

~~105~~
R51-35

nearly four months. This would indicate that from a production standpoint, the average looper will wear her corrective lenses five or six weeks before there is a marked

increase in her productive ability. It also indicates that she may continue to improve for at least four months and, if this be true, corrective lenses should be carefully checked at frequent intervals so that the looper may keep her production up and not have to wait during this long interval for her production to increase after her lenses have been changed.

With Attachment

Better Fit In Tubular Knitgoods

MANY types of circular knitting, as conventionally practiced, can be effectively accomplished only by the application of considerable lengthwise tension to the fabric to insure that the loops of yarn produced at the cylinder are pulled free of the needle latches or hooks after formation and do not interfere with the operation of the needles. This tension naturally results in abnormal stretching which produces a fabric that shrinks excessively in length and has little natural elasticity or stretch in this direction. Similarly, since the fabric is narrowed during knitting, there is a tendency for it to become wider during further processing and in use. Thus, the well known tendency of knitted garments to become short and "baggy" (increased in width) during normal wear and laundering can be attributed to this necessity for applying tension in knitting. Currently, adjustments for width and for reducing excessive length shrinkage can be made in the separate operation of calendering. Data showing the changes in shrinkage and in width produced in calendering are given in Textile Series Report No. 57, June, 1949.* It would be desirable to have some means of adjusting the width of

By L. I. WEINER, F. J. SPAGNA and
B. P. BERMAN, Military Planning Division,
Office of the Quartermaster General, Philadelphia

the fabric and reducing excessive length shrinkage during the knitting operation without the necessity of using supplementary operations.

An attachment has been developed which can be fitted into the conventional type of circular knitting machine and will change the shape of the knitted loop from an elongated configuration to more symmetrical form. This effectively decreases the length of the fabric and simultaneously increases its width. The device is constructed so that it may be inserted into the knitted "sock" (Fig. 1) hanging from the needles and allowed to rest in the bottom fluted rolls (Fig. 2) as the fabric is withdrawn from the machine. The geometry of the attachment allows the loops to form naturally after which they are gradually widened over a portion of the device which is circular in cross-section. The circular portion gradually becomes oval until, at the fluted rolls, the fabric is flattened out and passes through in the conventional fashion. A cylindrical element paralleling the fluted rolls prevents the device from being drawn into the rolls.

To demonstrate the effects of the device on dimensional changes of the tubing the following samples were prepared on a six-inch diameter Wildman machine.

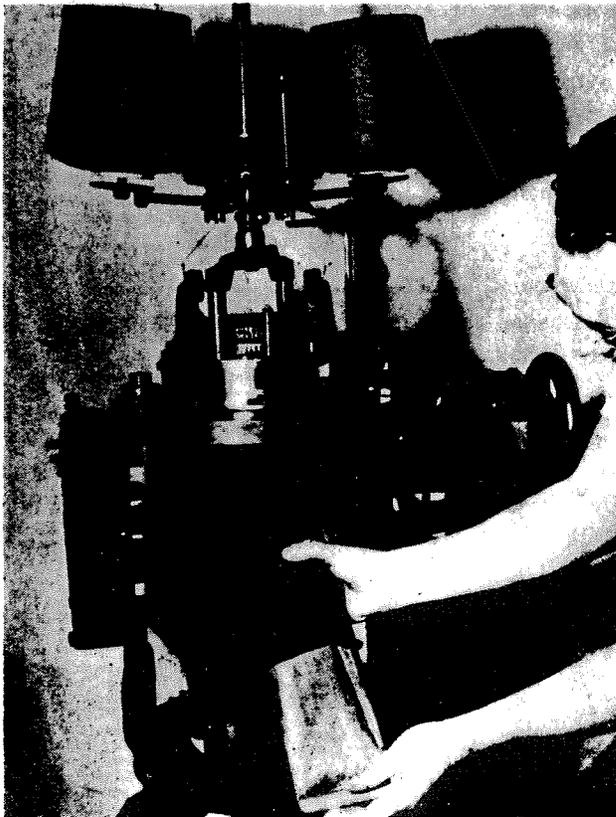


Fig. 1—Insertion of knitting machine attachment.

TABLE I

EFFECT OF ATTACHMENT ON KNITTING STIFFNESS

Cam Setting	Knitting Stiffness (courses in.)	
	Without attachment	With attachment
2.50	12	14
3.25	13	15
4.00	15	17

Using the same cam setting it is obvious that the knitting stiffness, as measured in terms of courses per inch, is greater for fabrics knit with the control device. After measuring the width of the samples, their shrinkage was evaluated using the relaxation shrinkage test described in Specification MIL-C-2184. The results are summarized in Table II below:

TABLE II

SHRINKAGE OF KNIT FABRICS (%)

Courses per inch	Without Control Device			With Control Device		
	12	13	15	14	15	17
Length	18.9	21.7	17.8	13.0	12.4	10.9
Width	8.9	1.5	6.4	17.9	20.1	19.1

It is apparent that the fabrics which were knit using the control device shrank approximately 40 per cent less in

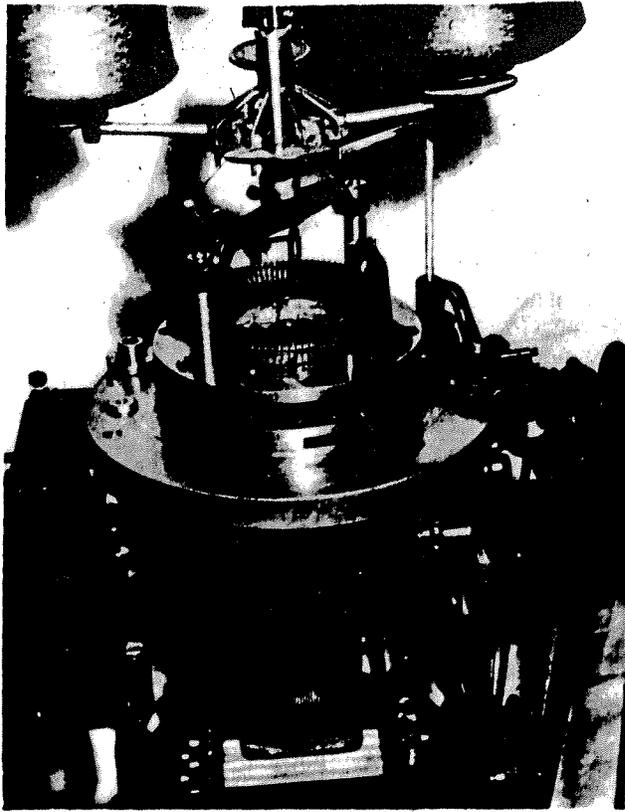


Fig. 2—Knitting machine attachment in place.

length for equivalent cam settings. However, shrinkage in width was correspondingly increased.

A comparison of the potential length shrinkage of fabric as produced normally and using the control device is graphically illustrated in Fig. 3.

Allowing for experimental error, it is evident that the shrinkage of the fabric decreases linearly with increasing knitting stiffness (courses per inch) and that there is a constant difference in shrinkage between fabrics knit normally and those knit with the control device for equivalent cam settings. The width of the fabric follows a similar pattern in that it decreases with increasing knitting stiffness and there is a constant increase in width produced by the use of the control device.

For most purposes there is a distinct advantage in producing a fabric which has a natural tendency to shrink in width since this is the direction of greatest elasticity and

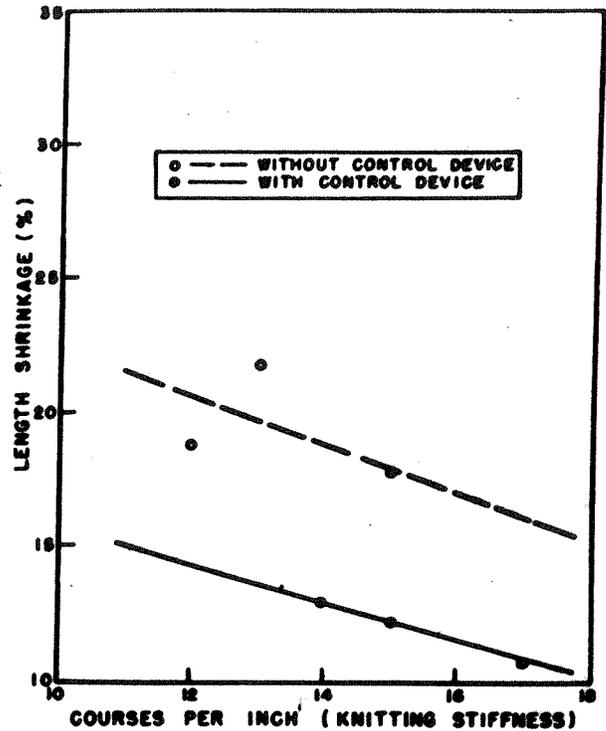


Fig. 3—Effect of control device on length shrinkage of all-wool fabrics.

stretch. Garments made of such a fabric will be more form fitting and have less tendency to become "baggy" in use and laundering.

It is probable in using the device that it will be necessary to determine the maximum tolerable width shrinkage for a given construction and to gage the dimensions of the device so that no increase in width over and above this amount would be produced.

Where wet processing is to follow the knitting operation, it is likely that fabrics made using the device will elongate slightly more during the wet operations than similar fabrics made in the conventional manner. However, because of the increased knitting stiffness (courses per inch), it is probable that the residual length shrinkage of the fabric so produced will be much less than is normally obtained. Confirmation of this fact will have to await actual production runs using mill equipment.

* Textile Series Report No. 57—Factors Affecting the Relaxation Shrinkage of Knit Underwear Tubing. Louis I. Weiner—may be obtained from the Office of Technical Services, U. S. Department of Commerce, Washington, D. C.

THE following descriptions of recent patents issued in the hosiery and knitgoods field is supplied by Eaton & Bell. Copies of the patents listed below may be obtained by sending company check, money order or silver to the Commissioner of Patents, Washington 25, D. C., at the rate of 25 cents per copy.

Patent No. 2,529,241 was issued to Rudolph Bassist of New York City and assigned to Futura Fabrics Corp. of New York which claims a warp knitting machine. The patent calls for, in a warp knitting machine, a cam shaft, a

warp beam, and adjustable mechanism operated in timed relation to the cam shaft for continuously rotating the warp beam in yarn-feeding direction, the mechanism comprising a variable output fluid motor, with means for varying the output of the motor. Regulatory means are operatively connected to the output-varying means and are responsive to the diminishing quantity of yarn on the warp beam for automatically effecting compensatory variations in the warp beam movements.

"Sinker Control Mechanism for Circular Knitting Ma-