

F. C. STEPHAN.

APPARATUS FOR MEASURING THE LENGTHS OF FABRICS.

(Application filed June 2, 1902.)

(No Model.)

Fig. I.

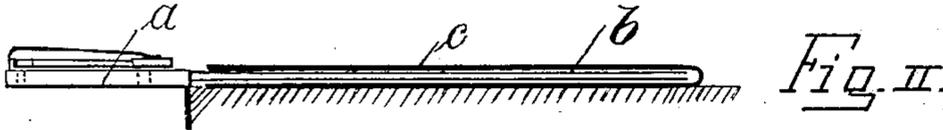
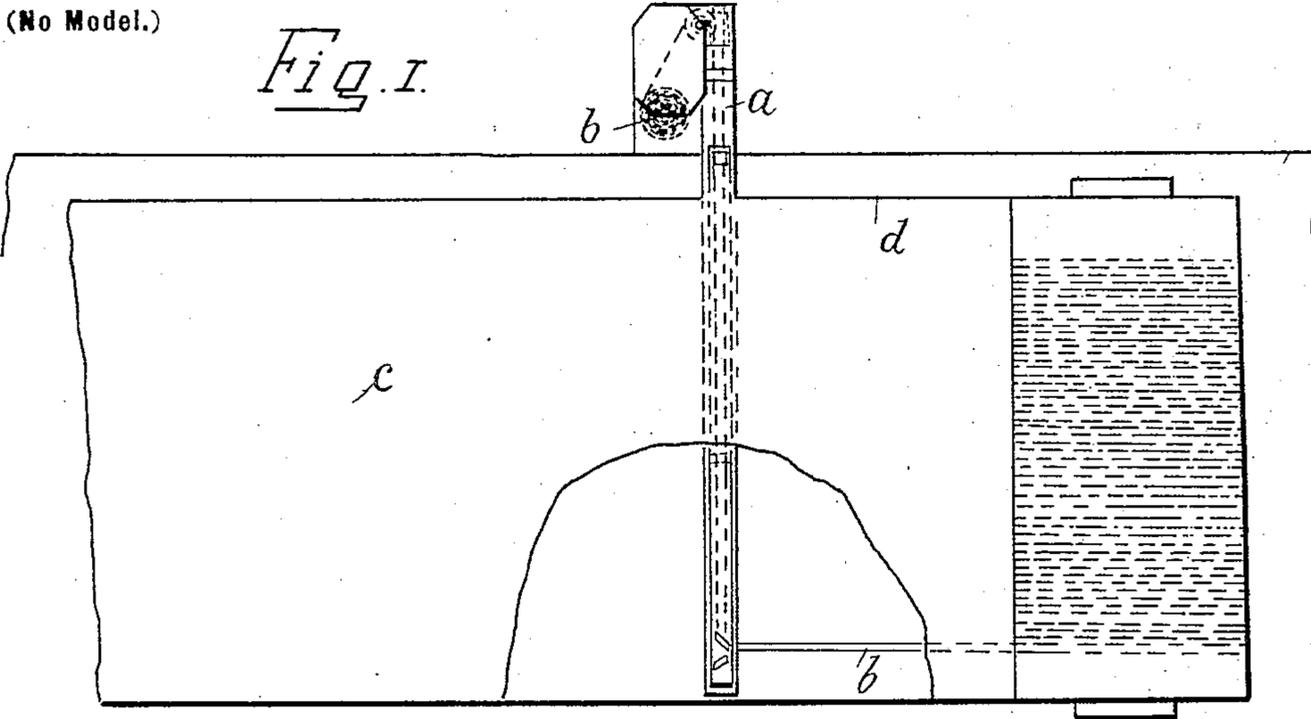


Fig. II.

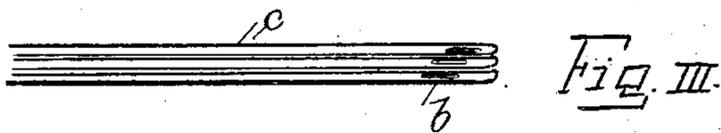


Fig. III.

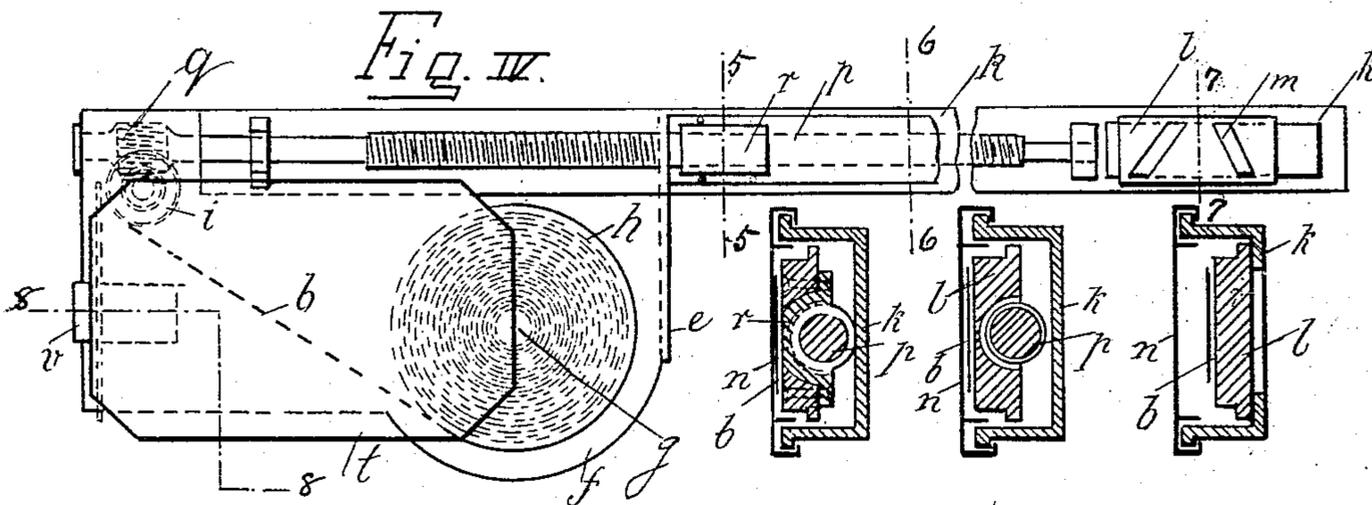


Fig. IV.

Fig. V. Fig. VI. Fig. VII.

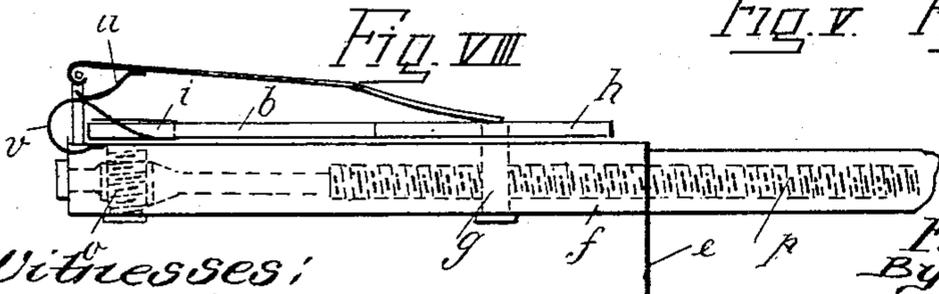


Fig. VIII.

Witnesses:

*W. B. Keedy*  
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Inventor  
 Friedrich C. Stephan  
 By *James L. Norris*

4464

# UNITED STATES PATENT OFFICE.

FRIEDRICH CARL STEPHAN, OF CRIMMITSCHAU, GERMANY.

APPARATUS FOR MEASURING THE LENGTHS OF FABRICS.

SPECIFICATION forming part of Letters Patent No. 713,524, dated November 11, 1902.

Application filed June 2, 1902. Serial No. 109,987. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH CARL STEPHAN, manufacturer, a citizen of Saxony, residing at Crimmitschau, in the Kingdom of Saxony and Empire of Germany, have invented a new and useful Improvement in Apparatus for Measuring the Lengths of Fabrics, of which the following is a specification.

My invention has for its object to improve the device for measuring and controlling the length of cloths and other fabrics, which consists in that a rolled-up measuring-band is introduced between the double layers of the fabric and wound up with the latter.

Hitherto the measuring process carried out with the device secured by Patent No. 519,277 has been sufficient for most fabrics with the exception of very fine goods—such as silks, velvets, satin, and the like—for the reason that the measuring-strip rolled therein leaves a mark upon these fabrics, and may thus render such extremely-delicate materials unsaleable. This disadvantage is mainly due to the fact that in winding the said measuring-strip between the two layers of the fabric when winding up the material the said strip is deposited in almost or in exact superposed layers in the same direction, thereby forming a swelling equal to the sum of the thicknesses of the superposed paper strips. This swelling has no objectionable effect upon unfinished thick materials of more or less elasticity and only produces an objectionable impression when applied to the face of thin, dressed, or heavy silks, &c. The new apparatus being subject of this invention obviates the aforesaid disadvantage by causing the position of the measuring-band between the layers of fabric to be constantly altered in such a manner that never one convolution of the measuring-band is superposed over the previous convolution. Thus there is a great progress created for the benefit of the entire textile industry, inasmuch as now all and every goods can be provided with a measuring-band.

I will now describe my invention in detail, reference being had for the purpose of such description to the accompanying drawings, in which—

Figure 1 is a plan view of my improved apparatus. Fig. 2 is a transverse sectional view

of a bolt of cloth, showing part of my apparatus in connection therewith. Fig. 3 is a longitudinal section of a bolt of cloth, illustrating the method of winding my improved measuring-band between the folds of cloth. Fig. 4 is a detail plan view of the mechanism for feeding and guiding the measuring-band. Figs. 5, 6, and 7 are cross-sections taken, respectively, on the lines 5 5, 6 6, and 7 7 of Fig. 4. Fig. 8 is a side view of the mechanism illustrated in Fig. 4.

Like reference-letters indicate like parts throughout the different views.

An apparatus *a*, which contains the roll of measuring band or strip *b* and permits its free withdrawal from such roll, while at the same time its outlet-point is constantly altered, delivers the said measuring band or strip between the folded layers of the material or fabric *c* to be wound in a roll, the strip being first delivered at the farthest end from the front longitudinal edge *d* of the fabric. The fabric is then wound up, together with the measuring-strip, which during the operation is pulled out of the measuring-band containing and delivering apparatus. The measuring-strip delivered from the apparatus passes through an opening in a slide which gradually moves forward and so constantly alters the position of the measuring-band, which latter is thus spirally wound in the cloth roll. In this manner no two convolutions of the measuring-strip will be superposed, and thus make an impression in the face of the fabric. A box *f*, with plate *e* for securing the apparatus to the table-top, is provided with a pin *g* for the reception of the measuring-band roll *h*. The measuring-band *b* from the roll is led around a guide-pulley *i* and then through a hollow delivery-channel *k*. The latter is provided with a slide *l*, having two slanting delivery-slots *m* for right and left winding and is covered with a top plate *n*. The roller *i* is fast on a worm-wheel *o*, Fig. 8, carried in bearings in the box *f* and gearing in a worm-wheel *q* at the end of a spindle *p*. The spindle *p*, which is carried in bearings in the box *f* and delivery-channel *k*, is revolved by unrolling the measuring-strip through the guide-pulley *i* and worm-gear *o q*. The rotation of the spindle *p* operates a semiscrew-nut *r*, and thus moves the slide *l* endwise, the nut *r* be-

ing fixed to the slide *l* and engaging in the screw-threads of the said spindle. In this manner the slide with the delivery-slot *m* moves gradually farther away from the measuring-roll *h*. After the slide has reached the end of its path it may be taken out and returned to its original position. A cover-plate *t* is pressed by springs *u v* with its fore edge upon the measuring band roll *h*, so as to produce a certain resistance to the unrolling of the measuring band or strip, which should be greater than the resistance of the rotation of the worm-gear. The cover affords at the same time a protection against the falling out of the measuring-band roll *h*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for measuring the length of fabrics, the combination with a part on which the fabric is adapted to be wound, and means for feeding a measuring-band between the folds of said fabric as it is being wound, of means for guiding said measuring-band, so that it will be wound between the folds of said fabric in a spiral direction.

2. In an apparatus for measuring the length of fabrics, the combination of a part on which the fabric is adapted to be wound, a measuring-band adapted to be fed between the folds of the fabric, and means operated by the movement of said measuring-band for guiding said

measuring-band between the folds of said fabric in a spiral direction.

3. In an apparatus for measuring the length of fabrics, the combination of a part on which the fabric is adapted to be wound, a measuring-band adapted to be fed between the folds of the fabric, a guide-pulley around which said measuring-band passes, and means operated by said guide-pulley for guiding said measuring-band between the folds of the fabric in a spiral direction.

4. In an apparatus for measuring the length of fabrics, the combination of a part on which the fabric is adapted to be wound, a measuring-band adapted to be fed between the folds of the fabric, a guide-pulley around which said measuring-band passes, a worm on said guide-pulley, a spindle arranged parallel to said fabric-winding means, a screw-thread on said spindle, a worm-wheel on said spindle adapted to mesh with the worm on said guide-pulley, a guide-block adapted to be operated by said spindle and to guide said measuring-band between the folds of said fabric in a spiral direction, and means for retarding the feed of said measuring-band.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRIEDR. CARL STEPHAN.

Witnesses:

A. SCHRAMM,  
C. A. CREEVEY.