

1,135,701.

Patented Apr. 13, 1915.
2 SHEETS—SHEET 1.

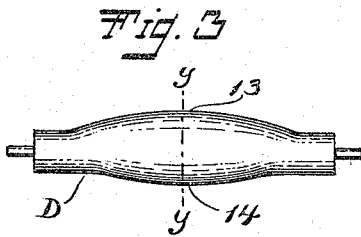
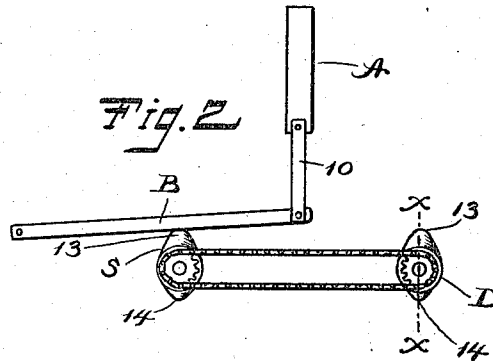
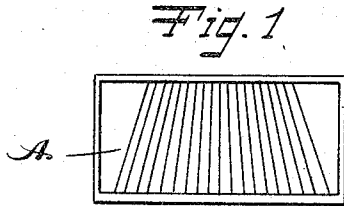
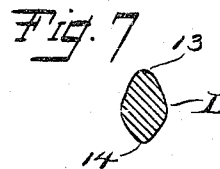
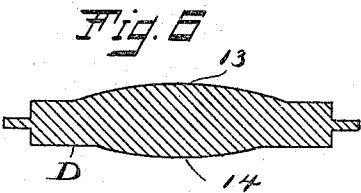
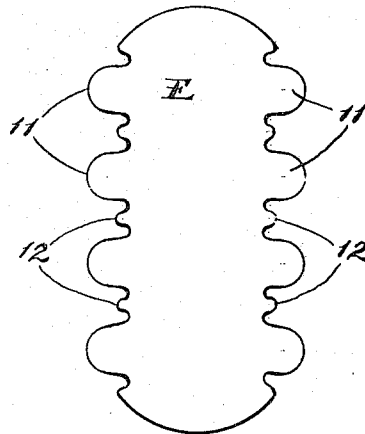


Fig. 4



Witnesses:

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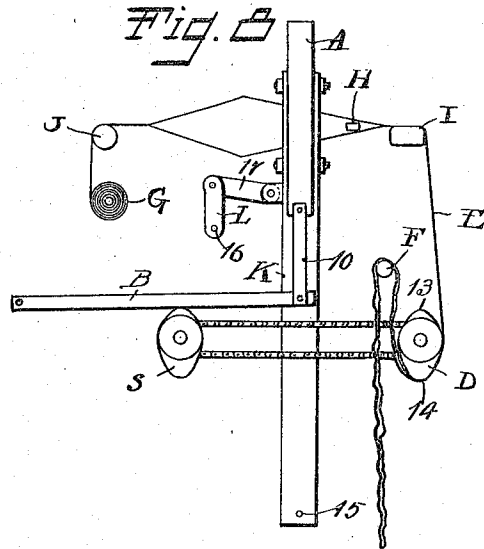
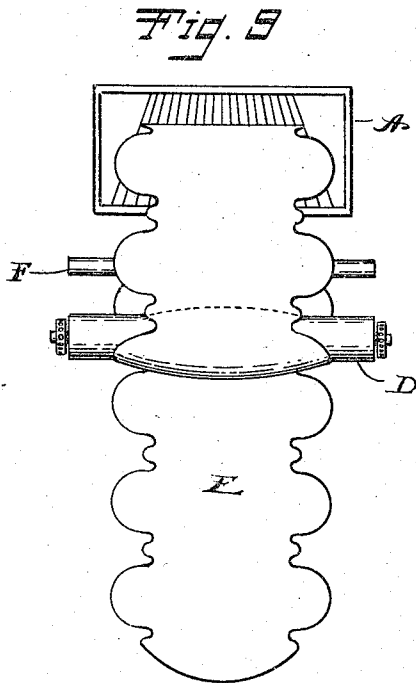
H. LANGER.
LOOM.

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2 SHEETS-SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY LANGER, OF MIDDLETOWN, CONNECTICUT.

LOOM.

1,135,701.

Specification of Letters Patent.

Patented Apr. 13, 1915.

Application filed April 3, 1912. Serial No. 688,156.

To all whom it may concern:

Be it known that I, HENRY LANGER, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Looms, of which the following is a specification.

My invention relates to improvements in looms, and the object of my improvement is to produce a loom that will operate to produce a corrugated tubular fabric, and one that is especially suitable for use in vehicle tires.

In the accompanying drawing:—Figure 1 is a side elevation of a reed suitable for use with my invention. Fig. 2 shows in end elevation mechanism for providing upward and downward movement to my reed. Fig. 3 is a side elevation of the take up roll shown in Fig. 2. Fig. 4 is a side elevation of a fabric made by my invention. Fig. 5 is a side elevation of a modification of the take up roll. Fig. 6 is a sectional view on the line xx of Fig. 2. Fig. 7 is a sectional view on the line yy of Fig. 3. Fig. 8 is a side elevation of the mechanism shown in Fig. 2 and other loom mechanism and the fabric. Fig. 9 is a front elevation of the same.

The reed A comprises a frame work supported so that the same can be moved up and down to different positions and the same is of the differential type, being narrower at one end than at the other, being provided with the usual dents, arranged diverging downward as shown. The said reed is caused to move up and down in the lay of the loom in the process of weaving and the width of the fabric will be determined by the particular position of the reed. When the narrow part of the reed is in position to beat against the weft the fabric will correspond in width to the width of the particular portion of the reed, and similarly when the wider part of the reed is beating in the weft the fabric will be correspondingly wide. The reed is caused to move up and down by suitable mechanism at the proper intervals corresponding to the corrugated effect desired in the fabric. The mechanism in Fig. 2 is applicable for one method of providing such movement of the reed. In this mechanism A is the reed which is suitably guided by proper mechanism, B is a lever connected to the reed A by a link 10 and pivotally supported by the other end.

A cam S in contact with the lever B serves as the same is rotated to impart the desired movement to the reed A through the connected mechanism, the falling movement being effected by gravity. Movement of the cam S is provided by means of a set of sprocket gears and chain from the cloth take up roll D. The cloth take-up roll D shown in Fig. 3 is relatively large at the center and tapered toward the ends. Different forms may be used for the cross-section of the middle of the roll, the preferred form being of special design, more or less elliptical, and determined by the particular construction of the reed. The cam S has the same general form as the cloth take up roll D of the special design mentioned has at the middle and the same form of cam is used even though a take up roll of modified form is used, such as D¹.

As the reed is moved up and down to correspond to the different widths desired to produce the corrugated fabric it is evident that in order to take up the same length of warp at the center and at the edges provision must be made for a different amount of take up intermediate the edges than at the edges themselves, which latter are curved and have longer length than the center which is straight, and in order to do this and to produce corrugations that are equal all around I make use of a cloth take up roller D that is of peculiar shape, being essentially elliptical at the middle portion and tapered toward the ends and merging into a round cross-section.

The roller D shown in Fig. 3 is suitable for fabric having alternate large corrugations 11 and small corrugations 12 and for this reason is provided on one side with elliptical enlargement 13 and on the opposite side with a smaller swelling or enlarged portion 14. In the modification of the roller D¹ shown in Fig. 5 the cross-section of the roll is symmetrical or circular, being large at the middle portion and tapered toward the ends. Such a roll will answer in many cases, but will not give as good or uniform results as the roll D shown in Fig. 3 having enlargements corresponding properly to desired corrugations. My take up roll D or D¹ is of the type that operates to effect the taking up of the warp in cooperation with other mechanism and the cloth E is delivered therefrom to receiving means, which

may comprise a receiving roll or the goods may be allowed to collect on the floor. My roll as described in either form operates as a differential take up roll and is operated by the mechanism described in unison with the differential reed and in coöperation therewith serves to produce tubular fabrics having uniform corrugations and also corrugations of different size.

10 In the mechanism shown partly in Fig. 8 and partly in Fig. 9 the principal elements not already designated are the following:—
F is a guide roll or idler, G is the warp, J is the whip roll, H is the shuttle, I is the breast beam, K is the lay which is pivotally supported by the lower end on the pivot pin or shaft 15, L is the crank mounted by the inner end on the crank shaft 16 and which is operatively connected to the lay H at the outer end by means of the link 17.

The process of making tubular fabrics generally is well known in the art of weaving and an extended description of the details of the well known features involved in the said process are omitted from the description and drawing, and such features are indicated only to such an extent as is deemed necessary for a proper comprehension of the special features that are involved in my invention. For instance, the manner in which the reed A may be supported in the lay and provided with a to and fro beating up movement may be ordinary, such as employed in the British patent to Lee, No. 569 of 1879.

I claim as my invention:—

1. In a loom having a reed and a take up roll, the said reed being a differential reed having different effective widths for different positions of elevation, the said take-roll being a differential roll having differing dimensions of cross-section for different positions along the axis, and having an eccentric form of cross-section at the middle, means for effecting a periodic vertical movement of the said reed between determined limits, and means for rotating the said take up roll, and the said several means being inter-connected so that the periodic movements of the said reed will be related in a predetermined manner to the periodic movements of the said take up roll.

2. A loom comprising a reed having different effective widths in different positions and means for periodically varying the positions thereof, a differential take up roll rotatively mounted and having means for varying the amount of take up in different positions, means for coöperatively operating the said reed and take up roll whereby the periodicity of the said reed will correspond to the rotative motion of the said take up roll and operative to weave equal lengths of warp in the entire width of the goods with varying widths of the same goods.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."