June 24, 1924.

1,499,314

H. B. COBB

MECHANICAL BELTING

Filed May 29, 1923

Fig. 1.

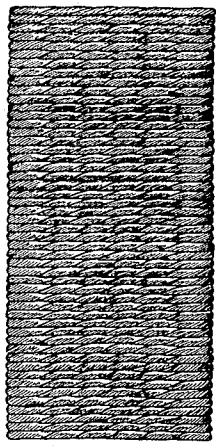


Fig. 2.

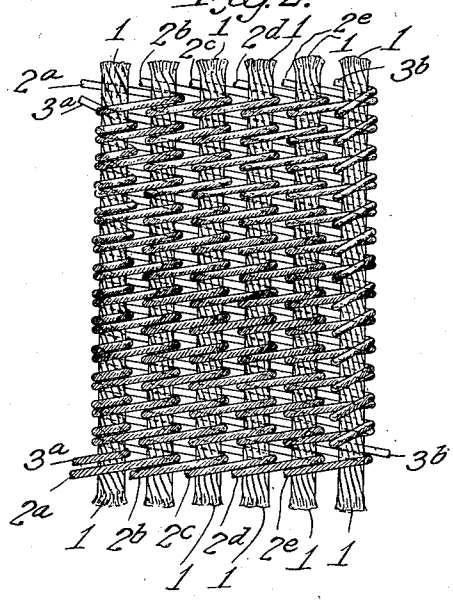
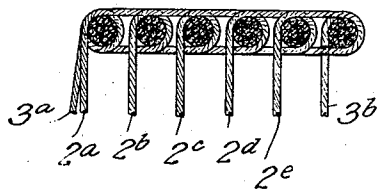


Fig. 3.



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HIS ATTORNEYS.

P nted June 24, 1924. 1,499,314

UNITED STATES PATENT OFFICE.

HENRY B. COBB, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-HALF TO JOB LEE COBB, OF THORNTON, RHODE ISLAND.

MECHANICAL BELTING.

Application filed May 29, 1923. Serial No. 642,232.

To all whom it may concern:

Be it known that I, HENRY B. COBB, a citizen of the United States, residing in the city of Richmond, county of Henrico, State of Virginia, have invented certain new and useful Improvements in Mechanical Belting, of which the following is a full, clear, concise, and exact description.

The objects of my invention are to generally improve mechanical belting for various purposes used in manufacturing in power plants, such as conveyer belts and belts used for the transmission of power.

One of the specific objects of my invention is to produce a belting which will not stretch when placed under tension, and which will be of maximum strength possible to obtain from the quantity of the material used in its construction.

A further object of my invention is to produce a belt which, when used for conveyer purposes, will accurately conform to the shapes of the pulleys over which the belt passes, and will easily maintain a concave or trough shape thereby retaining the material being conveyed effectively on the surface of the belt.

A further object of my invention is to produce a belt the surfaces of which are without substantial interstices or recesses, thereby reducing the wearing effect on each of the strands and increasing the friction or adhesion with the pulleys over which the belt passes when used for power transmission purposes.

A further object of my invention is to produce a belting in which the tension strands or the strands by which the power is actually transmitted or the weight of material carried, is protected by outer layers of strands so that the strength of the belting is not weakened as the necessary wearing progresses.

A further object of my invention is to produce a belting which may be made of material easily obtained in the market without the preparation of special kinds of yarn or cords.

For a detail description of one form of my invention which I at present deem preferable, reference may be had to the following specification and to the accompanying drawing forming a part thereof, in which—

Fig. 1 is a plan view of a small section of a completed belt showing substantially the kind of surface effect produced by the arrangement of the binder or weft strands employed in uniting the longitudinal or warp strands or cords;

Fig. 2 is a plan view of a similar section of a belt to that shown in Fig. 1, but showing the strands separated in order to illustrate the way in which they are related; and

Fig. 3 is a cross sectional view of Fig. 2, or may be considered to be a view of the lower end of the belting shown in Fig. 2.

In the form of the belt illustrated in the figures of the drawing, numeral 1 indicates a series of parallel longitudinal cords or warp strands. These strands may be of any preferred type, such as braided strands similar to sash-weight cords, or may be strands manufactured in the manner of the so-called Silvertown cords of the Silvertown automobile tires. Obviously, they may be in the form of ordinary twisted cord or rope, but should be preferably made in such a manner that the stretch or elongation under tension is a minimum.

These longitudinal strands 1 are united by a series of transverse cords or weft strands 2^a, 2^b, 2^c, etc.

In the form of my invention illustrated in the figures of the drawing, these weft strands 2^a, 2^b, 2^c, etc., are perfectly applied as follows: The strand 2^a starting at the top of Fig. 2 is looped or wound helically about the first two longitudinal or warp strands 1, while the strand 2^b is looped or wound helically about the second strand of the first longitudinal pair and around the third of such strands, the successive convolutions of the strand 2^b passing between the successive convolutions of the strand 2^a on the second longitudinal strand of the warp strands. This relation between the successive turns of the transverse or weft strands is maintained across the entire width of the belt, as clearly illustrated in Fig. 2. The successive weft strands 2^a, 2^b, 2^c, etc., are preferably placed in position or wound by the use of separate shuttles in a suitable machine for producing the belting.

It will be noted that the extreme outer longitudinal warp strands 1 have only one-half the number of spiral convolutions binding them with their adjacent strands. This fact would cause the convolutions of the strands 2^a and 2^e to be slightly separated

by spaces equal to the thickness of one transverse strand. To overcome this possible objection, I apply to the outer longitudinal strand 1 separate spiral strands 3^a and 3^b which engage said longitudinal strands only. These strands will fill the spaces above referred to and produce the symmetrical effect illustrated in Fig. 1, by making the entire surface of both sides of the belt continuous and smooth. These outer spiral strands 3^a and 3^b may, of course, be applied by means of separate shuttles in the machine for manufacturing the belt.

It will be appreciated that when the belting as above described is manufactured, it may be treated with a suitable compound for filling in between or impregnating the fibres of the material, when cotton, hemp, or other materials adaptable to this type of belting are used in its manufacture. The belt, when completed, may be friction coated and cured in the usual way familiar to the manufacturers of rubber goods, or the strands or fibres may be impregnated with rubber or other compounds prior to being woven into the belt.

It will be noted from a consideration of the figures of the drawing that the transverse or weft strands engage the longitudinal strands in the manner similar to the engagement between the plates or tongues of a hinge and the pivot pins. This allows a large amount of transverse flexibility in the belt which permits it to conform easily to the surface of the driving or supporting pulleys over which the belt may run. Furthermore, the longitudinal or warp strands are always maintained parallel and in substantially straight lines instead of being woven up and down or in and out between or among the transverse strands. This fact eliminates the stretching of the belt owing to the straightening out of the warp strands under tension when woven in the usual way, and thereby produces a great saving in the length of belting required for a particular purpose. Heretofore, in using belting woven in the usual way, it often has been found necessary to cut out thirty feet or more of the belting in order to take up the slack, thereby causing an unnecessary waste of expensive material.

Other advantages of my improved belting will be obvious from the manner in which it is made, and will be found to exist in practical use, in accordance with the objects of the invention above stated.

Although it is obvious that the belting above described may be woven by hand in a suitable apparatus employing shuttles, yet I contemplate, as is usual in the manufacture of belting, to employ an automatic power driven loom which will produce the belting rapidly and economically. For this purpose I have devised such an apparatus or loom but as the same is not part of the present invention I had deemed it unnecessary to describe the same herein.

Having thus described this form of my invention, I do not wish to be understood as being limited to the precise method of arranging the strands set forth, for various other arrangements which will produce the equivalent effect may be adopted by those skilled in the art without departing from the spirit and scope of my invention as set forth in the accompanying claims.

What I claim and desire to protect by Letters Patent is:

1. Belting, comprising longitudinal tension strands and transverse binding loops of flexible material, the longitudinal strands being substantially straight, and said binding loops being arranged in successive convolutions about a plurality of said longitudinal strands which are bound together in successive transverse groups.

2. Belting, comprising longitudinal tension strands and transverse binding loops of flexible material, the longitudinal strands being substantially straight, and said binding loops being arranged in successive helical convolutions about a plurality of said longitudinal strands which are bound together in successive transverse groups, the binding loops of the successive transverse groups overlapping each other.

3. Belting, comprising longitudinal tension strands and transverse binding loops of flexible material, the longitudinal strands being substantially straight, and said binding loops being arranged in successive helical convolutions about a plurality of said longitudinal strands which are bound together in successive transverse groups, the binding loops of the successive transverse groups being relatively staggered and overlapping each other.

4. Belting, comprising longitudinal and transverse strands of flexible material, the longitudinal strands being substantially straight and the transverse strands engaging successively a plurality of said longitudinal strands in continuous loops longitudinally.

5. Belting, comprising longitudinal and transverse strands of flexible material, the longitudinal strands being substantially straight and the transverse strands binding said longitudinal strands together by continuous helical loops longitudinally.

6. Belting, comprising longitudinal and transverse strands of flexible material, the longitudinal strands being substantially straight and the transverse strands being in the form of successive helical loops and binding successive pairs of longitudinal strands together longitudinally.

7. Belting, comprising longitudinal tension and transverse strands of flexible material, the longitudinal strands being sub-

stantially straight and the transverse strands binding successive pairs of longitudinal strands together in the form of successive helical loops which overlap each other on transverse lines of the belting.

8. Belting, comprising longitudinal and transverse strands of flexible material, the longitudinal strands being substantially straight and the transverse strands binding said longitudinal strands together by continuous helical loops, the outer marginal longitudinal strands being provided with helical filler strands.

Signed this 17th day of May, 1923.

HENRY B. COBB.