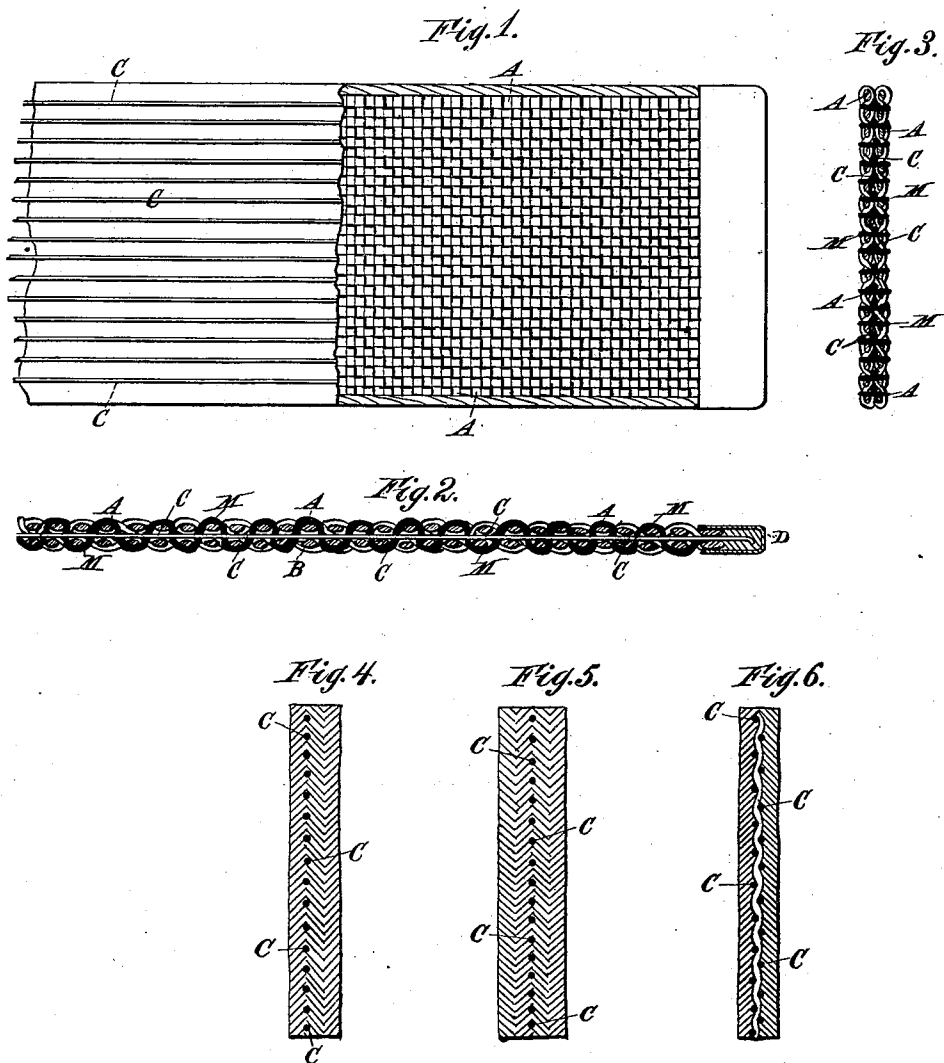


(No Model.)

G. S. LONG.  
MACHINE BELTING.

No. 251,261.

Patented Dec. 20, 1881.



WITNESSES  
Charles R. Searle.  
Hattie P. Acken

INVENTOR  
George S. Long  
by his attorney  
Thomas D. Stetson.

# UNITED STATES PATENT OFFICE.

GEORGE S. LONG, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE AMERICAN WIRE BELT COMPANY, OF SAME PLACE.

## MACHINE-BELTING.

SPECIFICATION forming part of Letters Patent No. 251,261, dated December 20, 1881.

Application filed May 25, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. LONG, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements relating to Machine-Belting, of which the following is a specification.

I manufacture a fabric in two or more plies of fibrous material, with a series of wires extending longitudinally between the plies, adapted to receive the great tensile strain in its use as a machine-belting, and I tie the two or more plies together by a series of yarns playing, to some extent, the part of warps which are carried alternately across from one fabric to the other facing fabrics. The result is a strong, inelastic, and peculiarly durable belting having the working-faces composed entirely of fibrous material, well compacted or woven together by a separate series of warp-yarns.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a face view, partly in section. Fig. 2 is a section on a larger scale, at right angles to that in Fig. 1, both sections longitudinal to the fiber. Fig. 3 is a cross-section. Fig. 4 is a cross-section of my belting made with three plies. Fig. 5 is a cross-section thereof made with four plies. Fig. 6 is a cross-section thereof with the wires woven together with a suitable fibrous filling. This figure shows only one ply of fibrous material on each side of the fabric containing the wires; but it will be obvious that this modification may also be made with two plies of the fibrous material on one face and one ply on the other face, or with two plies of the fibrous material on each face.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

I have in a patent to me dated August 31, 1880, No. 231,726, set forth the same general plan of extending longitudinal wires between two or more plies of separately-woven fabric; but in that patent the facing fabrics had warps of wire, and the warps of the facing fabric shifted alternately through from one side of the goods to the other. In my present invention, on the contrary, the facing fabrics are all

of fiber. There is no possibility of the bearing-surface of the pulleys being touched by the wires, and thereby the friction materially reduced. There is no possibility of the bends of such warp-wires being worn off by slipping on the pulleys. By reason of the fibrous material which composes the entire faces my present invention insures a suitable bearing-surface so long as the belt endures; and by reason of my separate set of warps to bind the fabrics together I am able to effect this function by yarns which are entirely free from the great tensile strain on the warps proper.

In my present improved manufacture I will use the letter C, as before, to designate a series of straight longitudinal wires, and D to indicate the caps soldered thereon, as before. I will use the letter B to designate the soft fibrous filling. I will use the letter A to indicate the hard-twisted fibrous yarns which serve as the warps proper. I will use the letter M to indicate the additional yarns of hard-twisted fiber which form the binder-yarns. These yarns differ from warps proper in the fact that they traverse across from one ply to the other. They perform no other function than that of binding the two plies of fabric together, and thus aiding to hold the wires in place, except by the small contribution which they make to the fibrous surface of the two facing-plies.

The tension of the binder-yarns M may be equal to that of the warp-yarns A, or less or more; but it is important that the yarns M be delivered from a separate yarn-beam, or from spools, or other provisions (not represented) which will allow them to be delivered faster than the warp-yarns A. My experiments indicate that the yarns M be taken up some three or more times as fast as the warp-yarns A.

The yarns M may be of the same size and material as the warp-yarns A. I propose, for ordinary belting, that both A and M be cotton yarns—about No. 9.

Modifications may be made in many of the details without departing from the principles or sacrificing all the advantages of the invention.

I can use linen, hemp, jute, and various other materials for the fibrous facing fabrics and for

the binder-yarns M; but I give the preference, for most purposes, to good quality cotton. The interstices between the fibers may be filled by rubber or other compound, if desired.

5 The ends of the wires C may be secured by other means than the soldered caps D.

I claim as my invention—

10 The machine-belting described, having the longitudinal wires C, in combination with two or more plies of facing material of fiber, and with a series of fibrous binder-yarns, M, trav-

ersing alternately through and binding the two plies, as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 23d day of 15 May, 1881, in the presence of two subscribing witnesses.

G. S. LONG.

Witnesses:

CHARLES C. STETSON,  
M. F. BOYLE.