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J. HÖFNER

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METHOD OF AND APPARATUS FOR FINISHING TEXTILE GOODS

Filed Sept. 19, 1928

Fig. 1.

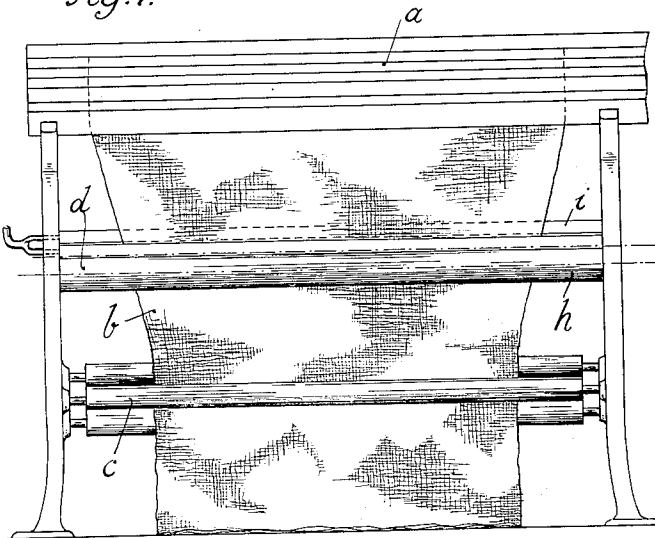


Fig. 2.

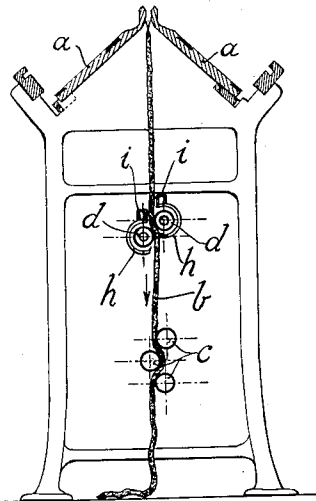


Fig. 3.

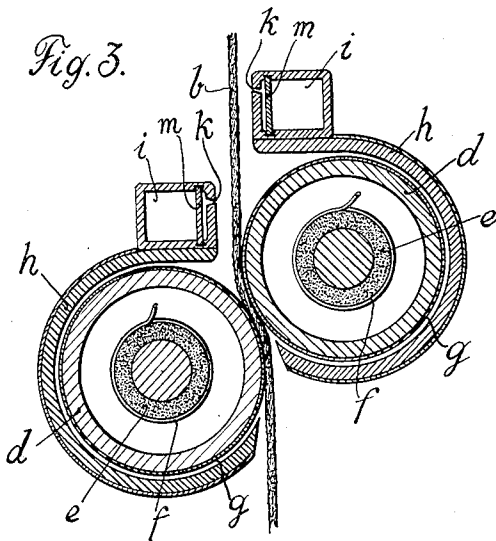


Fig. 5.

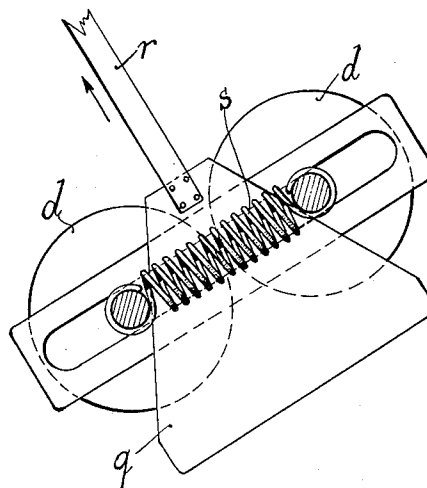
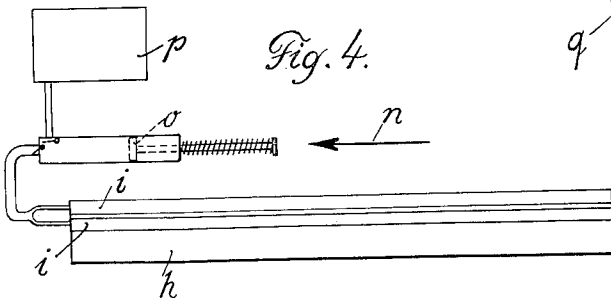


Fig. 4.



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METHOD OF AND APPARATUS FOR FINISHING TEXTILE GOODS

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Textile fabrics, particularly knitted ones, are subjected after their production to a pressing and shrinking process. This is usually effected by hand or by means of a separate machine. On leaving the textile machine in unfinished condition, the fabric generally curls up and the loops and meshes are subjected to a deformation which the subsequent finishing treatment cannot altogether eradicate, and the fabric thus loses a great deal of its original uniform and pleasant appearance.

The object of the present invention is to remedy this defect, and the invention consists in shrinking and pressing the fabric before it is detensioned in the machine so as to fix the loops and meshes in their original shape.

For this purpose the machine is fitted with press-rollers between which the fabric is passed while it is held in tension in the machine, and the additional advantage is thus achieved that the acquisition of a separate finishing machine and the provision of space for the same will be obviated.

Fig. 1 of the accompanying drawings represents a diagrammatic side view of a flat-bed knitting machine to which the invention is applied.

Fig. 2, a cross-section of the same,

Fig. 3, a cross-section on an enlarged scale of the press-rollers and the moistening device,

Fig. 4, a diagrammatic view of the moistening device, and

Fig. 5, a cross-section showing means for separating the rollers from each other and from the fabric.

The textile machine is provided with a pair of press-rollers *d* which may either themselves act as delivery rollers or be used in addition to the ordinary delivery rollers *c*. The fabric *b* passes between the rollers which are positively rotated so as to deliver the fabric in proportion as it leaves the needle beds *a* and maintain it in uniform tension. The rollers are clamped together against the fabric by springs *s* and they are heated so as to fix the loops and meshes in the exact shape in which they left the needles. Water or steam is applied to the fabric in advance of the

press-rollers through conduits *i* arranged parallel to the rollers one at each side of the fabric.

The construction of the rollers may be varied and they may be heated either electrically or by other means. In the illustrated construction each cylinder has a core surrounded by a refractory insulating layer *e*. Wound on the latter is a resistance wire *f* for heating the roller by means of electricity. Spaced from the heating element is an aluminium jacket *g* which latter is covered with felt or the like. The conduits *i* are fitted with narrow spraying nozzles *k* and are connected to metal shells *h* which are lined with asbestos and which embrace the rollers so as to protect them from outside heat interchange. The conduits *i* may be fitted with closing slides *m* adapted to be adjusted from the ends of the conduits for restricting the water spray to the width of the fabric.

The water spray may be produced by means of a piston *o* (Fig. 4) which receives its water supply from a tank *p* and which is adapted to be operated in opposition to a spring by a reciprocating part of the machine, for instance the needle carriage, as indicated by the arrow *n*.

In order to prevent the heated rollers from damaging the fabric when the machine stops, means are preferably provided, as shown in Fig. 5, for separating the rollers automatically from the fabric. This is effected by means of wedges *q* which are adapted to slide in between the roller shafts so as to force the rollers apart, the wedges being connected by links *r* to the starting gear so as to separate the rollers when the machine is stopped and release them when the machine is restarted. When the press-rollers are thus separated from the fabric, the tension of the latter must be maintained either by means of the ordinary delivery rollers *c* or by other means.

The rollers *d* are preferably arranged, as best shown in Fig. 3, so that a line connecting their axes is placed at less than a right angle to the direction in which the fabric leaves the machine. The fabric will thus contact with the larger part of the circumference of the

rollers, and a more efficient treatment will be ensured.

The rollers may be heated with steam instead of electrically in which case the steam may also be used for moistening the fabric. For instance, means may be provided for sucking the steam through the fabric from one roller into the other.

The water spray may contain dressing chemicals.

Although the term "textile fabric" has been used in the foregoing description, it will be understood that the present invention finds useful application more particularly to the types of fabrics included in the groups known as "Strickwaren" and "Wirkwaren" in the German textile industry, the latter being a term sometimes used to designate knitted fabrics of materials other than wool as distinguished from wool knitted fabrics, sometimes to designate machine knitted fabrics as distinguished from hand knitted fabrics, but in general to designate fabrics involving interengaging loops or meshes in their construction. In the absence of a commonly accepted single English equivalent for the German "Strickwaren" and "Wirkwaren" in a single generic sense, the term "knitted fabrics" will be utilized in the appended claims to convey the idea common to both terms.

I claim:

1. Method of treating a knitted fabric having portions normally tending to curl, to produce a uniformly flat fabric which includes retaining successively occurring last formed loops of the fabric in engagement with fabric forming instrumentalities continuously with the formation of said fabric, maintaining a portion of the formed web of fabric in advance of said instrumentalities under tension, removing web distorting strains in the fabric under tension, and fixing the fabric loops in undistorted relation.

2. Method of treating a knitted fabric having edge portions normally tending to curl, to produce a uniformly flat fabric, which includes retaining the successively occurring last formed loop of the fabric in engagement with fabric forming instrumentalities continuously with the formation of said fabric, maintaining a portion of the formed web of fabric in advance of said instrumentalities under tension, applying moisture to a portion of said web under tension, and progressively applying heat and pressure to said moistened web while under tension to fix the loops thereof in undistorted relation.

3. In a machine for forming knitted fabrics, the combination of fabric forming instrumentalities, means for continuously maintaining the last formed loops and a portion of said fabric under tension while said loops engage said instrumentalities, means for effecting in loops of the fabric under tension

the release of strains tending to distort said loop and to cause the fabric to curl when released from tension, and means for fixing the loops of said fabric in unstrained undistorted relation whereby the fabric is delivered from the machine in flat condition and with its loops fixed in substantially the same relative positions as when completed and ready to be released from the fabric forming instrumentalities.

4. In a machine for forming knitted fabrics, the combination of fabric forming instrumentalities, take off means for continuously maintaining the last formed loops and a portion of said fabric under tension while said loops engage said instrumentalities, a conduit positioned between said take off and said instrumentalities and transversely to the path of said fabric and having outlets for delivering moisture toward the fabric, means for closing some of said outlets while others remain open, and means between the conduit and the take off for fixing the loops of said fabric in flat undistorted relation.

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