(No Model.)

W. B. CAMPBELL.

WOVEN WIRE BED BOTTOM.

No. 482,337. Patented Sept. 13, 1892.

Fig: 1.

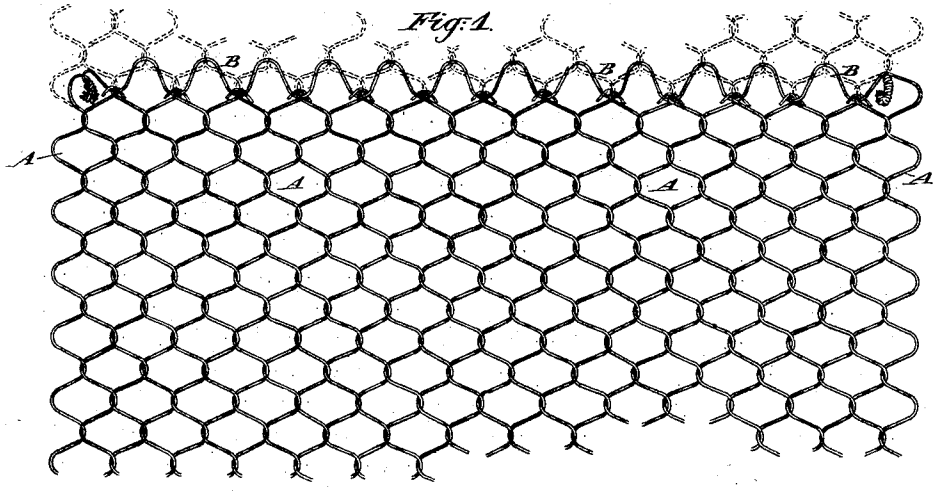


Fig: 2.

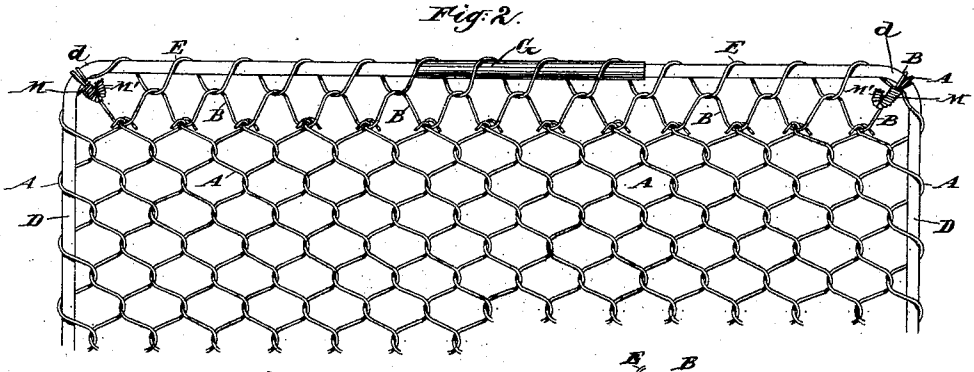


Fig: 3.

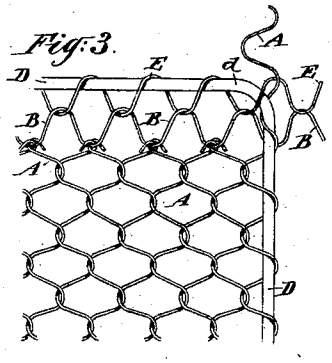


Fig: 4.

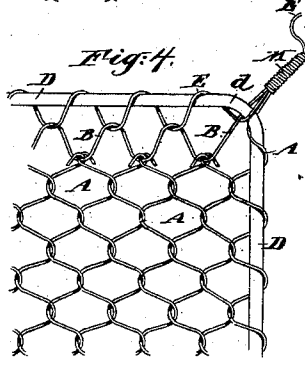
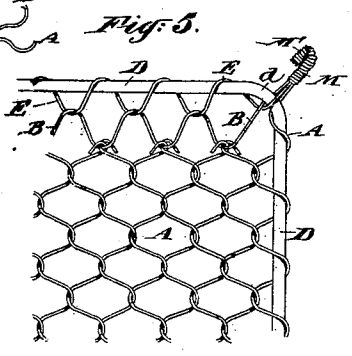


Fig: 5.



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UNITED STATES PATENT OFFICE.

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WOVEN-WIRE BED-BOTTOM.

SPECIFICATION forming part of Letters Patent No. 482,337, dated September 13, 1892.

Application filed June 20, 1891. Serial No. 396,890. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. CAMPBELL, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Coiled or Spiral Wire Fabrics, of which the following is a specification.

My improved fabric is intended more especially for use in woven-wire mattresses, and I will describe it as thus used; but it can be applied to any use where such tasteful and elastic fabric may be required. The improvement is in the means for finishing the ends and for attaching such finished ends to a rigid frame of stouter wire or other resilient material. I make the main body of the fabric in the ordinary long-approved manner by producing the spirals singly or a few at a time and combining them in the fabric by revolving each one or each two or three in the right position to cause them to engage. The result is a fabric completed, except that the ends are left raw. Now I take a single or double wire similarly coiled and introduce it properly at one edge near the end, and, giving it the proper rotatory motion, cause it to engage with each of the longitudinal wires, and thus traverse quite across in the manner commonly known as "cording," leaving the raw ends of this cross-wire extending out each edge. Next with a pair of cut-nippers or other suitable devices I snip off the surplus from the end of each longitudinal wire and double the short evenly-cut ends of the longitudinal wires, so that they engage with each other and also with the cross-cording. This results in giving the ends a finish by means of the cording which corresponds very nearly in appearance and in work to the other (the longitudinal) edges. The doubling of the ends of the longitudinal wires should be carefully and skillfully done. I find by experience that this is best effected by first partially doubling each longitudinal wire, and thus partially engaging it with its mate, and completing the folding by a subsequent movement. In other words, after the surplus material has been removed I first bend the end of one longitudinal wire to a little more than a right angle and then fold completely the end of the next one which engages with it, and then, reapplying the pliers to the partially-folded end of the first wire, complete the folding thereof. When each end of each longitudinal wire has been thus completely folded, except the one at each edge, the fabric is complete, with smooth and nicely-finished longitudinal edges, and also corresponding smooth and nicely-finished short edges across the end; but there are raw wires at the corners. When the fabric is to be used in this condition without any additional stiffening-wire at the edges, these raw ends which project at each corner may be directly twisted together and cut off and secured at this stage. I prefer in most cases to apply a stiffening-wire, and will describe the structure as having such introduced before the completion of the corners.

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 plan view of a portion completed, with a single cording-wire across the end. It is adapted to serve as a flexible fabric alone or without any stiffening-frame. Fig. 2 is a corresponding view of the same fabric after it has been provided with a stiffening-frame. The drawing shows the portion where the joining of the ends of the stiffening-frame is effected. The fabric is united to this frame by additional cording-wire traversed across the end. The remaining figures show one of the corners in different stages of manufacture. Fig. 3 shows the corner when the stiffening-frame has been inserted and engaged by the additional transverse cording-coil, but with the ends of three wires left protruding. Fig. 4 shows these protruding wires stretched and twisted together into a condition approximating to a wire rope. Fig. 5 shows the same with the protruding ends clipped off and the twisted portion or wire rope folded upon itself. The fabric is ultimately completed by folding the entire protruding portion at the corner inward and pressing it into the plane of the fabric within the stiffening-frame.

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

A A, &c., are the ordinary longitudinal wires, smoothly finished, preferably by tinning, so that they can be readily worked. They are made in uniform spirals engaged together in the ordinary and long-approved manner shown in Fig. 1, with a slight surplus of length.

B B are cording-wires of similar size and of similar diameter and pitch of spiral engaged with each of the longitudinal wires A and extending across near each end in the manner commonly known as "cording." After a cording-wire B is introduced of sufficient length for allowing each end to extend beyond the edge of the fabric the surplus material from the ends of the longitudinal wires is clipped off.

We have now arrived at an important stage in this manufacture. The end of each longitudinal wire A is next completely folded upon itself and the fold is engaged with one of the adjacent wires A and also with the cording-wire B. This being skillfully done, with the ends lying close, so as to allow nothing to protrude, the fabric is completed, except that there are two raw wires extending out at each corner, one being the spiral wire A which lies in the longitudinal edge and the other the spiral wire B which constitutes the cross-cording. Now a stouter wire D, cut a little in excess of the length required and bent at a right angle at two points *d d*, is introduced at one end, and one long straight arm is properly thrust through the interior of the spiral of the wire A which lies at one edge of the fabric, and the other long straight arm is similarly introduced in the other edge. Next a second cording-wire E, corresponding in diameter and pitch of coil with the other portions, is introduced at one corner and engaged with the cording B and inclosing in its spiral the cross part of the framing D, which extends across the end of the fabric. When this is traversed by being revolved in position until it has reached quite across, it is cut off, with a raw end extending at each corner. Next the straight projecting ends of the framing-wire D, being bent at right angles toward each other, are clipped off the proper length and inserted in a splicing-tube G, indented a little to make them take firm hold, all in the ordinary and long-approved fashion of forming frames for analogous fabrics. Cording-wires similar in all respects to the cording-wires B and E are traversed across at the other end, so as to similarly engage the fabric to the framing D at that end. The longitudinal spiral wires A are joined together and to the innermost of the two cording-wires at each end in the same manner as is shown in the figures at one end. When this is done, the cording-wires corresponding to the wires B and E at the other end are cut off, with the ends protruding. Now there are raw ends of three wires protruding at each corner. Now I go to each corner and twist these three ends, giving a sufficient number of turns to make a wire cord of a length of half an inch or more. I next cut off the surplus and fold the twisted-wire cord M thus produced twice. First, I fold a short length of the extreme end M′. Next I fold the whole protruding portion M of the three united wires inward and press it down into the plane of the fabric. The fabric is now complete and framed. It is ready to serve either with suitable springs attached in any convenient manner, as the top or bottom of a spring-bed, or to serve in various other ways. One use of my fabric is to lie upon or under an ordinary spring-bed formed of any suitable material, which may be either new or old or in good or bad order.

In some cases when the fabric shall prove to be too short for the frame there may be more than one cross-cord of spirally-coiled wire applied across the end, in the manner shown by B. In such case the several coils so extending across are engaged together in the same manner as the longitudinal coils A A are engaged together, and the ends of such transverse wires may be secured to the outermost of the longitudinal coils A A in the same manner as the longitudinal coils A are shown engaged with the cross-wire B and with each other.

My fabric without the inclosing frame, as shown in Fig. 1, is complete in itself, with ends analogous to selvages. It is capable of being bent in every direction and may be rolled up either transversely or longitudinally. When finished with the frame D and attached thereto by the cording E at each end, it can be piled with others, transported, and used either singly or hinged to another of the same or other construction to constitute a folding fabric and is complete both at the long edges at the sides and at the short edges across each end.

I have shown the several wires A, B, and E as single. The whole or a part may be double, triple, or there may be more than three in some or all of the situations. It will be understood that the duplicate wires, where such are employed, lie side by side and are engaged and folded in the same manner as the single wires represented. I have shown all the wires A, B, and E as of uniform size. This may be varied. I have in my experiments used soft-iron wire No. 22, tinned, the coils being a little less than an inch in diameter and a little less than an inch in pitch; but these points may be varied.

I can unite two or more of my complete fabrics with or without the frames by simply applying them together edge to edge and cording across in the same manner as I have shown, the fabric corded across the ends by the coil E. This gives great facility for piecing out.

To make a spring-bed, the suitable "hour-glass" spring may be attached in any suitable manner. What are known as "half-springs" may be used when my fabric is only used above.

I claim as my invention—

A length of spiral-wire fabric having a transverse spiral wire extending across at each end in the manner known as "cording," with the longitudinal spiral wires engaged together along their entire lengths, and also connected in pairs at each end by linking the folded ends of said longitudinal wires in the angular position shown and engaging them jointly with the cording-wire by the passage of the latter through the angle so formed and clinching the ends of the longitudinal wires upon the cording-wire, the said parts being combined with each other and with one or more additional cording-wires extending across the fabric at the end and the whole inclosed in a frame of stiffer material, as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

W. B. CAMPBELL.

Witnesses:
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M. F. BOYLE.