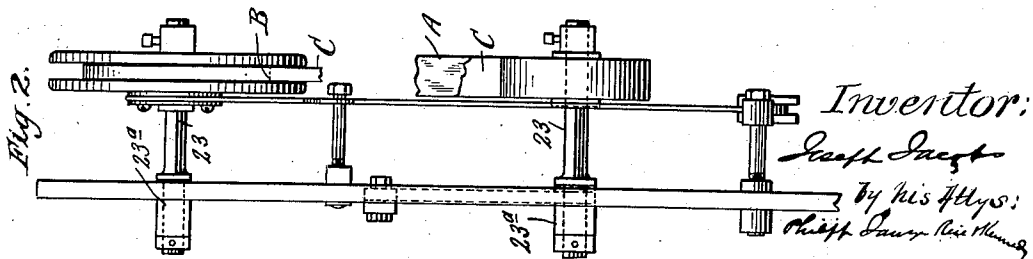
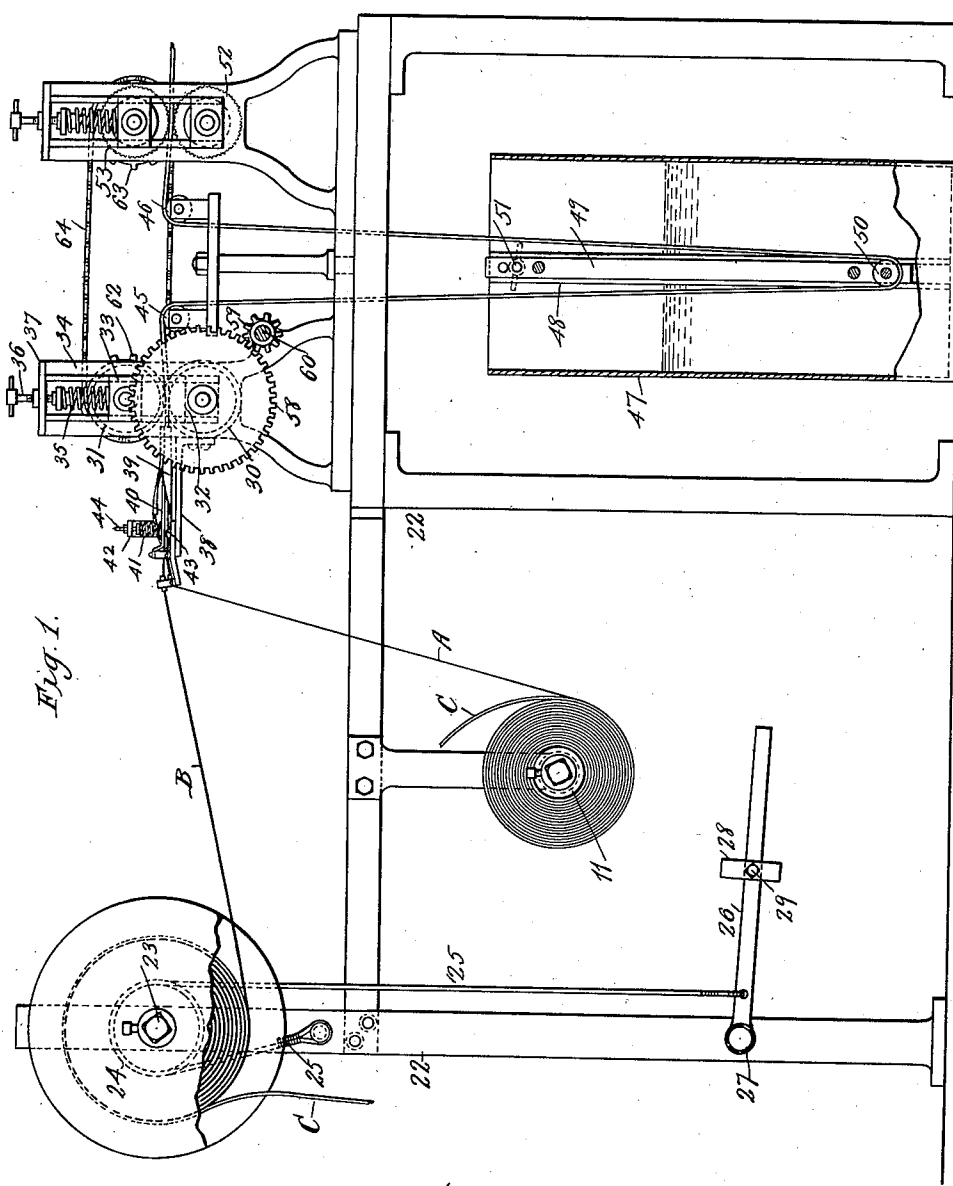


J. JACOBS.
 APPARATUS FOR MAKING AN ELASTIC BODY BELTING WEB.
 APPLICATION FILED JUNE 30, 1915.

1,242,698.

Patented Oct. 9, 1917.

4 SHEETS—SHEET 1.



Inventor:

Joseph Jacobs

By his Attys:

Philip Lawrence Rice & Company

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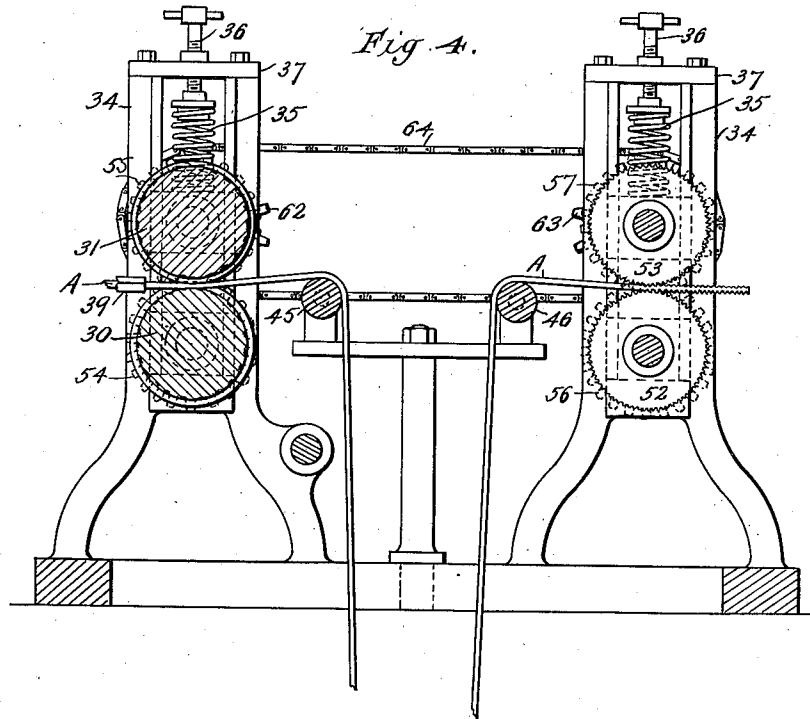
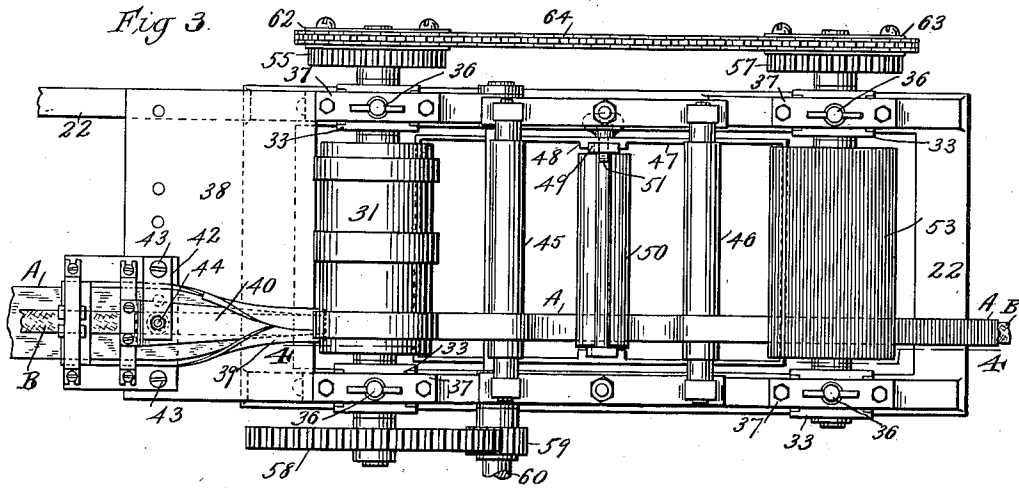
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 5.

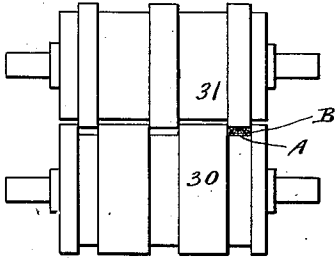


Fig. 6.

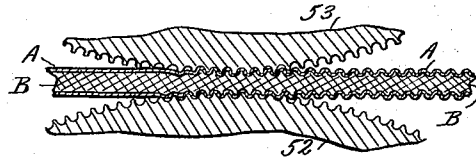


Fig. 7.

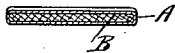


Fig. 8.

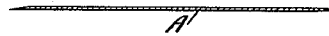


Fig. 9.



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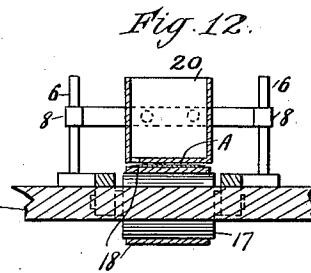
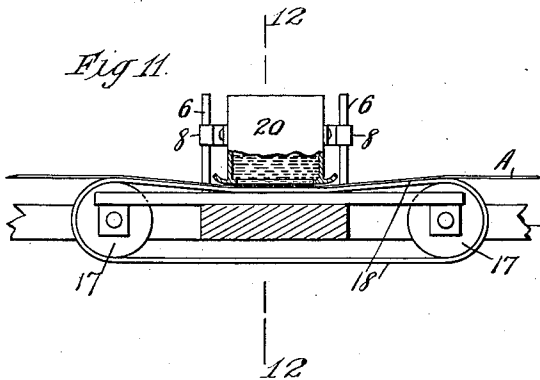
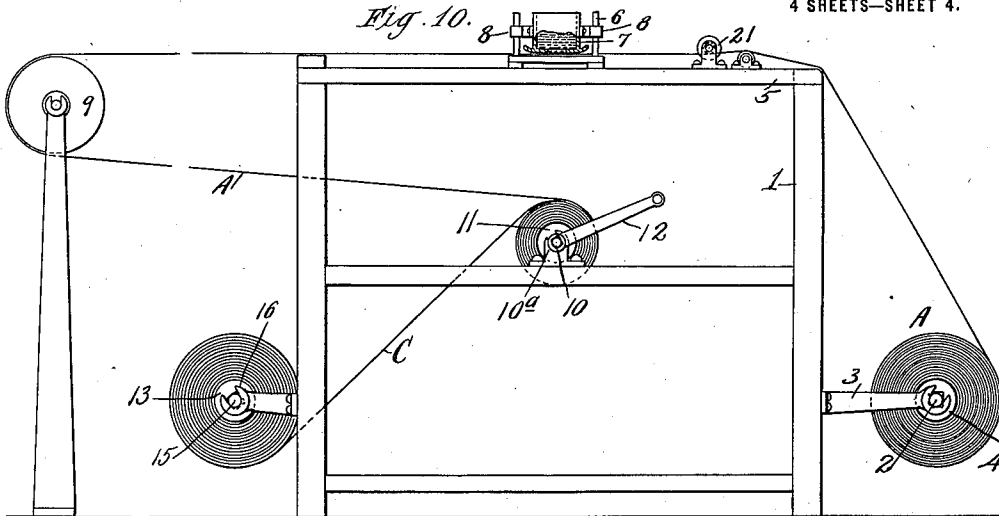
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4 SHEETS—SHEET 4.



Inventor:

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by his Attys:

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UNITED STATES PATENT OFFICE.

JOSEPH JACOBS, OF NEW YORK, N. Y., ASSIGNOR TO THE LIVE LEATHER BELT COMPANY, A CORPORATION OF NEW YORK.

APPARATUS FOR MAKING AN ELASTIC BODY-BELTING WEB.

1,242,698.

Specification of Letters Patent.

Patented Oct. 9, 1917.

Application filed June 30, 1915. Serial No. 37,161.

To all whom it may concern:

Be it known that I, JOSEPH JACOBS, a citizen of the United States, residing at New York city, county of Bronx, and State of New York, have invented certain new and useful Improvements in Apparatus for Making Elastic Body-Belting Webs, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in apparatus for making elastic leather belts.

The invention will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings—

Figure 1 is a side elevation partly in section of an apparatus for combining a casing web and an elastic web to produce a body belting web;

Fig. 2 a detail elevation of the front part of the machine shown in Fig. 1;

Fig. 3 a detail plan view of a part of the apparatus shown in Fig. 1;

Fig. 4 a detail longitudinal section of the same;

Fig. 5 a detail elevation of the pressing rollers;

Fig. 6 a detail section of one form of crimping rollers, showing, on an exaggerated scale the manner of crimping the casing web and its contained elastic web;

Fig. 7 a detail cross section of a completed body belting web;

Fig. 8 a similar view of the casing web showing one edge chamfered only on one side and the other edge chamfered on both sides;

Fig. 9 a front elevation of a completed body belt in its contracted condition;

Fig. 10 a side view of the apparatus for applying adhesive to the inner side of the casing;

Figs. 11 and 12 are detail views showing a tank for applying adhesive to one chamfered edge only on the outside of the casing.

The apparatus forming the subject matter of the present application is particularly intended to produce a web of material from which may be made body belts, each of which comprises a length of elastic body belting web provided with suitable fastening means, which may be of any desired kind. In Fig. 9 I have shown the belt with one end tapered to form a tongue. The other end is

provided with a buckle and a pair of keepers or straps of leather.

The elastic body belting web consists of an interior elastic portion B and an exterior casing A wholly inclosing the elastic portion and so crimped or convoluted that any unitary length of the completed belting web will contain a length of casing which is greater than such unitary length by the amount which the belting is intended to stretch. Further, the elastic portion is firmly cemented to the casing at all points of its surface.

It is important that the elastic portion of the completed belt be such that it will stretch to the extent necessary to permit the required movements of the wearer without injury to the elastic material, and at the same time this elastic portion, when so stretched as stated, must give an elastic reaction or pull sufficient to properly clamp the garment to the body of the wearer. An important feature of the invention consists in making the elastic web portion of that type of material generally known as elastic webbing, this consisting of a textile fabric generally woven or knitted and containing india rubber strands or threads which are combined with suitable strands of flexible fibrous material, such, for example, as wool, cotton, hemp, linen or the like. Moreover, in practice it is advisable that this elastic webbing be manufactured in a continuous web of the proper width for the belt, since in this way is obtained a better union of the casing around the selvage edges of the elastic webbing.

It is to be understood that the term elastic web as used herein is a generic term defining any kind of resilient band or strip of indefinite length, such, for example, as a strip of sheet rubber. On the other hand, the term elastic webbing refers to a special type of elastic web, as already explained.

The casing for the belt is most advantageously of leather for the reason that such material may be softened and then crimped, convoluted or corrugated and will thereafter harden in such a way as to maintain the crimps, convolutions or corrugations. Owing to the adherence of this casing to the elastic web, it is impossible to strain the elastic material beyond the desired limit predetermined in the manufacture of the belt, because the amount to which the elastic web may be stretched in the completed belt is

limited by the extent to which the casing may be stretched and this is determined by the amount of surplus material of the casing taken up in the crimps, convolutions or cor-

5 rugations.

In order that the functions and construction of the apparatus may be fully understood, I will first describe the process of making an elastic leather body belt.

10 The sides of leather are suitably slit into strips of a width about twice the width which the completed belt is to have plus a suitable amount to form an overlap. These leather strips are then skived or chamfered

15 on both edges on one side, but only on one edge on the opposite side. This will be clear from Fig. 8. Generally the side of the leather which is to be inside the belt has its two edges skived or chamfered, while

20 the side which is to be outside has only one edge chamfered. The strips thus prepared are cemented together end to end to form a long web of leather.

That side of the leather web which is to

25 be inside the belt is coated with a suitable adhesive composition, and most advantageously with a rubber cement, which is allowed to set or dry to a condition where it is tacky.

30 The chamfered portion of the outside of the web is also provided with a coating of adhesive material such as above described. Where the outer surface of the web is colored, for example, black or tan, the adhesive applied to its chamfered edge portion

35 is colored with suitable coloring material, so that the chamfered portion when coated with adhesive will have the same color as the remaining outside surface.

40 A long web of suitable elastic material, and particularly the elastic textile such as is known in the trade as elastic webbing, of a width somewhat less than the width of the completed belt is stretched to the desired extent and laid against the central portion of

45 the inside of the leather web. The two sides of the leather are folded over the elastic web, the sides of the leather overlapping each other to the extent of the skiving or

50 chamfering of the edges, whereby a scarfed joint is formed longitudinally of the belt and along the central line of that side of the belt which is to be next the wearer.

The belt is now submitted to a heavy

55 pressure, whereby the joined edges are pressed into close contact with and firmly secured to each other, while at the same time the adhesive inside of the leather is firmly united to the elastic webbing. During

60 all of this time the elastic webbing is retained in its stretched condition. While still retaining the elastic webbing in this stretched condition the leather is moistened, for example, with water, and then subjected

65 to the action of a suitable crimping or cor-

rugating device whereby it is provided with suitable crimps or corrugations extending generally transverse to the length of the belt. Instead of straight corrugations extending at right angles to the length of the

70 belt, the crimps or corrugations may be short and irregular and, if desired, may be in the form of any suitable pattern or grain. The crimps or corrugations may be done by suitable dies, but most advantageously

75 by a pair of roller dies through which the web is passed.

After the leather has been crimped, the tension on the elastic webbing is released. Owing to the firm attachment of the elastic

80 webbing to the inside of the leather in which the webbing is incased and because of the crimps or corrugations, the release of the tension on the elastic webbing permits the latter to contract longitudinally and there-

85 by contract the leather casing to the same extent.

The product of the process thus far described is a long web of elastic material comprising a central flat core of elastic web-

90 bing entirely inclosed in and firmly combined with a casing of leather, the elasticity of the completed web being due to the fact that owing to the crimps, corrugations or rugosities of the leather, the latter can be

95 extended to the full extent to which the elastic webbing itself may properly be stretched.

Furthermore, the leather prevents the elastic webbing from being stretched to such

100 an extent as would weaken such webbing.

The long web is now cut into length suitable for making belts and these lengths are finished in the usual way, as for example, by forming a tongue at one end and attaching

105 a buckle and tongue socket or slide at the other end, as shown, for example, in Fig. 9.

In carrying out the process on a large scale, suitable apparatus is provided. For

110 example, in applying the adhesive to the inside of the leather, the apparatus shown in Fig. 10 may be employed. This consists of a framework 1 provided with means for holding a roll of leather web, indicated at

115 A. This means, in the present instance, comprises a shaft 2 mounted in open journals 3 and having a squared portion which may be inserted in a square opening at the center of a reel or drum 4. The leather web

120 made by cementing together the ends of strips of leather skived on the edges as heretofore explained, is wound on a reel, such as the one indicated at 4. From this the web of leather passes over the top 5 of a table,

125 that side of the web which is to be provided with adhesive being uppermost. The table is provided with a suitable guiding device comprising vertical guides in which a box or tank for adhesive is loosely mounted. In

130

the present example the guide comprises four vertical pins 6 secured to the table. The tank 7 has at each corner a loop or eye 8 through which passes the corresponding guide pin.

The bottom of the tank is provided with a transverse slit. When the web is passed beneath the tank 7 and the latter is provided with a suitable adhesive, such for example, as the usual viscous or semifluid rubber cement, the latter will flow out through the slit in the bottom of the box on to the leather web which is passing beneath it. The coated web is passed around a roller 9 at some distance from the table whereby the adhesive material has time to set and thence is brought back to a winding up device located in the frame 1. This comprises a winding shaft 10 journaled in open bearings 10^a and provided with a squared portion arranged to enter a central opening in a suitable drum or reel indicated at 11. The shaft 10 is rotated by any suitable means as, for example, by the crank 12.

At 13 is indicated a reel for a fabric web C, this being mounted in an axle 15, rotatable in open bearings 16 carried by the frame.

The leather web, coated on one side with adhesive is brought to the drum 11 together with the web C of cloth, muslin, or the like, the two webs being wound together on the drum 11 by turning the crank 12, the fabric web C being next to that side of the leather web which is coated with adhesive.

Furthermore, the leather web is advantageously wound so that its adhesive side faces outward.

When a reel has been filled with the webs, it is transferred to a machine for applying the adhesive to the single skived or chamfered edge of the leather web. This machine is similar to the one just described with the exception that instead of a flat table for the leather web to pass over beneath the tank, there is provided an endless apron device. This comprises in the present example, a pair of rollers 17, Fig. 11, over which an endless apron 18 of suitable flexible material, for example, leather or cloth, is passed. The leather web A has its adhesive side running in contact with the endless apron and the latter is moved by the adhesion between the apron and the leather web. As the endless apron turns downward over its rear roller it pulls itself away from the leather web, while the latter passes off to the roller 9, around the same and back to a winding-up device where it is wound up with a web of fabric by an apparatus like that already described.

The tank 20 for applying adhesive to the single chamfered or skived outside edge of the leather web differs from that of the apparatus hereinbefore described only in that

it has a horizontal slot along one side, this slot being arranged to register with the chamfered edge of the leather web, whereby adhesive in the tank flows to and is spread along the chamfered portion only. (See Fig. 12.)

In both types of machines for applying adhesive, the web of leather is guided by suitable side guides as indicated at 21, Fig. 10.

The adhesive applied to the outside of the leather web is usually a rubber cement and is colored, if necessary, to match the color of the outside of the leather.

The reel or drum of wound leather and fabric webs, A and C, is taken to a machine for combining the leather and elastic webs.

This machine, illustrated in Figs. 1 to 6, comprises a frame 22 provided with spindles on which to mount the reels of leather web A and elastic web B. The spindle for the elastic web is above that for the leather web. Each spindle comprises a shaft 23 mounted in suitable bearings 23^a and having a squared end portion projecting horizontally and arranged to enter the squared central opening of the web reels. The shaft for the reel of elastic web is provided with a suitable friction device or brake, which, in the present example, consists of a grooved pulley 24, over which passes a brake band 25, one end of which is fixed to the frame. The other end passes down and is connected to a lever 26, fulcrumed at 27 on the frame. On the inner end of this lever is mounted a weight 28 which can be slid along the lever to adjust the tension on the brake band, and can be fixed at any adjusted position, as by means of a set screw 29.

The machine is provided with a pair of pressure rollers as indicated at 30 and 31. The lower roller 30 is journaled in stationary bearings, as indicated at 32, while the upper roller 31 is journaled in bearings which are yielding and normally pressed to hold the upper roller against the lower one. In the present example, the upper roller has each gudgeon journaled in a block 33 slidable vertically in a guideway formed in the respective journal housing indicated at 34.

Above each block is a spring, as indicated at 35, whose pressure may be adjusted by a hand screw 36 threaded through the cap 37 of the housing.

The rollers, 30 and 31 are driven by suitable means as hereinafter explained. The lower roller 30 is provided with a groove to receive the body belting web, this groove being of a width equal to that of the completed belt. As this width must be quite accurate, and as it is customary to make belts of different widths, I have found it advantageous to make the pressure rollers so that they will work on belts of different standard widths. In the present example, the lower

roller is shown as provided with a plurality of grooves of different widths. The upper roller 31 has projections arranged to coact with the grooves of the lower roller.

5 In front of the pressing rollers is a table 38, upon which is mounted a folder mechanism consisting in the present example of a usual web folder, 39, above which is located a tapering tongue 40, held and pressed to-
10 ward the web folder by a spring 41, carried by an arm 42 secured to one flange of the folder. The web folder has two of these side flanges, each being provided with holes through which may be passed bolts 43 ar-
15 ranged to pass through bolt holes in the table 38 whereby the web folder may be clamped to the table in line with the corresponding groove in the lower presser roller. The table has a series of bolt holes so ar-
20 ranged that the web folder may be shifted from one position to another, according to the particular groove in the lower roller to be used. The spring 41 is pressed by a screw 44 by which the tension of the spring may be
25 adjusted.

Behind the pressure rollers 30 and 31 are located two guide rollers 45 and 46. At the lower part of the machine is a tank 47 arranged to receive the liquid for softening
0 the leather, usually water.

The inside of this tank has its sides provided with guide channels 48 into which can be slid a frame 49 carrying a guide roller 50 at its bottom just above the bottom of the
35 tank. This frame is secured in the tank, in a detachable manner by any suitable means, as for example, by a set screw 51.

This machine is also provided with a pair of crimping or corrugating rollers as indicated at 52 and 53, the upper roller being
40 yieldingly mounted in the same way as the upper pressing roller 31.

Both pressing rollers are geared together by gear wheels 54 and 55 and both crimping
45 rollers are similarly geared together by gear wheels 56 and 57.

One of the pressing rollers is provided with a gear 58 which is driven by a gear 59 on a driving shaft 60.

50 One of the pressing rollers, for example, the upper one, has one of its gudgeons provided with a chain wheel 62 and the corresponding crimping roller is similarly provided with a chain wheel 63 driven from the
55 chain wheel 62 by a chain 64.

In operation, the leather web A and the elastic web B are led from their separate reels to and through the folding device, the leather web being below elastic web, both
60 webs being pressed beneath the tongue 40. The elastic web is kept under such a tension by its brake or friction device that said web is stretched to the maximum extent to which it will be stretched in use.

65 In the folding device the leather web is

folded up at each side of the elastic web and then folded over so that one edge laps over the other.

From the folder the web goes to the proper groove of the pressing rollers and
70 thence over the first guide roller 45, down into the tank 47 around the guide roller 50 therein, thence up over the guide roller 46, to and between the crimping rollers 52 and 53. As the pressing and crimping rollers
75 are geared together, the elastic web B remains under tension from the time it leaves its reel until the completed body belting web passes the crimping rollers.

After leaving the latter rollers, the elastic
80 web contracts so that the tension on the elastic web is relieved. By this contraction it shortens the crimped leather, as hereinbefore explained, and is ready for use in making body belts.
85

The body belting web is then cut into the desired lengths, and these lengths formed into belts, in the manner already described.

Within the term "crimping", as hereinbefore and hereinafter used, I intend to in-
90 clude the embossing or stamping of the leather with an ornamental or other design.

What is claimed is:

1. In an apparatus for making elastic body belting web, the combination, with
95 means for stretching an elastic webbing, of means for folding a casing web supplied with adhesive about the elastic web while the latter is stretched and in close contact with the side edge of said elastic webbing,
100 and means for pressing the casing web whereby it is caused to adhere to the elastic web.

2. In an apparatus for making elastic body belting web, the combination, with
105 means for stretching the elastic web to a predetermined extent, of means for folding a casing of flexible material supplied with adhesive about the elastic web while the latter is stretched, means for pressing the cas-
110 ing web whereby it is caused to adhere to the elastic web, and means for crimping the casing with its inclosed elastic web.

3. In an apparatus for making elastic body belting web, the combination with
115 means for folding a leather casing web about an elastic web, of means for pressing the folded casing web and its inclosed elastic web, means for moistening the casing web, and means for crimping the casing web and
120 its inclosed elastic web in a direction transverse to the length of the webs.

4. In an apparatus for making elastic body belting web, the combination, with a
125 folder device, arranged to fold a continuous web of flexible material about a continuous web of elastic webbing and in close contact with the longitudinal edges thereof, of a pair of pressing rollers behind the folding device, means for holding a reel of elastic
130

webbing in line with the folding device, and means for maintaining a predetermined resistance to rotation of said reel.

5 In an apparatus for making elastic body belting web, the combination, with a pair of pressing rollers geared for movement in unison, and means for yieldingly pressing said rollers together, of a folder device arranged to fold a continuous web of
10 flexible material, about a continuous web of elastic webbing and in close contact with the longitudinal edges thereof said folder device being arranged in advance of the pressing rollers, means for holding a spool of elastic
15 webbing in line with the folding device, means for maintaining a resistance to rotation of said spool, and means for driving the pressing rollers.

20 6. In an apparatus for making elastic body belting web, the combination, with a

pair of pressing rollers, one of which is grooved and the other provided with a peripheral projection arranged to enter said groove, and means for driving said rollers in unison, of a folder device arranged to
25 fold a continuous web of flexible material about a continuous web of elastic webbing and in close contact with the longitudinal edges thereof, said folder device being in front of the pressing rollers and in line with
30 the groove, and means for supplying an elastic webbing under tension to the folder.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

JOSEPH JACOBS.

Witnesses:

A. WHITE,

J. F. DONOVAN.