July 6, 1926. 1,591,303

A. L. FREEDLANDER

METHOD OF MANUFACTURING DRIVING BELTS

Filed June 12, 1922

Fig. 1.

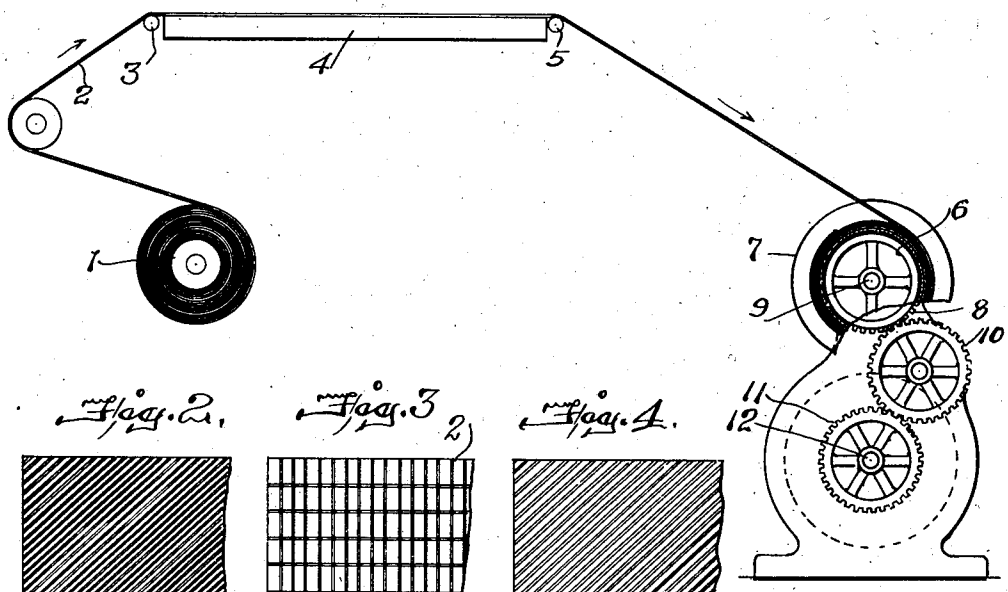


Fig. 2.

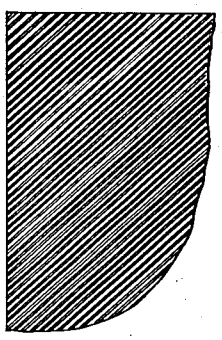


Fig. 3.

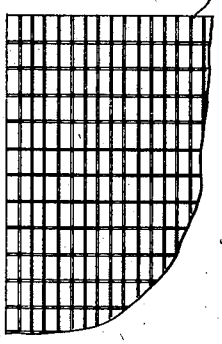


Fig. 4.

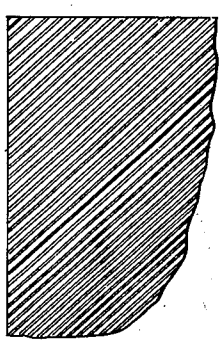


Fig. 6.

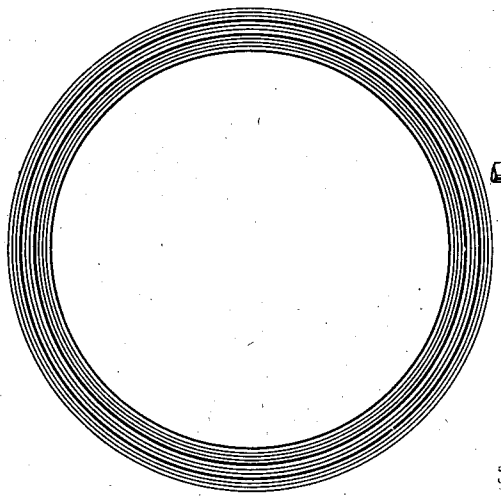
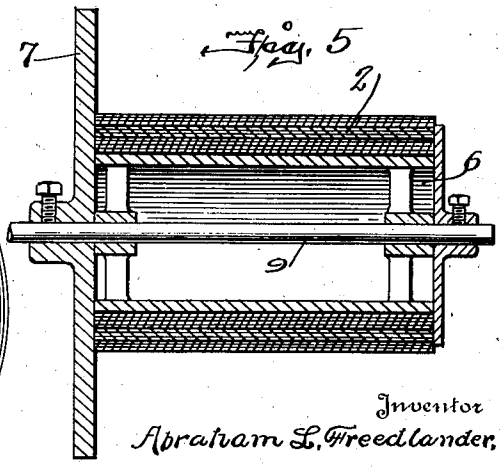


Fig. 5.



Inventor
Abraham L. Freedlander,

by Toulmin & Toulmin,

Attorneys

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UNITED STATES PATENT OFFICE.

ABRAHAM L. FREEDLANDER, OF DAYTON, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO THE DAYTON RUBBER MANUFACTURING COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, AND ONE-FOURTH TO GENERAL MOTORS RESEARCH CORPORATION, OF DAYTON, OHIO, A CORPORATION OF DELAWARE.

METHOD OF MANUFACTURING DRIVING BELTS.

Application filed June 12, 1922. Serial No. 567,843.

This invention relates to an improved method of manufacturing or producing driving belts, particularly designed for use on automobiles for operating the fans.

The belt, generally speaking, which is to be produced by my method is a belt composed of three members, an inner or compression member composed of rubberized fabric cut on the bias; a neutral or middle member composed of a rubberized fabric cut straight—parallel with either the warp or woof; and an outer or tension member composed of rubberized fabric cut on the bias.

My method consists, essentially, in, first, fabricating the inner or compression member by cutting a fabric sheet on the bias, as stated above, and rubberizing such sheets; second, in fabricating the neutral or middle member by cutting a sheet of fabric straight, as above stated, and rubberizing such sheet; and third, in fabricating the outer or tension member by cutting a sheet of fabric on the bias, as above stated, and rubberizing it; in winding such first member upon a rotating drum with as many layers as desired, three or more; in winding upon this first member so composed the second member in as many layers as desired, not less than two; and in winding upon such second member the outer or tension member in as many layers as desired, not less than three; and in vulcanizing, in the manner well known in the art of vulcanizing rubber, this roll of belt material, which after vulcanization is severed into a number of individual belts by a step which forms no part of this invention.

I illustrate one form of apparatus by which to practise this method.

In the accompanying drawings:

Fig. 1 is a diagrammatic view of a winding apparatus used in carrying out the winding step of my method;

Fig. 2 is a strip of the rubberized fabric cut on the bias for the compression member;

Fig. 3 is a like view of a strip of rubberized fabric cut straight to form the neutral member;

Fig. 4 is a like view of a strip of rubberized fabric cut on the bias to form the tension member:

Fig. 5 is a view of the drum with a roll of belting thereon ready for vucanizing; and

Fig. 6 is a side elevation of the completed belt or product.

In describing my improved method of producing the belt in question I shall make reference to one type of machine, in order to facilitate an understanding of the method.

In Fig. 1 I have illustrated such a machine. It comprises a roll 1 on which the materials are wound and from which they are payed off, the material for the compression member being first wound on and payed off from such roll, then the material of which the neutral member is made is applied to and payed off of the roll, and finally, in its turn, the material of which the tension member is made is likewise wound on and payed off of the roll. The numeral 2 designates, for instance, the material of which the neutral member is made, it being assumed in the drawing that the material composing the compression member has already been wound upon the drum presently to be described. The material passes over a guide roller 3, a flattening table 4, another guide roller 5 and thence to the spool 6 on the drum 7 driven by a gear 8 mounted on a shaft 9. An idler gear 10 drives the gear 8 and is itself operated by a gear 11 on the motor shaft 12 of an electric or other motor.

As above stated, the sheet of material of which the compression member is composed is first applied to the roll 1 and thence wound upon the spool of the drum. It is assumed in Fig. 1 that this has already been done, usually in three or more layers. Then the sheet of material of which the neutral zone is composed is mounted on the roll 1 and thence wound on the now wound compression member in as many layers as desired, not less than two. After this is done the sheet of material of which the tension member is formed is likewise applied to the roll 1 and thence wound on the neutral member in as many layers as desired, not less than three.

When all of these members composed each of such sheets have been so wound upon the spool and upon one another and a roll of belting has been produced, the spool 6 is removed from the drum and the roll of belting is subjected to a vulcanizing step, such as

commonly practiced in the art of making rubber tires for automobiles. This vulcanizing step causes the several layers and members of the belt to "run" together or form a homogeneous mass.

Later on, after the vulcanizing, by the use of means not involved in this invention, the roll of belting is severed into individual belts.

The manner of fabricating the sheet of which the compression member is composed consists in taking a strip of canvas fabric cut on the bias, as shown in Fig. 2, and rubberizing it in a manner common in the art of making rubber tires. The manner of fabricating the sheet of which the neutral member is composed consists in taking a strip of canvas fabric cut straight, that is, at right angles to the woof and parallel with the warp, as indicated in Fig. 3, and in rubberizing such strip also in the manner common in the art of making rubber tires.

The manner of fabricating the tension sheet of which the member is composed consists in taking a strip of canvas fabric cut on the bias, as indicated in Fig. 4, and in rubberizing it also in the manner well known in the rubber tire art.

The completed product is shown in Fig. 6, a product designed for use particularly as a fan belt for automobiles.

By my method herein described I have been able to economically produce the belt described.

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

1. The herein described method of making endless rolls of belting material from which to form driving belts consisting in fabricating the material for the compression member in the form of a sheet; in fabricating other material for the neutral member in the form of a sheet; in fabricating other material for the tension member in the form of a sheet; in winding on a suitable drum the sheet of material for the compression member; in winding on the latter the sheet of material for the neutral member; in winding on the latter the sheet of material for the tension member; and in vulcanizing the resulting roll thus built up of the several kinds of sheets; and in cutting this roll into individual belts.

2. The herein described method of making endless rolls of belting material from which to form driving belts consisting in fabricating strips of rubberized fabric in the form of a sheet cut on the bias; in fabricating the material for the neutral member of rubberized fabric in the form of a sheet cut straight; in fabricating the material for the tension member of rubberzed fabric in the form of a sheet cut on the bias; in winding on a suitable instrument such sheet for the compression member; in winding on the latter such sheet for the neutral member; in winding on the latter such sheet for the tension member; and in vulcanizing the roll thus built up; and in cutting this roll into individual belts.

3. The herein described method of making endless rolls of belting material from which to form driving belts consisting in fabricating the material for the compression member of rubberized fabric in the form of a sheet cut on the bias; in fabricating the material for the neutral member of rubberized fabric in the form of a sheet cut straight; in fabricating the material for the tension member of rubberized fabric in the form of a sheet cut on the bias; in winding on a suitable instrument the sheet for the compression member in a series of laps; in winding on the latter the sheet for the neutral member in another series of laps; in winding on the latter the sheet for the tension member in a series of laps; and in vulcanizing the roll thus built up; and in cutting this roll into individual belts.

In testimony whereof, I affix my signature.

ABRAHAM L. FREEDLANDER.