

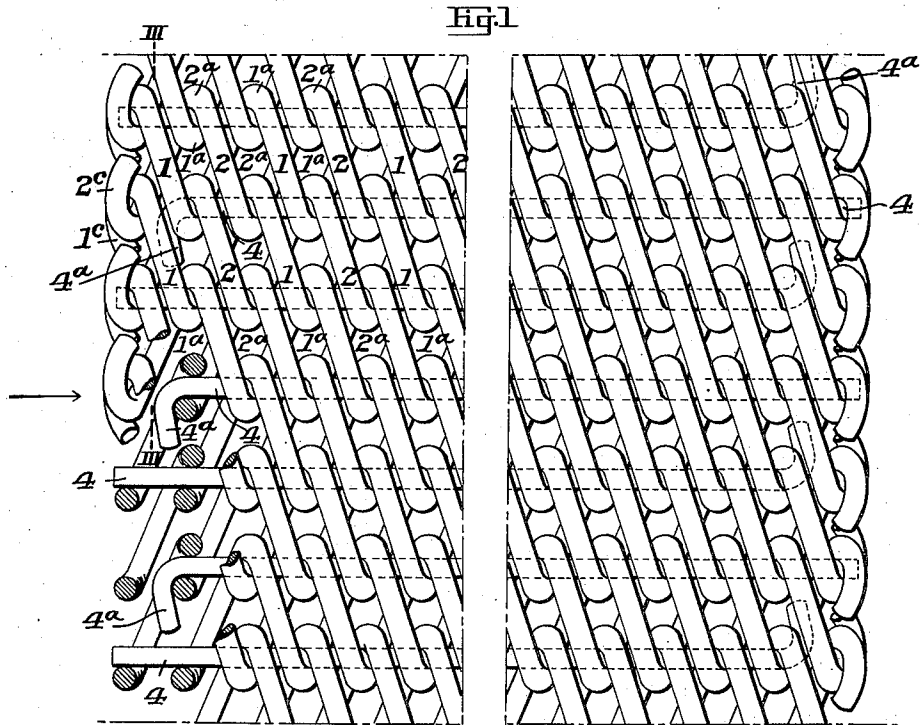
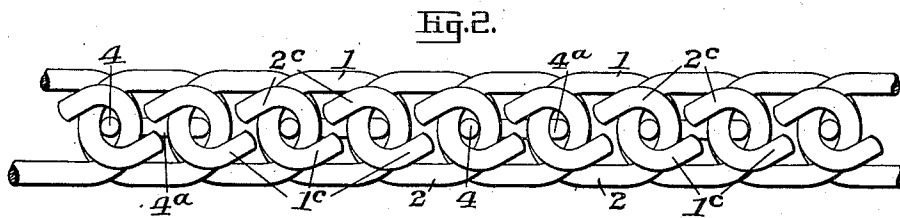
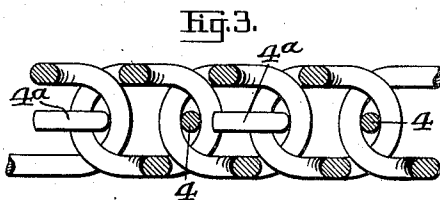
Dec. 28, 1937.

R. J. GUBA

2,103,918

WIRE FABRIC AND METHOD OF MAKING THE SAME

Filed May 18, 1936



INVENTOR
Raymond J. Guba,
BY *Murray B. Boyer*
ATTORNEY

UNITED STATES PATENT OFFICE

2,103,918

WIRE FABRIC AND METHOD OF MAKING
THE SAMERaymond J. Guba, Philadelphia, Pa., assignor to
Audubon Wire Cloth Corporation, Philadel-
phia, Pa., a corporation of New Jersey

Application May 18, 1936, Serial No. 80,441

12 Claims. (Cl. 245—6)

My invention relates to wire fabrics of the type produced from interconnected helically coiled or spirally wound wires and comprises an improved form of wire fabric structure which, while particularly available for use as a belt, may be employed for other purposes.

My improved belt is highly flexible, of great tensile strength and has interstices of small dimensions. My improved structure includes a fabric made up of helically coiled wires in which the wires are arranged in pairs and are interconnected or interlaced with the wires of other pairs. In the bights of the several pairs of interconnected or interlaced helically coiled wires, cross wires or rods in the nature of cross connector wires are passed, which cross wires or rods lie wholly within the fabric and add greatly to the strength of the same and increase its wearing qualities. In addition, the presence of these cross wires, which may be of the same gauge as the helically coiled wires, reduces the size of the interstices between the bights of successively connected pairs of helically coiled wires.

These and other features of my invention are more fully set forth hereinafter; reference being had to the accompanying drawing, more or less diagrammatic in character, in which:

Figure 1 is a plan view, partly in section and partly broken away, of a portion of wire fabric in the form of a belt structure constructed in accordance with my invention.

Fig. 2 is an edge view looking in the direction of the arrow, Fig. 1, and

Fig. 3 is a sectional view on the line III—III, Fig. 1.

The improved fabric forming the subject of my present invention is made up of helically coiled or spirally wound wires arranged in pairs in the present instance; the spirals of the respective wires of each pair passing through the spirals of the respective wires of adjacent pairs and lying substantially in the same plane. The pairs of helically coiled wires of each pair are interconnected or interlaced with the helically coiled wires of other pairs throughout the entire extent of the fabric and these spirals or helically coiled wires may be of right-hand twist or left-hand twist, as the case may be; the several wires of any particular section of the structure, however, having their helices or spirals extending in the same direction.

Considering Fig. 1 of the drawing, pairs of wires are indicated at 1 and 2; the wires 1 having bights indicated at 1^a, and the wires 2 having bights indicated at 2^a; both sets of bights

being in alignment transversely of the fabric. The next pair of wires 1 and 2 will have the same bight connections; the bights 1^a of the wire 1 of the second pair interconnecting with the bights 2^a of the wire 2 of the first pair, while the bights 2^a of the wire 2 of the second pair will interconnect with the bights 1^a of the wire 1 of the first pair, and this relation will be maintained throughout the construction of the fabric.

When this fabric is developed in the form of a belt, the ends of the associated pairs of wires 1 and 2 may be knuckled together at the marginal edges of the belt in the manner indicated in Fig. 2 of the drawing; the ends 1^c of the wires 1 being engaged by and with the ends 2^c of the wires 2, and this arrangement is maintained throughout the full extent of the belt. By reason of these isolated connections of the associated pairs of the helically coiled or spirally wound wires, complete flexibility of the belt is insured.

Between the aligned bights of the respective sets of the interconnected helically coiled wires 1 and 2, I introduce cross rods or wires 4, which may be in the nature of connector wires and extend from side to side of the belt, transversely of the same, but are not positively connected with the helically coiled wire although they are arranged to be held in position transversely of the belt.

Each of these cross rods or wires 4 is provided at one end with a bent end 4^a which may be substantially at right angles to the main portion of such cross wire although it is preferably arranged obliquely thereto, and this end is enclosed within the helices of the pairs of wires 1 and 2, just short of the marginal edge of the belt, as clearly indicated in Fig. 1; such bent end engaging one of the helically coiled wires. The opposite straight end of each cross rod or wire is brought to and passed through the knuckled portions 1^c and 2^c of the helically coiled wires 1 and 2 with which it is associated and such wire is cut off so that its end lies substantially even with or within such knuckled portion at the marginal edges of the belt. The next cross rod or wire directly adjacent to the one first mentioned has its bent portion at the opposite marginal edge or side of the belt adjacent to the straight end of the first mentioned wire, and this relation is maintained throughout the entire belt; the bent ends of the alternate cross rods or wires being alternately arranged adjacent to the opposite marginal edges of the belt, and such bent ends may extend in the same direction

longitudinally of the belt, or the end of one cross wire may be bent in one general longitudinal direction and the end of the next adjacent cross wire bent in the opposite direction, as indicated in Fig. 1.

By reason of the fact that the bent ends of the cross wires are embedded wholly within the body of the belt adjacent to the marginal edges of the same, such wires or rods are held against longitudinal movement transversely of the belt structure. At the same time, inasmuch as the cross wires or rods have no positive connection with the helically coiled wires, there is no impairment of the flexibility of the belt, and their presence strengthens the belt structure and increases its wearing qualities.

It will be understood, of course, that belt structures made up of my improved wire fabric may consist of sections made up of helically coiled wires of right-hand twist alternating with sections made up of helically coiled wires of left hand twist, throughout the extent of the same; any suitable form of connection being employed to join the sections of belt fabric made up of the helically coiled wires of different twist and that the improved form of cross wires or rods having bent ends which lie wholly within the marginal edges of the fabric, will be employed with said several belt sections.

While my improved fabric is preferably made of helically coiled wires arranged in pairs, it will be understood that it is entirely possible to provide fabric structure having more than a pair of helically coiled wires in what might be termed unit relation, interconnected with the helically coiled wires of similarly arranged units. The presence of the helically coiled wires arranged in pairs or in other plural units reduces the size of the interstices between the respective coils or helices of the same transversely of the fabric, and the presence of the cross rods or wires within the bights of the interconnected helically coiled wires reduces the size of the interstices longitudinally of the fabric, with the result that I am able to produce a closely woven structure with slight tendency to contract transversely, and one possessing admirable carrying qualities and with a smooth surface.

Various modifications may be made in the construction and arrangement of the elements constituting my improved wire fabric without departing from the spirit of my invention; all of which is deemed to be within the scope of the appended claims.

I claim:

1. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in knuckled engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of adjacent pairs, and cross wires located in the interconnecting bights of all of the adjacent sets of helically coiled wires and having their ends wholly embedded within the fabric between helices of the helically coiled wires.

2. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in connected engagement with the wires of adjacent pairs in alternate relation and

the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of adjacent pairs and cross wires located in the interconnecting bights of all of the adjacent sets of helically coiled wires and having their ends wholly embedded within the fabric between helices of the helically coiled wires; each of said cross wires having a bent end whereby it is anchored within the fabric.

3. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in knuckled engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of adjacent pairs, and cross wires located in the interconnecting bights of all of the adjacent pairs of helically coiled wires and having their ends wholly embedded within the fabric between helices of the helically coiled wires.

4. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in connected engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of each pair and the wires of adjacent pairs, and cross wires located in the interconnecting bights of all of the adjacent pairs of helically coiled wires and having their ends wholly embedded within the fabric between the helices of the respective wires; one end of each of said cross wires engaging a knuckled connection of the helically coiled wires.

5. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in knuckled engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of adjacent pairs, and a plurality of cross wires located in the interconnecting bights of all of the adjacent pairs of wires and having their ends wholly embedded within the fabric between the helices of the respective wires; one end of each of said cross wires being bent and serving to anchor said cross wires or rods within the fabric.

6. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in connected engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of adjacent pairs, and a plurality of cross wires in the interconnecting bights of all of the adjacent pairs of wires and having their ends wholly embedded within the fabric between the helices of the respective

wires; one end of each of said cross wires being bent and serving to anchor the cross wires within the fabric while the opposite end passes into knuckled connection of helically coiled wires.

5 7. A wire fabric comprising helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in connected engagement with the wires of adjacent pairs in alternate relation
10 and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of such pair and the wires of
15 adjacent pairs, and cross wires passing through the bights of the interconnected wires of each pair; each of said cross wires having a bent end lying wholly within the marginal edges of said belt fabric and arranged alternately; the opposite
20 end of each of said cross wires being straight and extending into the knuckled portions of the helically coiled wires at the opposite edge of the belt fabric.

8. A wire fabric comprising helically coiled
25 wires arranged in pairs and interconnected with the wires of other pairs; each wire of each pair having its ends in knuckled engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two
30 sets of bights in parallel alignment throughout the full extent of the fabric; each wire of each pair being freely movable with respect to the other wire of each pair and the wires of adjacent pairs, and cross wires passing through each of
35 said sets of aligned bights transversely of the fabric; each of said cross wires having a bent end which terminates wholly within the body of the fabric adjacent to the knuckled connection of a pair of wires while its opposite end passes into
40 a knuckled connection and said bent ends being alternately disposed adjacent to opposite marginal edges of the fabric.

9. A wire fabric comprising a plurality of helically coiled wires arranged in pairs and interconnected with the wires of other pairs; each
45 wire of each pair having its ends in knuckled engagement with the wires of adjacent pairs in alternate relation and the interconnection of said wires providing two sets of bights in parallel alignment throughout the full extent of the
50 fabric, and cross wires passing through each of said sets of aligned bights; each of said cross wires

having a bent end which terminates wholly within the body of the fabric between the helices of the coiled wires adjacent to the knuckled connection of a pair of wires while its opposite end
5 passes into and terminates at a knuckled connection at one marginal edge of the fabric and said bent ends being alternately disposed adjacent to opposite marginal edges of the fabric.

10. The method of making wire belt fabric which comprises arranging helically coiled wires
10 in plural units with their ends knuckled together; nesting the coils of the wires of each plural unit in each other to lie in the same plane; one coil of each wire passing through adjacent coils of other helically coiled wires on opposite sides of
15 the same, passing cross wires through all of the bights of the interconnected wires; and bending one end of each of said cross wires and disposing the same wholly within the marginal edges of said belt fabric and between helices of the helically
20 coiled wires.

11. The method of making wire belt fabric which comprises arranging helically coiled wires in pairs with each pair having their ends knuckled
25 together; nesting the coils of the wires of each pair in each other to lie in the same plane; one coil of said first pair passing through adjacent coils of pairs of helically coiled wires on opposite sides of the same, passing cross wires through
30 all of the bights of the interconnected wires of each pair; and bending one end of each of said cross wires and disposing the same wholly within the marginal edges of said belt fabric and between helices of the helically coiled wires.

12. The method of making wire belt fabric
35 which comprises arranging helically coiled wires in pairs with each pair having their ends knuckled together; nesting the coils of the wires of each pair in each other to lie in the same plane, one coil of said first pair passing through adjacent
40 coils of pairs of helically coiled wires on opposite sides of the same, passing cross wires through all of the bights of the interconnected helically coiled wires of each pair; bending one end of each of said cross wires and disposing the same wholly
45 within the marginal edges of said belt fabric arranged in alternate arrangement, and passing the opposite straight ends of said cross wires into the knuckled portions of the helically coiled wires at the opposite edges of the belt fabric.
50

RAYMOND J. GUBA.