J. JACOBS.

PROCESS OF MAKING AN ELASTIC BODY BELTING WEB.

APPLICATION FILED JUNE 21, 1917.

1,288,601.

Patented Dec. 24, 1918.

3 SHEETS—SHEET 1.

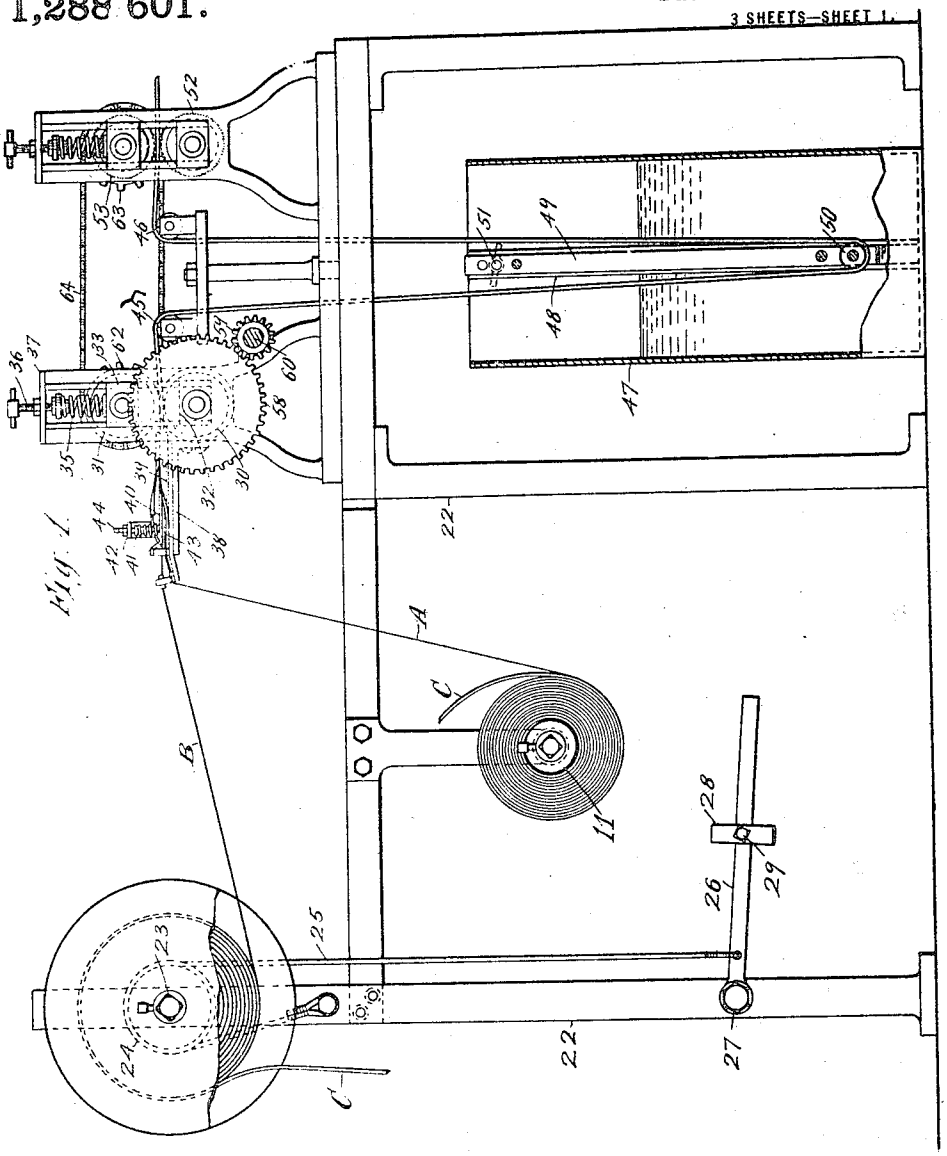


Fig. 1.

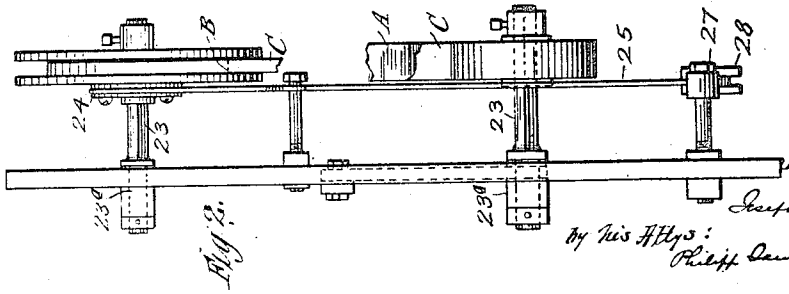


Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 3.

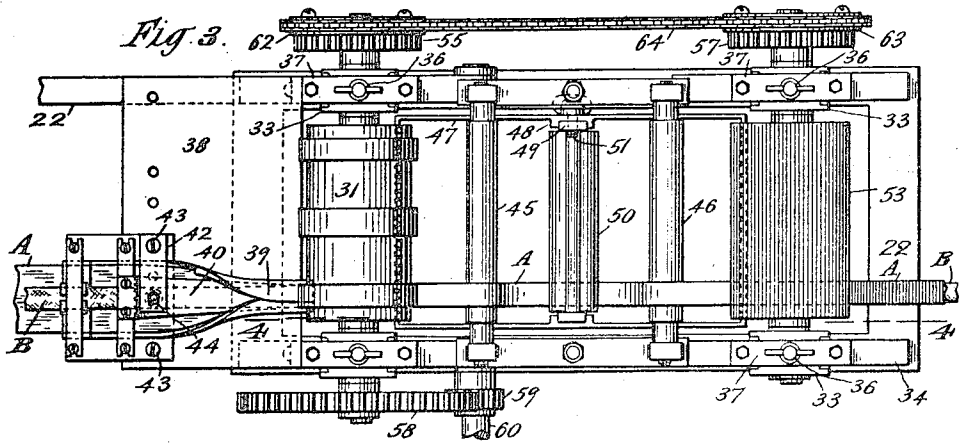


Fig. 4.

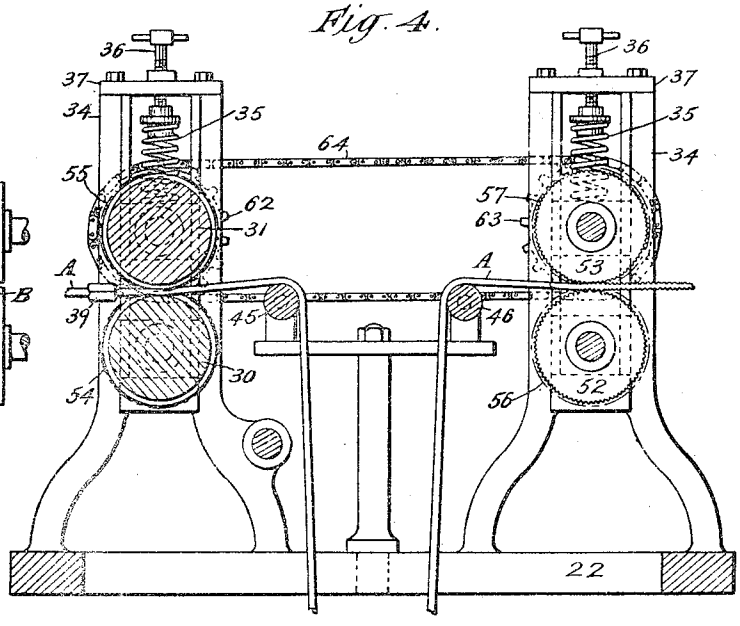


Fig. 5.

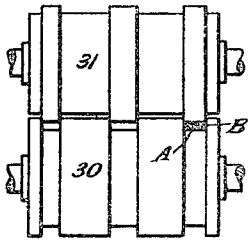


Fig. 7.

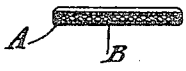


Fig. 6.

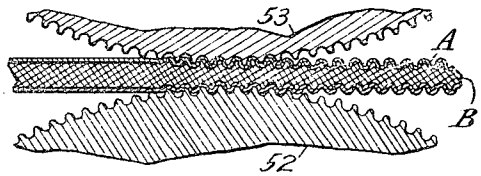


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 9.

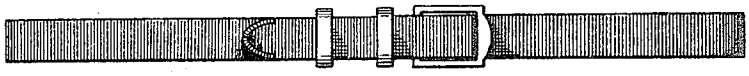


Fig. 10.

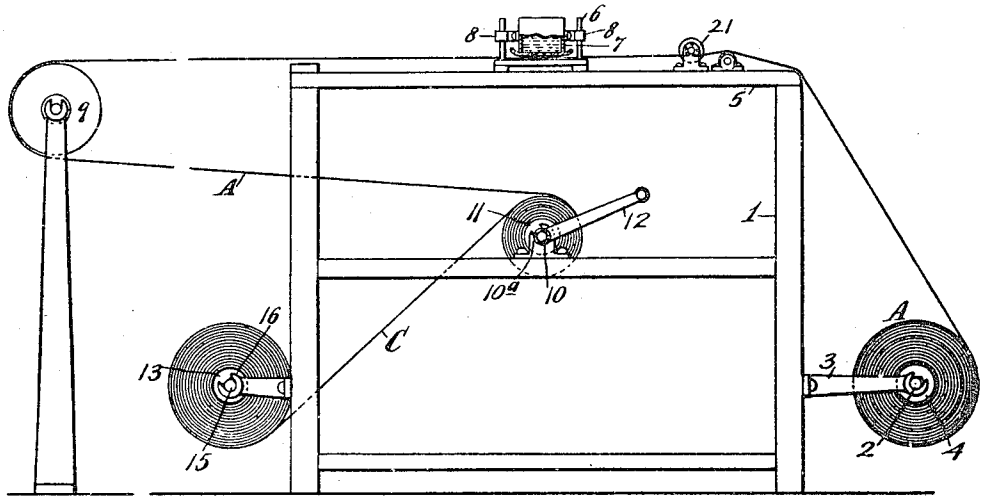


Fig. 11.

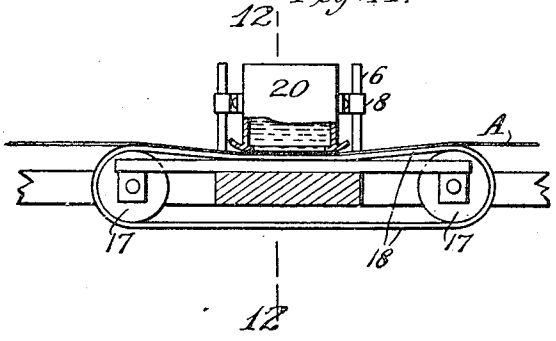
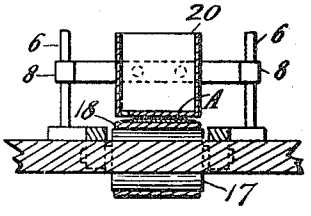


Fig. 12.



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Joseph Jacobs

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.

PROCESS OF MAKING AN ELASTIC BODY-BELTING WEB.

1,288,601. Specification of Letters Patent. Patented Dec. 24, 1918.

Original application filed June 30, 1915, Serial No. 37,161. Divided and this application filed June 21, 1917. Serial No. 176,040.

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 Processes of Making an Elastic Body-Belting Web, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a process of making an elastic body belting web.

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.

A body belt formed from an elastic web made according to my process 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 corrugations.

I will now describe one specific form of my improved process, it being understood that the invention is not to be limited to the exact details of the process as described but is a broad invention, as fully pointed out in the claims. In this description, the casing is assumed to be made of leather cut from the desired material.

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 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 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.

The side of the leather web which is to 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.

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 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.

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 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 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. In this folding it is important that the casing be folded in close contact with the longitudinal edges of the elastic web. Where the webbing is woven of the proper width with the usual selvage edges, the folding of the casing in close contact therewith results in cementing the edge of the folded casing to the textile fabric constituting the selvage of the webbing, so that when the belting is completed, no puckering will occur along the edges.

The belt is now submitted to a heavy 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 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 to the action of a suitable crimping or corrugating 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 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 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 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 thereby 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 webbing 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 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 an extent as would weaken such webbing.

The long web is now cut into lengths 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 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.

The apparatus shown in the accompanying drawings is the same as that shown and described in my Patent No. 1,242,698, granted October 9, 1917. The machine shown in Fig. 10 serves for the purpose of applying adhesive to the inside of the leather.

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 the winding up device located in the frame 1.

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 the 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 machine is illustrated in Fig. 11 and fully described in my said Patent No. 1,242,698. 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 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, and fully described in my said Patent No. 1,242,698 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, and with a pair of pressure rollers as indicated at 30 and 31.

The rollers 30, and 31 are driven by suitable means.

In front of the pressing rollers is a table 38, upon which is mounted a folder mechanism while 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 the leather, usually water and with suitable means for guiding the web.

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

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 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.

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 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 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 web contracts so that the tension of the elastic web is relieved. By this contraction it shortens the crimped leather, as hereinbe-

fore explained, and is ready for use in making body belts.

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 include the embossing or stamping of the leather with an ornamental or other design.

What is claimed is:

1. The process of making an elastic body belting web, which consists in cementing a stretched elastic web in a casing of flexible material, crimping the casing and its contained elastic web in a direction transverse to the direction in which the elastic web is stretched and while the web is under tension, and subsequently releasing the elastic web from its tension whereby the casing is contracted in length.

2. The process of making an elastic body belting web, which consists in cementing a stretched elastic webbing in a casing of flexible material folded in close contact with the longitudinal edges of the elastic webbing, and subsequently releasing the elastic web from its tension, whereby the casing is contracted in length.

In testimony whereof, I have hereunto set my hand.

JOSEPH JACOBS.