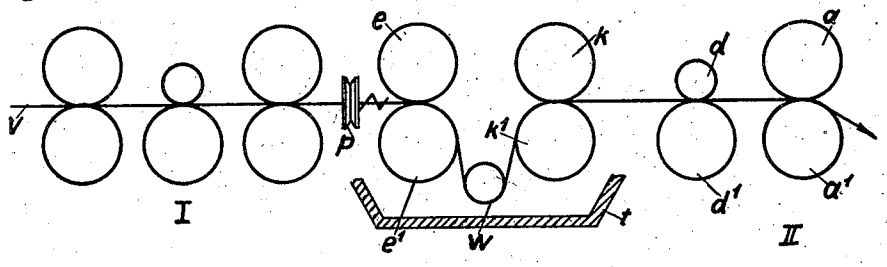

Fig. 4.

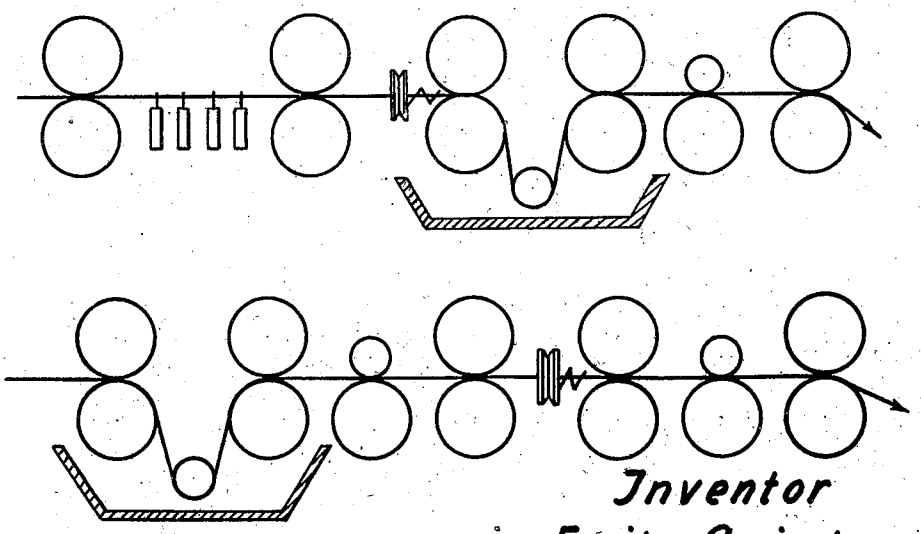

Fig. 3.

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METHOD OF DRAWING BAST FIBER ROVING

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1 Claim. (Cl. 19—130)

This invention relates to the drawing of bast fibre rovings. Such rovings are made up of fibres obtained from the raw or retted stalk and each of such fibres is composed of a number of individual filaments held together by vegetable gum. The fibres cannot ordinarily be stretched or elongated when dry because the gum does not permit relative slipping of the short individual filaments which are held together as a bundle to make up the fibres. For the purpose of this case, I will refer to the fibres as they occur in the stalk as "bundle fibres" and the individual filaments which make up these bundle fibres I will refer to as "individual fibres".

When the bundle fibres are wet the vegetable gum is softened and the bundle fibres may be elongated or pulled apart, whereas the individual fibres cannot be stretched. The minimum length of the bundle fibres is about one inch, and the average length is about four inches, while some bundle fibres greatly exceed that length. The length of the bundle fibres depends in part upon the length of the vegetable stalk, but they are shortened in the course of the working process. The individual fibres are ordinarily from one-half inch to two inches.

In carrying out my invention I employ a drawing frame in which the drawing field is shorter than the average length of the bundle fibres, but is greater than the length of the individual fibres, and I wet the roving before passing it to the drawing frame so that the gum is softened and the individual fibres may slip in respect to each other. The individual fibres in passing through the middle portion of the drawing field will not be directly acted upon by either of the pairs of drawing rollers and the relative degree of slipping of the individual fibres in the bundle fibres may be such that the yarn is not always uniform. This difficulty is overcome in my invention by interposing between the pairs of drawing rollers a pair of slipping rollers which tends to hold back the free or swimming fibres until they are gripped by the front pair of the drawing rollers.

Any known drawing mechanism may be employed in advance of the wetting means or beyond the wet drawing frame and a compressing device, such as a twist tube, may be employed between the two drawing mechanisms.

For the purpose of explaining the invention several examples embodying the same have been shown in a diagrammatical way in the accompanying drawing, in which:—

Fig. 1 is a diagrammatical elevation showing an apparatus comprising a wet drawing frame,

Fig. 2 is a similar diagrammatical elevation showing a double drawing apparatus comprising a dry drawing frame and a wet drawing frame following the same,

Fig. 3 is a similar diagrammatical elevation showing a wet drawing and double drawing frame and compacting means between the members of the frame, and—

Fig. 4 is a similar diagrammatical elevation showing a wet drawing frame in combination with a needle strip drawing frame and compacting means provided between the said elements.

In Fig. 1 the dry roving v goes through feed rollers e, e', under a dipping roller w through the water trough t and then in the wet state through the first gripping rollers k, k', from there through the high drawing rollers d, d', and through the delivery rollers a, a'. Between the feed rollers e, e' and the rollers k, k' there is no drawing. The distance between the pairs of rollers k, k' and a, a' is shorter than the mean length of the bundle fibres, and is greater than the mean length of the individual fibres. This unit forms a wet drawing frame.

This appears in Fig. 2 as unit II of a double drawing frame, the first part I is formed as a dry drawing frame. In order to compress the roving a twist tube p, for example, is interposed between the drawing frames. In this whole drawing mechanism the roving first passes through a dry drawing frame I, is then compressed and is further drawn in a wet drawing frame II.

The distance between k and a is less than the mean length of the bundle fibres, so that a fibre when nipped by the more rapidly rotating rollers a, a' is drawn through the rollers d, d' while other "swimming" fibres are held back until they are nipped by the drawing rollers a, a'. The result is that the fibres are regulated in their passage through the drawing frame, so that a uniform yarn is obtained. Further, it is found possible to use a much higher draft than was hitherto possible, with completely satisfactory results.

In Fig. 3 I have shown a wet drawing and double stretching frame comprising compacting means between its members, the roving being first passed through the wet drawing and stretching frame or the wet gripping and stretching frame. Thereafter it is passed through the second stretching frame which may be a dry or wet gripping or drawing and stretching frame, because the fibre material is already wet.

In the modification shown in Fig. 4 the roving is first passed through a needle strip stretching frame, thereafter through compacting means,

and finally through a wet gripping or a wet drawing and stretching frame.

From the examples given above it will be understood, how wet and dry treatment may be performed in a combined stretching frame with or without drawing, the said combined frame being either a dry stretching frame-wet stretching frame, or a dry drawing and stretching frame and a wet stretching frame, or a dry drawing and stretching frame and a wet drawing and stretching frame, or a wet drawing and stretching frame and an ordinary drawing and stretching frame, or a needle strip stretching frame and wet gripping or a wet drawing and stretching frame, etc., all the said apparatus including compacting means.

It is not possible in the dry stretching of bast fibre roving to draw the roving so that the individual fibres slip relatively to each other. However, this operation is possible when first moistening the bast fibre roving and thereafter drawing the same in a wet state in a roller stretching frame in which the distance between the supply and delivery rollers is smaller than the median length of the bundle fibres. This method is advantageous for the reason that the fibre material which is made soft by being moistened immediately before stretching is drawn when being passed through the drawing field where the individual fibres slip relatively to each other.

I claim:

The method of drawing bast fibre roving including saturating the roving with water, and passing the roving between three pairs of rollers in succession, the spacing between the first and third pairs being shorter than the average length of the bundle fibres, to simultaneously grip them and the middle pair permitting slipping whereby high drawing of said fibres and relative slipping of the individual fibres are effected while wet.

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