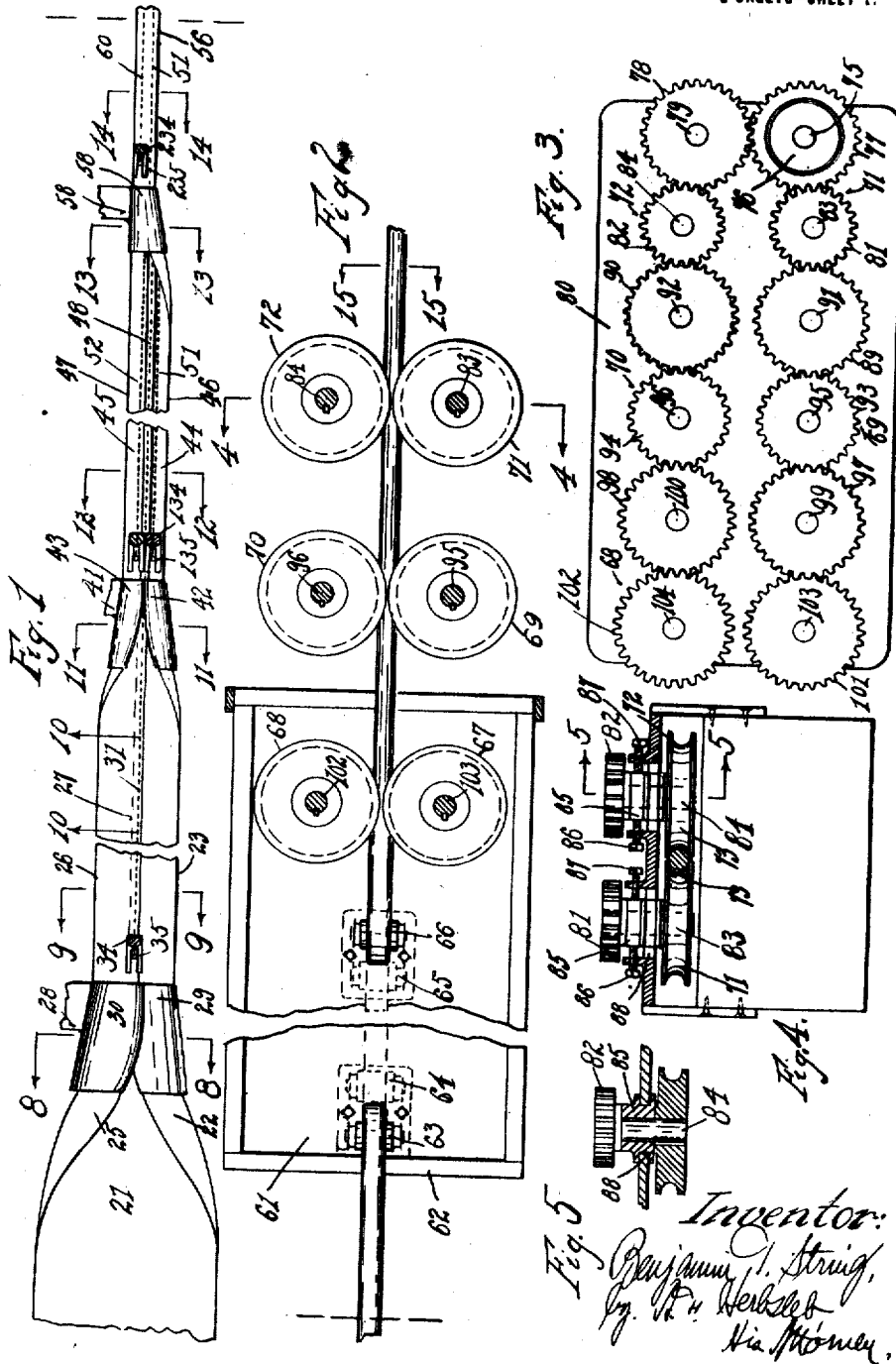


1,279,036.

Patented Sept. 17, 1918.

2 SHEETS—SHEET 1.

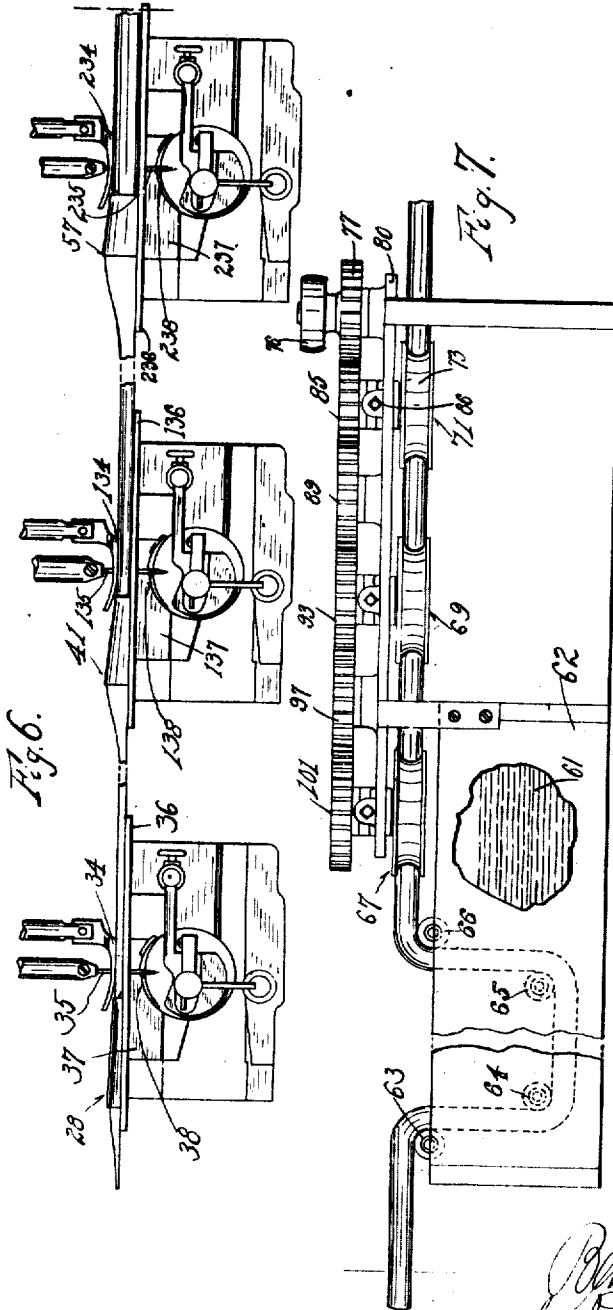
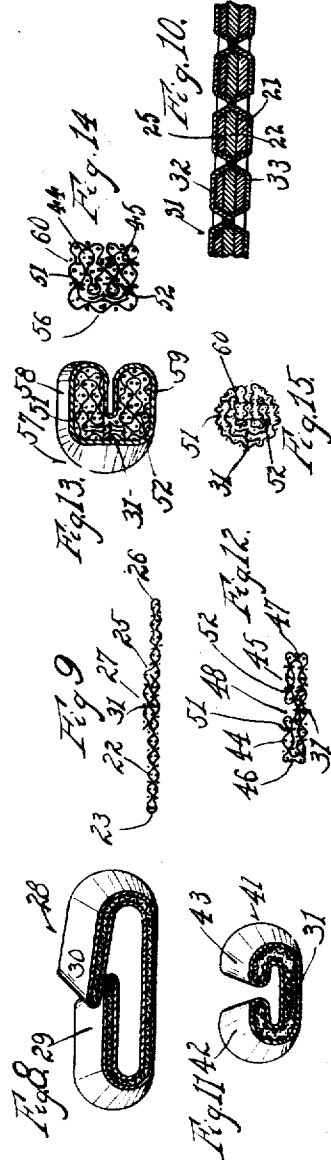


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B. T. STRING.
BELTING AND METHOD OF MAKING THE SAME.
APPLICATION FILED JULY 5, 1917.

1,279,036.

Patented Sept. 17, 1918.
2 SHEETS—SHEET 2.



Inventor:
Benjamin T. String,
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UNITED STATES PATENT OFFICE.

BENJAMIN T. STRING, OF NORWOOD, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE BELTO MANUFACTURING COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

BELTING AND METHOD OF MAKING THE SAME.

1,279,036.

Specification of Letters Patent. Patented Sept. 17, 1918.

Application filed July 5, 1917. Serial No. 178,854.

To all whom it may concern:

Be it known that I, BENJAMIN T. STRING, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Belting and Methods of Making the Same, of which the following is a specification.

My invention relates to an improved belting made of textile material, for example, canvas, and to the method of making the same.

It is the object of my invention to provide a new and improved textile belting, capable of withstanding great stress; further, to provide a new and improved textile belting which is substantially round in cross-section, and adapted to form a substitute for round leather belting; further, to provide a novel belting of textile material comprising a strip arranged in folds and stitched in novel manner to form a belting of substantial thickness comparative to its width, and, further, to provide a new and improved method for forming the belting and for finishing the same.

The invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a plan view of mechanism, partly in section, performing the folding and stitching steps of my improved method.

Fig. 2 is a plan view of mechanism performing the permeating, shaping and stretching steps of my improved method.

Fig. 3 is a plan view showing the gearing for operating the shaping and stretching rolls.

Fig. 4 is a cross-section of the same, taken in the plane of the line 4—4 of Fig. 2.

Fig. 5 is a detail of the same, taken in longitudinal section, in the plane of the line 5—5 of Fig. 4.

Fig. 6 is a side elevation of the mechanism shown in Fig. 1.

Fig. 7 is a side elevation, partly broken away, of the mechanism shown in Fig. 2.

Fig. 8 is a detail in cross-section, taken on the line 8—8 of Fig. 1, showing the bending of the primary folds.

Fig. 9 is a cross-section, taken on the line 9—9 of Fig. 1, showing the primary folds of the belting folded and stitched.

Fig. 10 is a longitudinal section showing the primary stitching of the belting, taken on the line 10—10 of Fig. 1.

Fig. 11 is a cross-section taken on the line 11—11 of Fig. 1, showing the intermediate folding.

Fig. 12 is a cross-section, taken on the line 12—12 of Fig. 1, showing the intermediate folds folded and stitched.

Fig. 13 is a cross-section, taken on the line 13—13 of Fig. 1, showing the finishing folding.

Fig. 14 is a cross-section, taken on the line 14—14 of Fig. 1, showing the completely folded and stitched belting; and,

Fig. 15 is a cross-section, taken on the line 15—15 of Fig. 1, showing the completely folded, stitched and stretched belting.

My improved belting is preferably formed from a textile strip, exemplified at 21, which may, for example, be a strip of canvas.

In the primary operation on the strip, one margin of the strip is folded inwardly upon the body of the strip for forming the fold 22, creased along the crease 23. The other margin of the strip is also folded inwardly upon the body of the strip, forming the fold 25, creased along the crease 26. The inner edges of the folds overlap each other as shown at 27. The folding may be accomplished by a folder 28, having the folding wings 29, 30, for respectively folding over the folds 22, 25.

Upon the folding of the primary folds, the folded strip is provided with a line of stitching 31, lengthwise of the strip, which passes through the superposed inner edges of the folds 22, 25, and the body of the strip, along approximately the median line of the strip. The stitching or seam thus formed lengthwise of the belting is preferably a lock stitch, formed of two threads 32, 33, which interlock one with the other for forming a lock stitch locking the sewed parts together, and extending lengthwise of the belting for aiding in strengthening the finished belt.

The stitching may be formed by any suitable means, as by any suitable sewing machine, preferably a lock-stitch sewing machine, the usual presser foot 34, piercing needle 35, work support 36, intermittent feed-bar 37, and rotary hook 38, of the sewing machine being exemplified in Figs. 1 and

6. The forward feeding of the strip is instanced as accomplished automatically by the sewing machine, which feeds the strip through the folder 28 and past the sewing instrumentalities.

When the primary folding and stitching of the textile strip has been accomplished, the primarily folded and stitched strip is passed through a second or intermediate folding and stitching, or sewing operation, which may immediately follow the primary folding and stitching, as a continuous operation, as exemplified, or may be accomplished subsequent to the finishing of the primary folding and stitching as a separate operation or operations.

The intermediate folding and stitching serves the purpose of folding the margins of the primary folds toward each other, and arranging them in separated relation, so as to facilitate subsequent folding of the partially formed belt. The margins of the primarily folded strip are folded inwardly toward each other by a folder 41, having the folding wings 42, 43, for respectively forming intermediate folds 44, 45, along the respective margins of the primarily folded strip, along intermediate creases 46, 47, in such manner that the inner or proximate edges of the intermediate folds are separated by the space 48.

Stitching 51, 52, is passed through the intermediate folds, preferably along their inner edges, and through the primary folds and body of the partially folded belting, this stitching being instanced as accomplished by a suitable two-needle sewing machine, sewing two lines of stitching along the respective intermediate folds, preferably adjacent their inner edges, the parts of the two-needle sewing machine being exemplified similarly to the parts of the sewing machine accomplishing the primary feeding and stitching, with similar parts identified by similar reference numerals raised to the series 100. The stitchings 51, 52, are preferably two-thread lock stitchings similar to the stitching 31.

When this intermediate folding and stitching has been accomplished, the partly formed belting will have the intermediate form exemplified in cross-section in Fig. 12.

The partially formed belting in the intermediate form, is next subjected to an additional folding and stitching operation which may be accomplished immediately after the intermediate folding and stitching as a continuous operation, as exemplified, or subsequent to the completion of the intermediate folding and stitching of the entire strip as a separate operation or operations. In the present exemplification, the subsequent folding and stitching is shown accomplished as a continuous operation on the strip, while the intermediate folding and stitching is being performed thereon.

Thus the intermediately folded and stitched strip is arranged to have the intermediately formed folds 44, 45, folded toward and upon each other by forming a crease 56 in the body of the strip, coincident with the space 48 between the inner edges of the intermediate folds, and along the overlapping inner edges of the primary folds. This subsequent folding is exemplified as accomplished by a folder 57 having folding wings 58, 59, for folding the folds 44, 45 one upon the other. The subsequent folding arranges all of the lengthwise outer edges of the strip, and the inner edges of the intermediate folds in the inside of the completely folded strip, so as to present continuous woven fabric devoid of outer or cut edges at all outer surfaces of the belting. The superposed folds formed by the subsequent folding, have a stitching 60 passed therethrough, this stitching being preferably a two-thread lock stitching, similar to the stitching 31, formed by a sewing machine, the parts of which are similar to the other sewing machines instanced as employed, but preferably of stronger structure, similar parts of the machine being indicated by similar reference numerals, raised to the series 200.

The belting thus formed by the folding and stitching is exemplified in cross-section in Fig. 14.

The belting is preferably permeated with a preserving or seasoning compound, which may be exemplified as comprising bees-wax and animal fat, or may be any suitable belting composition, which is preferably heated when applied to the belting. The application of the heated preservative to the belting, may be accomplished by passing the belting through a bath, exemplified at 61, in a tank 62, in which the bath may be heated in suitable manner. The belting may remain in the bath long enough to be permeated to the desired extent by the preservative. In passing through the bath the belting is received about directing rollers 63, 64, 65, 66, suitably supported.

When the belting has been folded and stitched as hereinbefore described, it is of a substantially great thickness compared with its width, the upper and lower surfaces of the belt, however, being still somewhat flat. In order to give the belting a round form, or a form which in cross-section presents only one comparatively flat surface, the belting is passed between suitable rollers, three sets of rollers being exemplified at 67, 68; 69, 70; and 71, 72.

The peripheries of these rollers are provided with grooves 73 of a shape to correspond with the cross-sectional shape to be imparted to the belting, the grooves being exemplified as having rounded bottoms. The belting, formed as hereinbefore described, is passed between the sets of rollers,

with the side edges of the belting presented to the grooves in the rollers. The rollers of the respective sets press the edges of the belting toward each other and compress the belting to correspond to the cross-sectional shape formed by the walls of the grooves in the rollers.

The first set of rollers is preferably so arranged that it will squeeze the surplus permeating compound from the fabric of the belting, the surplus dropping into the tank 62.

The sets of rollers are preferably so geared, that the rollers of subsequent sets will rotate at greater peripheral speeds than preceding sets.

Thus a drive-shaft 75, driven in suitable manner, as by a pulley 76, has a gear 77 fast thereon which meshes with a gear 78 on a shaft 79. The shafts 75 and 79 are journaled in suitable bearings in a frame 80. The gears 77 and 78 respectively mesh with gears 81, 82, fast on shafts 83, 84, on which the rollers 71, 72, are secured. The shafts 83, 84, are journaled in bearings 85 adjustable toward and from each other by set-screws 86, 87, the bearings being slidable in guideways 88 in the frame 80. The gears 81, 82, mesh with transmitting gears 89, 90, rotating on studs 91, 92, secured to the frame 80. The gears 89, 90, mesh with gears 93, 94, fast on shafts 95, 96, to which the rollers 69, 70, are secured. The shafts 95, 96, are relatively adjustable and are mounted similarly to the shafts 83, 84.

The gears 93, 94, are larger than the gears 81, 82, for rotating the rollers 71, 72, at greater peripheral speed than the rollers 69, 70, for stretching the belt passing between said sets of rollers. The gears 93, 94, mesh with transmitting gears 97, 98, rotating on studs 99, 100, secured to the frame 80. The transmitting gears 97, 98, mesh with gears 101, 102, fast on shafts 103, 104, to which the rollers 67, 68, are secured. The gears 101, 102, are of greater diameter than the gears 93, 94, for rotating the rollers 69, 70, at greater peripheral speed than the peripheral speed of rotation of the rollers 67, 68, for stretching the belting. The shafts 103, 104, are relatively adjustable and are mounted similarly to the shafts 83, 84.

The rollers 67, 68, 69, 70, and 71, 72, press upon the belting during their action, thus subjecting the belting to stretching, the result being that the belting is rounded and stretched during this operation. The form of the finished belting is exemplified in cross-section in Fig. 15.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The method of making textile belting which consists in folding the margins of a textile strip toward each other as primary

70 folds, folding said primary folds toward each other for forming intermediate folds along creases whereby the outer edges of said primary folds are presented toward each other, passing stitching through the said intermediate folds and the body portion of the strip, then folding the body portion of said strip along the median line of said body portion for folding said intermediate folds upon each other in manner to inclose one of the faces of all said stitchings within said folds, passing stitching through said intermediate folds for connecting the same, and subjecting said folded and stitched product to edge pressure directed in the plane of the width of the strip for cross-sectionally shaping the same.

2. The method of making textile belting which consists in folding the margins of a textile strip toward each other as folds whose inner edges overlap each other at the middle of the body portion of said strip, providing the folded strip with a stitching through said overlapping edges and said body, folding the folded margins of said primary folded strip toward each other on the side thereof where said overlapping margins are located for forming intermediate folds along creases whereby the outer edges of said primary folded strip are presented toward each other in coincident planes but spaced apart, for forming a space between them, passing stitching through the said intermediate folds and the body portion of the strip, then folding the body portion of said strip along the median line of said body portion for folding said intermediate folds upon each other with their inner edges located in said space, passing stitching through said intermediate folds for connecting the same, impregnating said folded and stitched product with a preservative, and subjecting said product to stretching and edge pressure in line with the planes of said folds for cross-sectionally shaping the same.

3. As an article of manufacture, a textile belting formed out of a textile strip with edge folds folded toward each other lengthwise of said strip and forming overlapping edges of said strip along the median line of the body portion of said strip, stitching passing through said overlapping edges and said body portion, lateral margins of said folded strip folded as folds toward each other but spaced apart for forming a space between them, stitching along the respective last-named folds passing through said respective last-named folds and said body portion of said strip, said last-named folds folded upon each other, with their inner edges located in said space, and stitching passing through said last-named folds stitching said last-named folds together.

4. As an article of manufacture, a tex-

tile belting formed out of a textile strip
with edge folds folded toward each other
lengthwise of said strip and forming over-
lapping edges of said strip along the me-
5 dian line of the body portion of said strip,
stitching passing through said overlapping
edges and said body portion, lateral mar-
10 gins of said folded strip folded as folds to-
ward each other but spaced apart for form-
ing a space between them, stitching along
the respective last-named folds passing
through said respective last-named folds
and said body portion of said strip, said
last-named folds folded upon each other,

within the inner faces of all said stitchings 15
within said folds, and stitching passing
through said last-named folds stitching said
last-named folds together, said folds pressed
laterally in line with the planes of said
20 folds for cross-sectionally rounding said
belting.

In testimony whereof, I have hereunto
signed my name in the presence of two sub-
scribing witnesses.

BENJAMIN T. STRING.

Witnesses:

THERESA M. SILBER,
CHARLES E. WEBER.

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

Correction in Letters Patent No. 1,279,036.

It is hereby certified that in Letters Patent No. 1,279,036, granted September 17, 1918, upon the application of Benjamin T. String, of Norwood, Ohio, for an improvement in "Belting and Methods of Making the Same," an error appears in the printed specification requiring correction as follows: Page 4, line 15, claim 4, for the word "within" read *with*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of October, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.

Cl. 154--4.