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APPARATUS FOR MAKING PATTERNED GOODS ON KNITTING, HOSIERY, AND SIMILAR MACHINES

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Fig. 1.

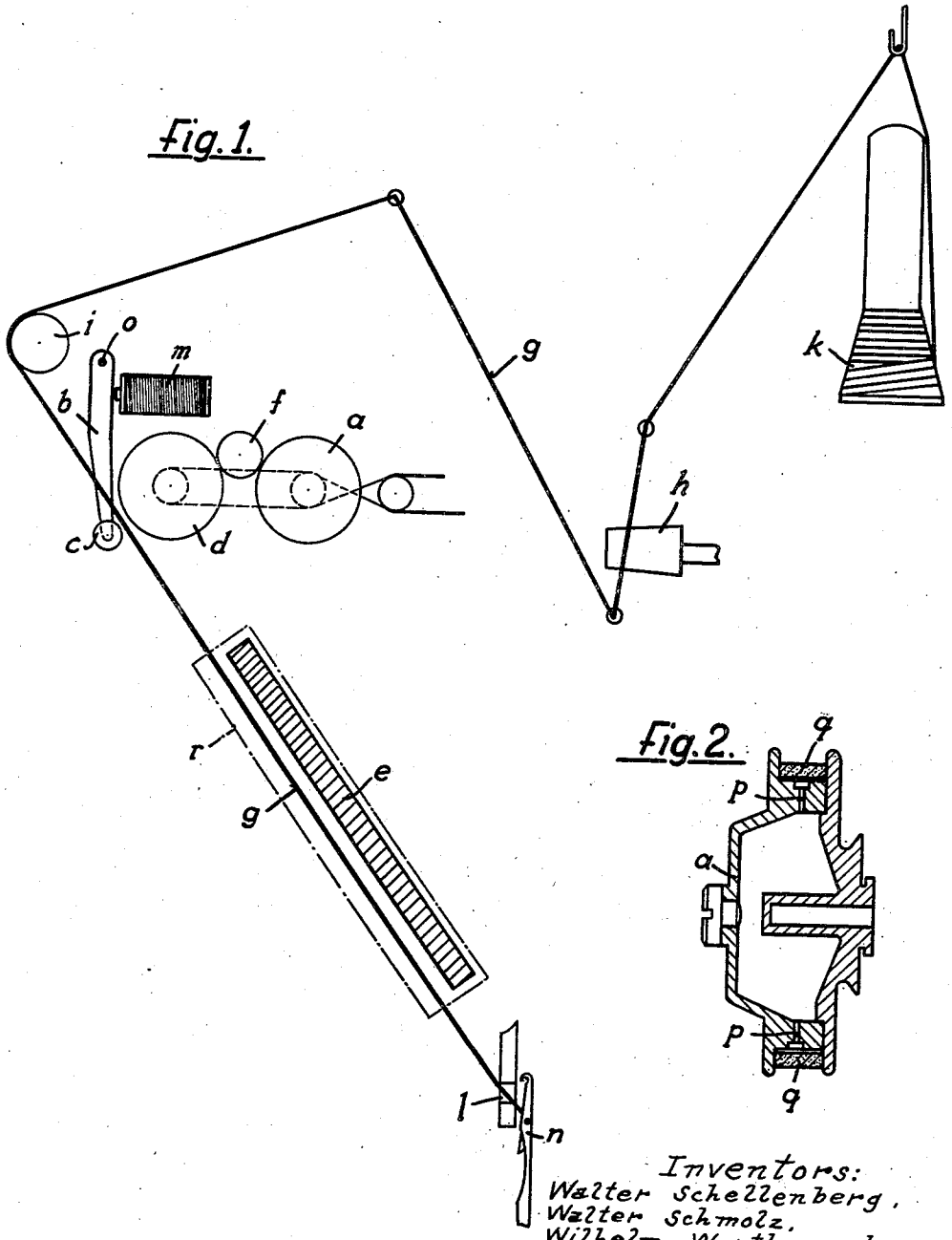


Fig. 2.

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APPARATUS FOR MAKING PATTERNED GOODS ON KNITTING, HOSIERY, AND SIMILAR MACHINES

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6 Claims. (Cl. 66—125)

The invention relates to a process and an apparatus for making patterned goods on knitting, hosiery and similar machines.

The preparation of already printed yarns for a production of a pattern is, with mesh-forming machines, not possible since the quantity of yarn being supplied is not constant and the printed parts of the yarn would not come in each case at the correct place. The printing of hose-like knitted goods during their manufacture, on the loom by means of a device which is arranged between the needle head and the take-off of the finished article simply permits the application of a coloured pattern on one side of the goods.

Pattern-making devices for circular and flat knitting machines are known, by means of which the threads whilst they are on the needles in a tensioned condition in the formation of the loops, have colour applied thereto either by the direct application of the colour on to the threads or by the colour being applied to the needles and being taken therefrom by the threads tensioned in the formation of the loops. Using such a process, however, the needles head is soiled so that a loop following thereon and which is not to be printed is smudged by the residue of the colour. Furthermore, there can be attained with this known device only a printing on one side of the stitch or loop. With knitting machines of fine division and sensitive latch needles, the use of the known device is not practically possible and furthermore the variations of patterns are very limited as special pattern wheels are used. A multiple colour printing cannot possibly be attained.

The known devices for impregnating the yarn in its course from the spool to the working position are not adapted for the coloured patterning of the goods since the yarn could not be printed in places therewith. Finally, it is known in the case of weaving looms to print the warp threads by means of a roller. Here, however, a special printing roller is necessary for each pattern, and furthermore such a device would not be suitable for loop forming machines as the parts of the thread printed by a roller would not appear in the correct place in the finished article.

The process according to the present invention consists in the yarn on its path between the spool and the point of working being printed in places corresponding to a sample pattern and preferably all round it.

To carry out the process, a device is used which is characterised by a colouring roller arranged between the spool and the place where the yarn is worked, against which roller the yarn is pressed by means of a printing roller controlled by the pattern device at proper intervals. The colouring device can have connected after it a drying device preferably of tubular form. The colouring roller is fed through a transmission roller from a colour supply roller which is made as a drum containing the colouring matter and provided on the outside with outlet openings, the whole surrounded with a jacket of felt or the like. The colouring device is driven by the thread delivery device or from some other point of the machine.

The use of a transmission roller and the construction of a colour supply roller or cylinder as a drum provided on the outside with outlet openings are known per se. But owing to the outside of the drum being surrounded with felt or the like, a uniform distribution of the colour passing through the outlet openings arranged in the jacket of the drum is attained, which is simultaneously absorbed by the felt jacket or the like and applied to the transfer roller. The driving of the colour supply roller at the speed of the machine effects a supply of the colouring matter corresponding to the consumption owing to the centrifugal action of the colouring matter contained in the drum and consequently also the supply of the colouring matter to the felt jacket or the like increasing corresponding to the speed of the roller and thus also with that of the machine.

If a plurality of devices according to the invention are connected in series, then the same length of yarn can be printed with different colours.

By means of the process according to the invention, and the device serving for carrying out this process, the possibility is presented of applying in sharp definition any desired multiple colour pattern to any part of the articles either inside or outside.

The device according to the invention is shown by way of example on the annexed drawing, in which

Figure 1 shows diagrammatically the colouring device according to the invention, and

Figure 2 shows a section through the colour supply roller.

The length of yarn *g* runs from the spool *k* over the yarn supply device *h* and a roller *i* to the colouring apparatus from where if necessary it passes through a heating device and the yarn guide *l* to the needle *n*.

The colouring device consists of the colour supply roller *a* which gives up the colour through a transfer, cylinder *f* to the colouring cylinder *d*. The yarn is intermittently pressed against this

by means of a printing roller *c* controlled by the pattern device, whereby the printing at different places of the yarn, that is, the printing at places separate from each other distributed over the length of the yarn, is attained. The printing roller can, for example, be controlled by being arranged rotatable on a lever *b* which can oscillate about a pivot *o*. This lever can be attracted by a magnet *m* controlled by the pattern device and presses in the attracted condition the yarn *g* by means of the printing roller *c* against the colour roller *d*. The colour supply roller *a* is made as a drum containing the colouring material and its jacket has outlet openings *p* around it which allow the colour contained in the drum to pass to a jacket *q* of felt or the like.

A heating device can be arranged to follow the colouring device, preferably made in tubular form, and the yarn *g* can for example be carried through a tube *r* in which is arranged a heating wire *e*.

We claim:

1. In a knitting, hosiery and similar machine for the production of patterned goods, a stitch forming device, a yarn coloring device comprising a color roller past which the yarn travels to said stitch forming device, means for driving the color roller and for supplying color thereto, a printing roller located in the path of the yarn before it reaches said stitch forming device, and means with predetermined timing for intermittently pressing the yarn against the color roller by the printing roller.

2. A coloring device according to claim 1, in which the means for intermittently pressing the printing roller includes a lever which is pivotally mounted and on which the printing roller is mounted, and a magnet for operating the lever.

3. A coloring device according to claim 1, in which a tubular heating device is arranged between the color roller and the stitch forming device.

4. In a knitting, hosiery and similar machine, a coloring device including a color supply roller comprising a drum to contain the color material and having radially arranged outlet openings therein, and a circumferential jacket around the drum and over the outlet openings of a material which will permit the passage of the color material therethrough from the openings.

5. In a knitting, hosiery and similar machine for the production of patterned goods, a stitch-forming device, a yarn-coloring device comprising a color roller past which the yarn travels to said stitch-forming device, means for driving the color roller and for supplying color thereto, a printing roller located in the path of the yarn before it reaches said stitch-forming device, and means actuable with controlled timing to press the yarn against the color roller by the printing roller at determined intervals and for determined durations.

6. In a knitting, hosiery and similar machine for the production of patterned goods, a stitch-forming device, a yarn-coloring device comprising a color roller past which the yarn travels to said stitch-forming device, means for driving the color roller and for supplying color thereto, a printing roller located in the path of the yarn before it reaches said stitch-forming device, and means arranged between the color roller and the stitch-forming device for drying the colored portions of the yarn before said portions reach said device.

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