

PATENT SPECIFICATION

DRAWINGS ATTACHED

1,182,696



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Date of Application (No. 43199/67) and filing Complete Specification: 22 September, 1967.

Complete Specification Published: 4 March, 1970.

Index at Acceptance:—B6 C (2B3B, 2B4D, 18N9, 28M, 56N1).

International Classification:—B 41 f 17/00.

COMPLETE SPECIFICATION

Printing on Knitted Fabric

I, RODERICK ALLAN MAUND, a British subject, of 54 Pemberton Street, Botany, New South Wales, Commonwealth of Australia, do hereby declare the invention, for which I pray that a patent will be granted to me, and the method by which it is to be performed to be particularly described in and by the following statement:—

In the random colouring of textile yarn, it has been suggested that a tubular sock, i.e. a tubular knitted fabric should first be knitted using the yarn and the sock subjected to colour printing by means of printing elements which apply coloured dyes or inks to selected areas of one side of the flattened sock while it travels through a printing station, following which the flattened sock is reversed so that its other side is similarly printed while it again travels through the printing station. The printed sock is processed in conventional manner and then unravelled so that the randomly printed yarn may be wound onto a cone for use in a textile weaving machine.

However, the apparatus used for colouring yarn in the manner indicated above is unduly cumbersome and unreliable in operation and it is therefore an object of the present invention to provide an improved printing apparatus for the above stated purpose and which, according to the invention, essentially comprises printing apparatus comprising at least one pair of coacting printing rollers, means to supply said printing rollers with colouring material, a spreader adapted to enter a knitted sock (as hereinbefore defined) to be printed simultaneously on both sides and to maintain said sock in a spread out condition while the sock is passing between said printing rollers, and support means for said spreader; said spreader being so proportioned that it extends from a position in advance of said printing rollers to a position beyond those rollers.

[Price 5s. 0d.]

The invention also resides in printing apparatus comprising at least one pair of coacting printing rollers, means to supply the printing rollers with colouring material, means for feeding a knitted sock (as hereinbefore defined) between the printing rollers along a given path, and a spreader extending to both sides of the printing rollers along said path and serving to spread out a knitted sock being fed between the printing rollers.

By way of example an embodiment of the above described invention is described herein after with reference to the accompanying drawings.

Figure 1 is a front elevation of printing apparatus according to the invention.

Figure 2 is a detailed view taken on line 2/2 of Figure 1 and drawn on a larger scale.

Figure 3 is a sectional view taken on line 3/3 of Figure 1 and drawn to a larger scale.

Figure 4 is a sectional view taken on line 4/4 of Figure 1 and drawn to a larger scale.

The illustrated printing apparatus comprises an upright stand 5 supporting at its top end a mandrel 6 on which a rolled knitted sock 7 of textile yarn may be rotatably supported. The frame 5 also supports an upper pair 8 of printing rollers 9 and 10 respectively, a similar lower pair 11 of printing rollers and a pair of spreader support rollers 12 and 13 respectively.

Each of the printing rollers comprises a plurality of printing discs 14 of various widths held in spaced apart relation by appropriate spacer collars 15 sleeved on the printing roller shafts.

Reservoirs 16 adapted to hold a supply of liquid colouring medium 17 are provided for each of the printing rollers. For preference the reservoirs 16 are divided internally into separate compartments so that each of the discs 14 may be supplied with a particular colouring medium which may or may not be of the same colour as that of the

adjacent discs 14. Therefore it will be seen that the flattened sock travelling between the rollers of each pair of printing rollers will have coloured stripes applied to it extending longitudinally of it.

For preference, the discs 14 and spacers 15 of the lower pair of rollers are selected so that the stripes applied by the lower pair of rollers fill in the unprinted zones between the stripes applied by the upper pair of printing rollers.

If desired, each printing roller may be a single body—as distinct from the illustrated rollers built up of discs and spacers—in which event grooves may be cut in the roller to leave protruding portions corresponding to the discs 14.

For preference, at least one roller of each pair of printing rollers is resiliently loaded towards the other roller of that pair. Thus, as can be seen in Figure 2, the roller 9 is mounted in bearings 17 slidable between guides 18 and urged towards the roller 10 by means of a helical loading spring 19 sleeved on a spring-supporting rod 20 extending from the bearing 17 through a clearance hole in an end plate 21 bridging from one guide 18 to the other.

In order to maintain the sock 7 in a spread out condition while the sock is passing between the printing rollers a spreader 22 of suitable width is loosely disposed within the sock. The spreader 22 has a planar body comprising a sheet of semi-rigid material or alternatively a metal frame comprising a pair of longitudinal bars 23 held in spaced relation by means of a plurality of cross-bars 24 such as rods, with an upstream portion 25 of more or less pointed profile and a protruding edge bead 26 at its other end. The spreader extends along the path of the sock to both upstream and downstream sides of the printing rollers.

The spreader 22 rests upon the support rollers 12, 13 and due to the relatively large diameter of the bead 26 the spreader is supported well clear of the nip between the rollers 12 and 13. As a result, the material of the sock 7 may readily leave the downstream end of the spreader 22 under the influence of the support rollers 12 and 13, but the spreader itself is unable to travel between the support rollers.

WHAT I CLAIM IS :—

1. Printing apparatus comprising at least one pair of coacting printing rollers, means to supply said printing rollers with colouring material, a spreader adapted to enter a knitted sock (as hereinbefore defined) to be printed simultaneously on both sides and to maintain said sock in a spread out condition while the sock is passing between said printing rollers, and support means for said spreader; said spreader being so proportioned that it extends from a position in advance of said printing rollers to a position beyond those rollers.

2. Printing apparatus comprising at least one pair of coacting printing rollers, means to supply the printing rollers with colouring material, means for feeding a knitted sock (as hereinbefore defined) between the printing rollers along a given path, and a spreader extending to both sides of the printing rollers along said path and serving to spread out a knitted sock being fed between the printing rollers.

3. Printing apparatus according to Claim 1 or 2 wherein said means to supply the printing rollers with colouring material are such that at least one predetermined section of each printing roller may be provided with colouring material independently of the remainder of said each printing roller.

4. Printing apparatus according to Claims 1, 2 or 3, wherein each roller comprises a series of axially spaced bands.

5. Printing apparatus according to any preceding Claim including a pair of coacting spreader support rollers between which said spreader is unable to pass.

6. Printing apparatus according to any one of the preceding Claims wherein said spreader comprises a planar frame with a pointed or rounded profile at one end and an edge bead at its other end.

7. Printing apparatus substantially as described herein with reference to the accompanying drawings.

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