(No Model.) 3 Sheets—Sheet 1.

J. E. EMERSON & T. MIDGLEY.

METHOD OF MANUFACTURING WIRE BELTING.

No. 362,577. Patented May 10, 1887.

Fig. 1.

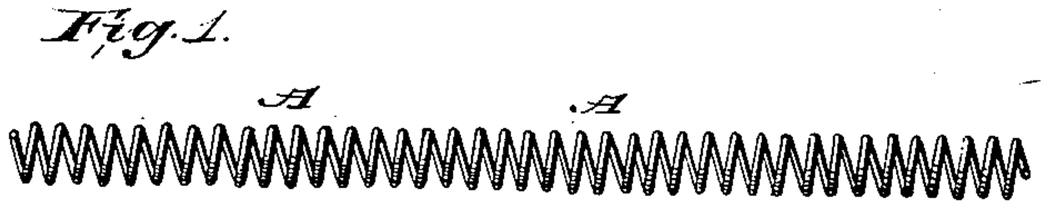


Fig. 2.

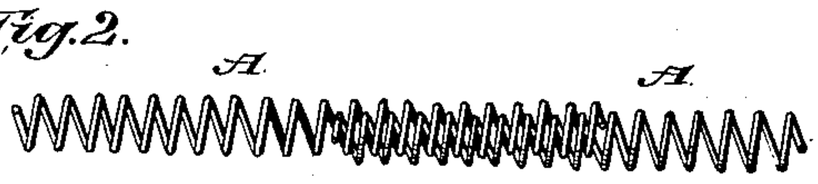


Fig. 3.

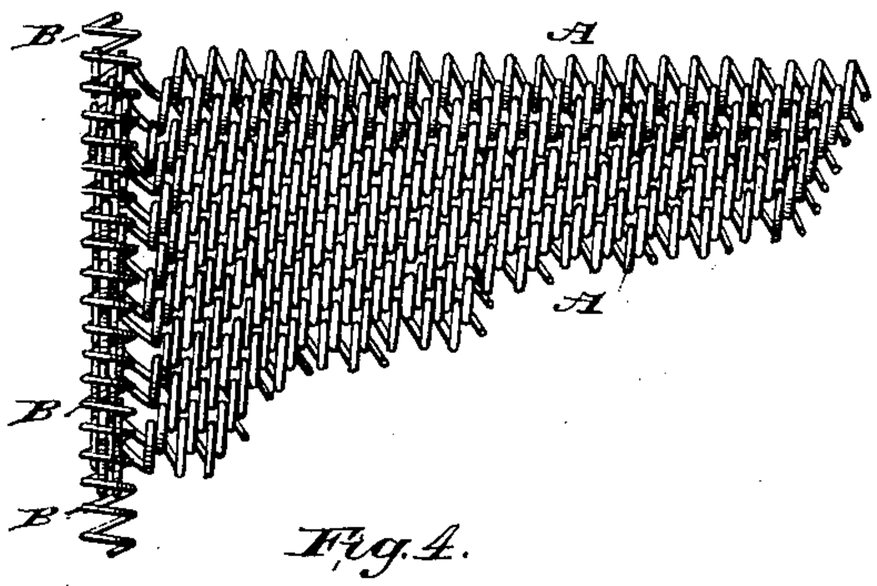


Fig. 5.

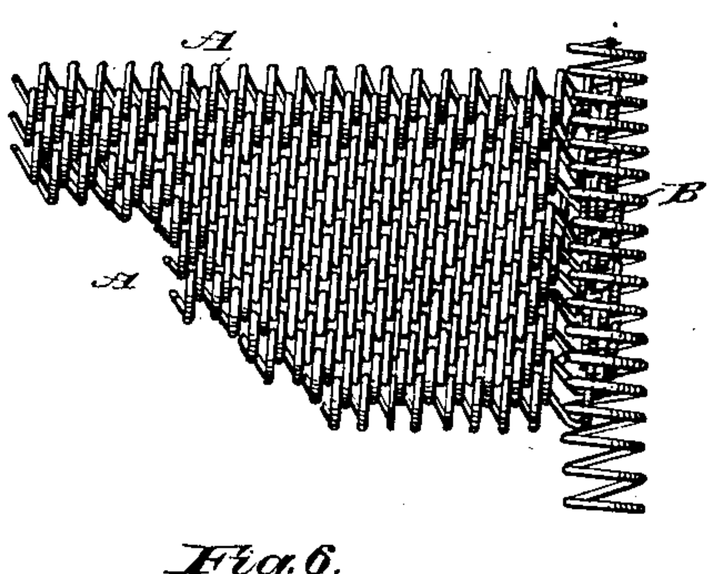


Fig. 4.

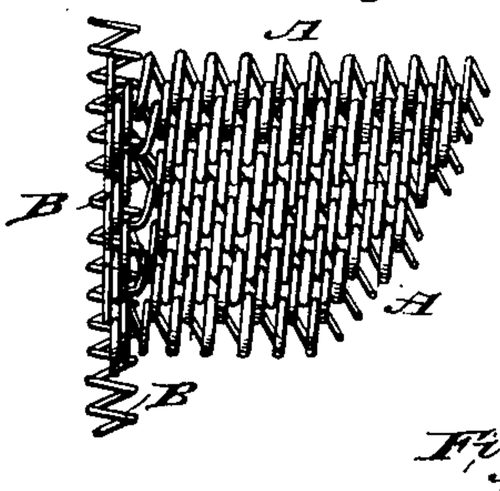


Fig. 6.

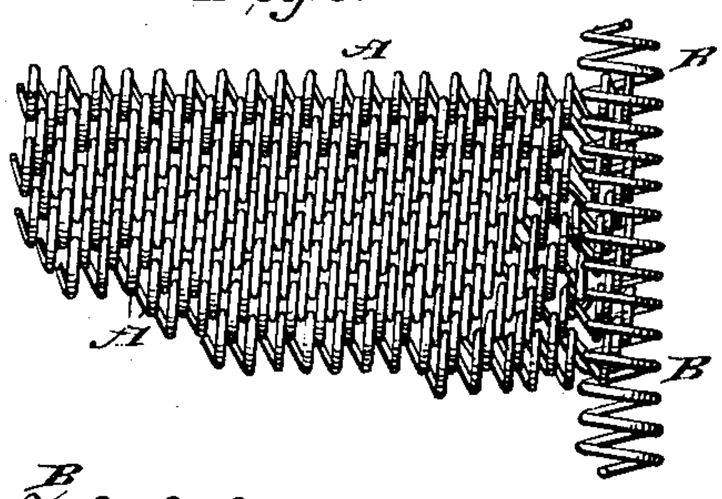


Fig. 7.

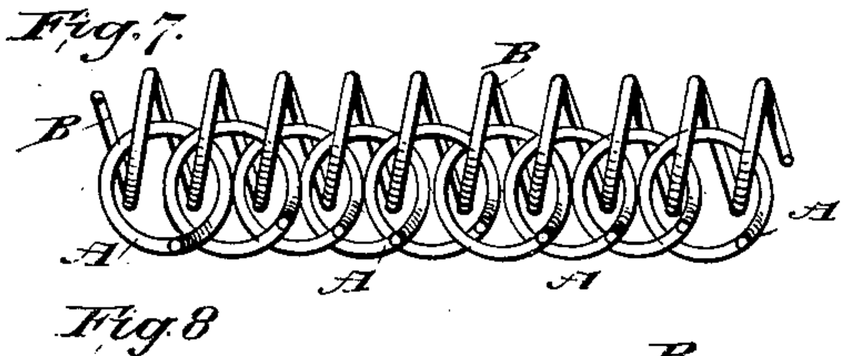
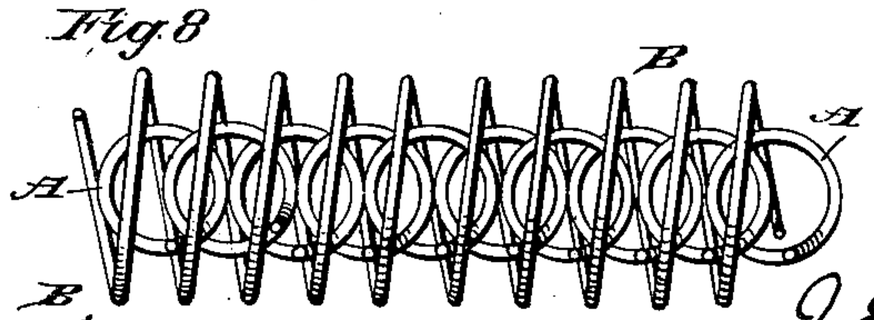


Fig. 8



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 9.

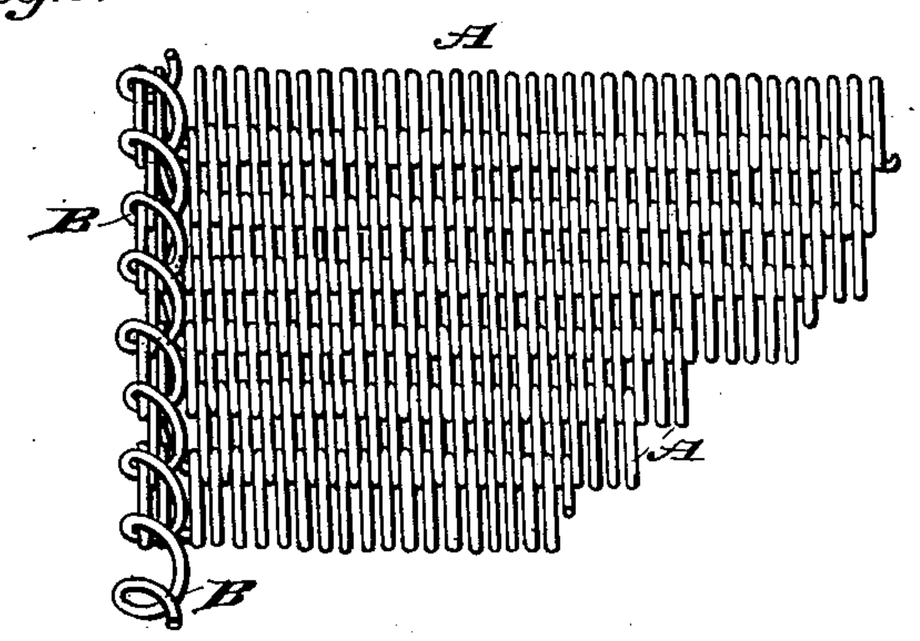

Fig. 10.

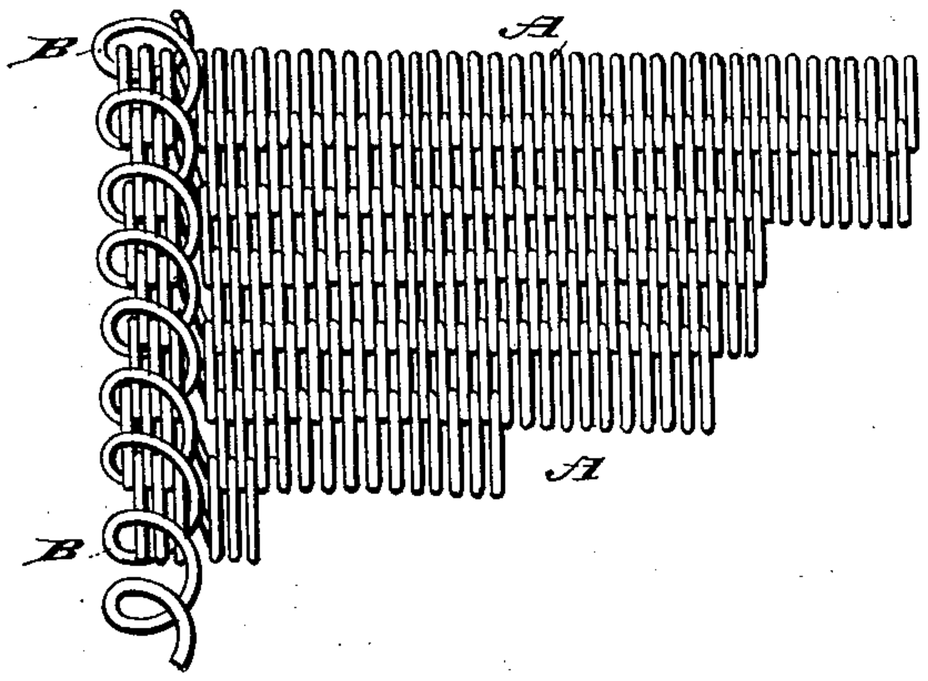

Fig. 11.

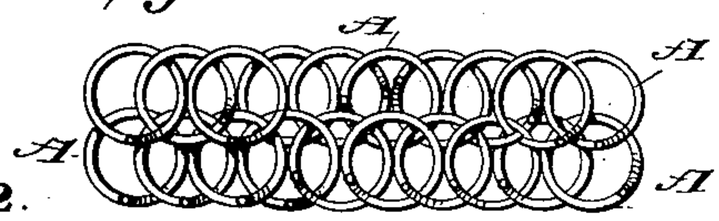

Fig. 12.

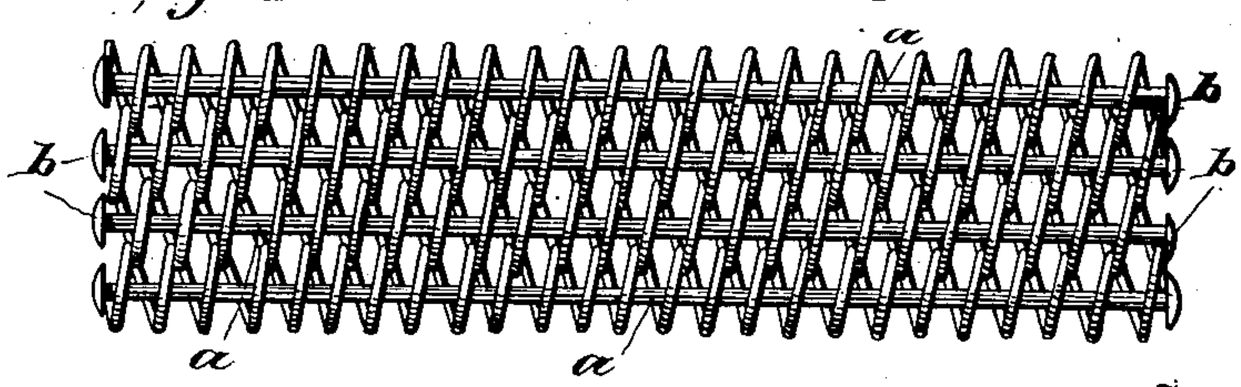

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Fig. 13.

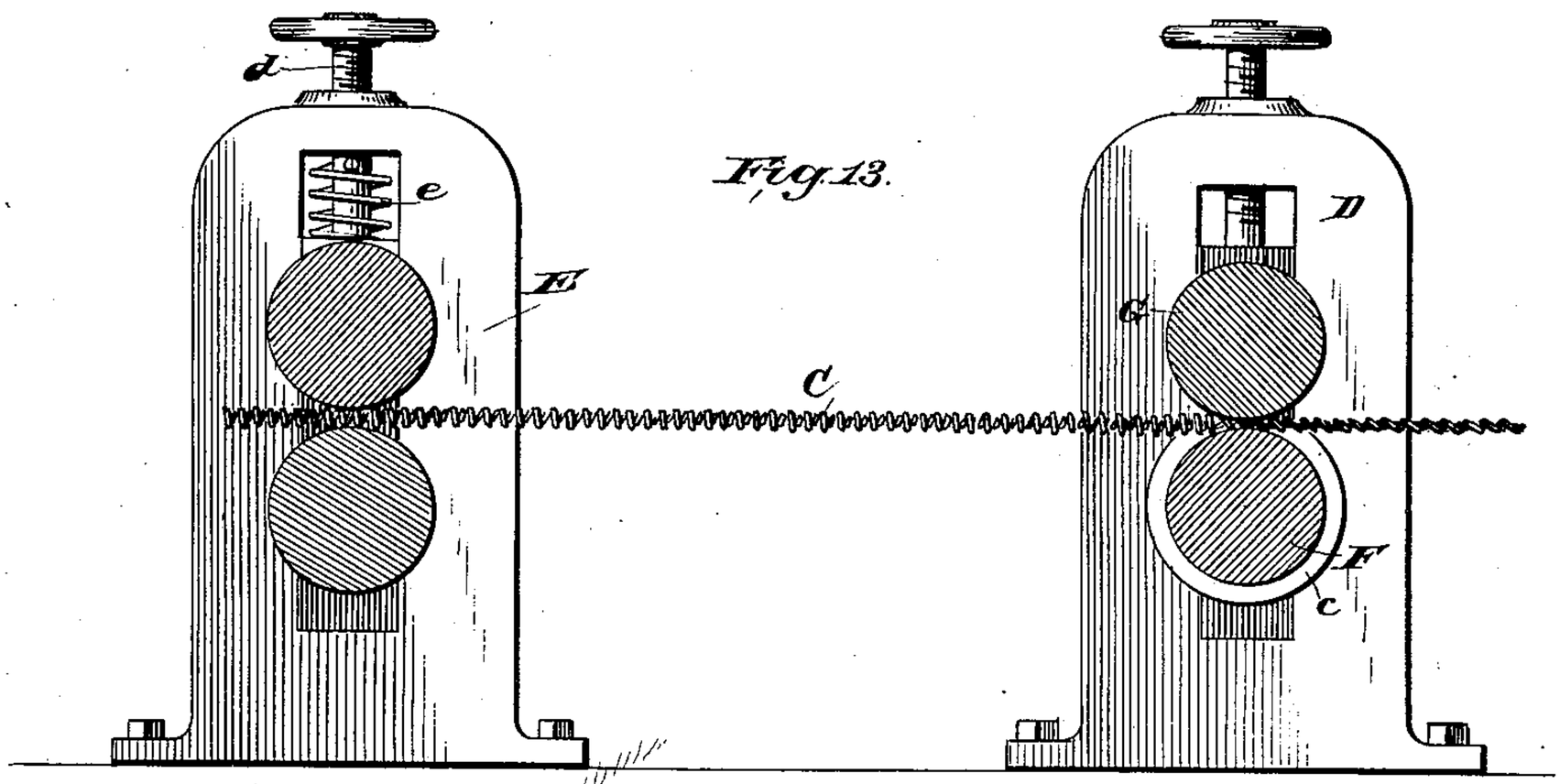
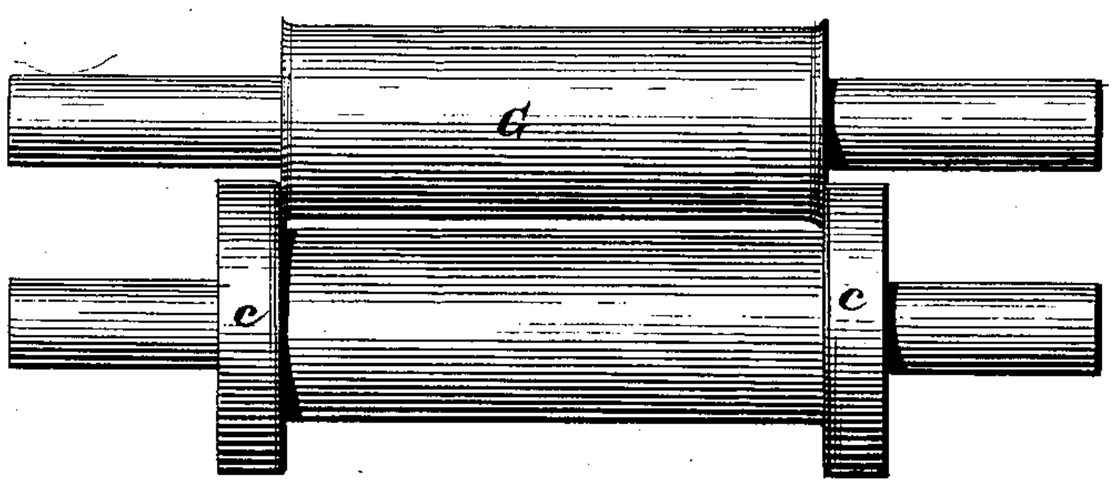


Fig. 14.



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UNITED STATES PATENT OFFICE.

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METHOD OF MANUFACTURING WIRE BELTING.

SPECIFICATION forming part of Letters Patent No. 362,577, dated May 10, 1887.

Application filed March 7, 1887. Serial No. 230,025. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. EMERSON and THOMAS MIDGLEY, citizens of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Manufacturing Wire Belting; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to the method of manufacturing wire belting, and has for its object the production of wire belting in which the ends of the transverse wires forming the edges of the belt are secured and protected, and comparatively a smooth working surface or edge formed on the belt. The article produced is not, however, limited in its use to belts, but may be successfully applied to other articles—such as elevators, mattressess, other metal cloths, armor for defense, fire-proof theater-curtains, bicycle and tricycle driving-straps, straps for buggies and carriages, &c.

Heretofore it has been proposed to make wire belting with flat oval spirals, the links being connected together by pushing the turns or twists of one link between the turns or twists of the adjacent links, and then passing a rod transversely through all of the links of both sections and bending the ends of the rod to hold them together. It has also been proposed to intersect circular or flat spirals by screwing them into each other, and then to separate the spirals and pass a rod transversely between them, as in the former construction; but in both of these constructions the ends of the spirals are protected only at their point of overlapping or intersection, and the strain of the belt is upon the transverse rod.

By our improved construction of wire belting the edges of the belt are entirely covered by metal running at a right angle to the transverse sections, and the ends of the spiral sections secured against displacement, while the strain of the belt is distributed among all of the links of the transverse spiral sections, thus producing a belt of great flexibility and that can be used for any and all purposes to which belts are applied without stretching.

The invention will be hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 represents a single section of coiled wire. Fig. 2 represents two sections being joined; Fig. 3, a face view of a portion of a belt before it has been rolled. Fig. 4 is a reverse view of Fig. 3. Fig. 5 represents a face view of a portion of a belt with a heavier longitudinal coil on the edges. Fig. 6 is a reverse view of Fig. 5. Fig. 7 represents an edge view of Fig. 3. Fig. 8 is a similar view of Fig. 5. Figs. 9 and 10 represent the construction shown in Figs. 7 and 8 after rolling. Fig. 11 represents a section showing double coils of wire. Fig. 12 represents a modification in which the edges are protected and a working-surface formed by headed transverse rods, which pass through the coils. Fig. 13 represents a diagrammatic elevation of the rolls employed for flattening the coils, and Fig. 14 is a section of the metallic rolls.

Reference being had to the drawings and the letters marked thereon, A A represent helical coils of wire, which are woven together by one coil being screwed into the other, as shown in Fig. 2. One coil after another is added until a sheet is formed of any desired length. To secure and protect the ends of the coils and form a working-edge for belting, a coil of wire, B, is screwed into the ends of the transverse sections A, as shown in Figs. 3 to 7.

The coil B engages with two or more of the spirals at each end of the sections, and may be of wire of the same weight and diameter as the coils A, as shown in Figs. 3 and 4, or it may be of heavier wire and larger coils, as shown in Figs. 5 and 6. In the former construction the end coil, when rolled, laps on one side of the sheet only, as shown in Fig. 9. In the latter construction the coil laps on both sides of the sheet, as shown in Fig. 10, and forms a stronger and more durable edge. Instead of screwing the longitudinal coils into the ends of the transverse coils, it is obvious that the reverse operation may be resorted to.

Instead of the single coils A being used, the coils may be multiplied to form a stronger sheet, as shown in Fig. 11.

The ends of the coils may also be protected

and kept from spreading laterally by rods *a* being passed through the coils and headed as at *b* in Fig. 12.

It will be observed that the links formed by the coils of the adjacent sections intersect and bear directly upon each other without the interposition of rods for connecting the sections.

After the sheet has been formed by weaving the coils together, it is pressed between rolls to flatten the links to prevent them from stretching when put into any use in which they are subjected to strain.

In Figs. 13 and 14 are shown rolls for pressing the sheet, and in which C represents the sheet, D the front or metallic rolls, and E the tension-rolls. The lower roll, F, of the metallic rolls is provided with collars *c c*, to prevent the coils A from spreading laterally while being rolled, and the upper roll, G, projects into and fills the space between the collars *c c* of the lower roll. The tension-rolls are made with plain surfaces, which engage with both sides of the sheet C, and the tension of the sheet is regulated by suitable screws, *d*, only one of which is shown, and which may be provided with an interposed spring, *e*. By preference, the tension-rolls are made of rubber or other material having an elastic surface. The object of applying tension to the sheet C while it is being rolled is to keep the sections stretched longitudinally, so as to produce a bearing between all of the links in the transverse sections, and to cause the coils to roll out evenly in straight lines across the sheet.

The rolled sheet may be coated with or embedded in rubber, canvas, or other suitable material.

The ends of a sheet may be connected by screwing a section, A, into them after having opened the ends of the links, or it may be connected by lacing or by means ordinarily employed for lacing or securing the ends of belts.

In another application filed herewith, Serial No. 230,024, we have claimed the product of our method as an article of manufacture.

Having thus fully described our invention, what we claim is—

1. The method of manufacturing wire belting, which consists in interweaving sections of coiled wire to form the length of a belt, and interweaving the ends of said sections with independent longitudinal sections of coiled wire to form the edges of the belt, substantially as described.

2. The method of manufacturing wire belting, which consists in interweaving sections of coiled wire to form the length of a belt, and interweaving the ends of said sections with independent longitudinal sections of coiled wire to form the edges of the belt, and finally rolling the belt to flatten the links, substantially as described.

3. The method of manufacturing wire belting, which consists in interweaving sections of coiled wire to form the length of a belt, and the ends of said sections with independent longitudinal sections of coiled wire, and subsequently passing the whole body between suitable rolls while under longitudinal tension, substantially as described.

4. In the manufacture of wire belting, the method of stretching the links of a section and seating them evenly in the links of an adjacent section, with which they engage, which consists in subjecting a sheet of interwoven sections of wire to the action of rolls and keeping the sheet under longitudinal tension while being operated upon by said rolls, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES E. EMERSON.
THOMAS MIDGLEY.

Witnesses as to signature of James E. Emerson:

I. A. TERRY,
WM. E. DYRE.

Witnesses as to signature of Thomas Midgley:

GEO. W. MORRISON.
J. F. MERRIMAN.