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O. C. SCHERFEL

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WIRE FABRIC AND METHOD OF MAKING THE SAME

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2 Sheets-Sheet 1

Fig. 1.

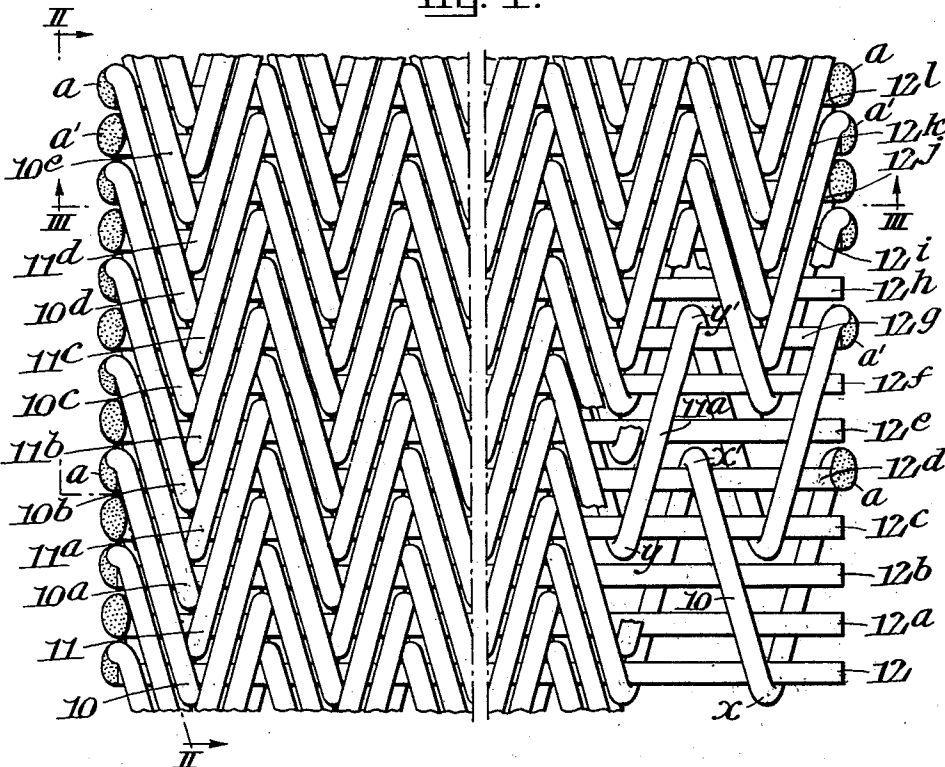


Fig. 2.

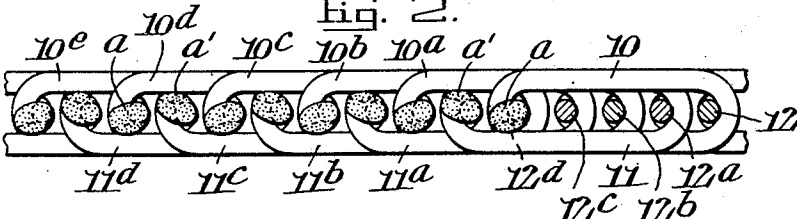
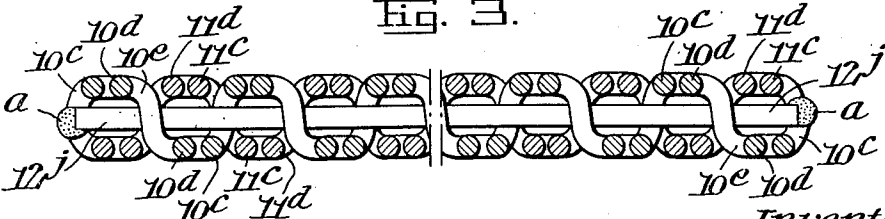


Fig. 3.



Inventor
Otto Carl Scherfel,
by Murray B. Raper
Atty.

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WIRE FABRIC AND METHOD OF MAKING
THE SAME

Otto Carl Scherfel, Haddon Heights, N. J., assignor to Audubon Wire Cloth Corporation, Philadelphia, Pa., a corporation of New Jersey

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10 Claims. (Cl. 245—6)

My invention relates to wire fabric made of helically coiled or twisted wires, and comprises a fabric of this general type composed of wires of right hand twist arranged in nested relation with respect to wires of left hand twist; the several helically coiled wires being connected by cross rods or wires in engagement with bights of their helices so that helices of the respective wires of different twist will lie alternately side by side throughout the entire extent of the fabric.

As the helically coiled wires are of different twist and lie transversely of the fabric in nested relation, it is necessary to employ cross rods or wires to connect the same, and these connecting members may be in the form of straight or crimped rods. They are permanently connected, as by welding, to the ends of the helically coiled wires; each helically coiled wire being separately connected to the ends of a cross rod.

The relation of the helices of the respective wires is such that those of each twist lie alternately in parallel rows longitudinally of the fabric; each wire being offset with respect to the directly adjacent wires so that the bights engaged by the cross rods are in substantial alignment longitudinally of the fabric and transversely of said rods. When such fabric is employed in the form of a conveyor belt, it provides a structure that will track true.

One object of my invention is to provide a closely woven, flexible fabric made of helically coiled wires of different twist associated with connecting cross rods to which the ends of the helically coiled wires are permanently secured, as by welding, and to arrange that a plurality of cross rods or wires shall lie within each of the helices of the several connected wires. By such arrangement, the helices of the several connected wires are brought into close relationship.

A still further object of my invention is to provide cross rods or wires which are crimped and provide seats for engagement by the bights of the helices of the several helically coiled wires; an arrangement which serves to maintain their position transversely and longitudinally of the fabric, particularly when it is developed into a belt structure.

And a still further object of my invention is to construct my improved fabric of helically twisted wires having relatively wide and substantially flat helices.

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

Figure 1 is a plan view, partly broken away, of

one form of wire fabric constructed in accordance with my invention.

Fig. 2 is a view looking toward a marginal edge of the fabric; partly in section on the line II—II, Fig. 1.

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

Fig. 4 is a view similar to Fig. 1, illustrating another form of my improved fabric, and

Fig. 5 is a view looking toward a marginal edge of the fabric shown in Fig. 4; partly in section on the line V—V.

My improved fabric is made of helically coiled wires 10, of one twist—right-hand, for instance—helically coiled wires 11, of opposite twist—left-hand, for instance—and cross wires or rods 12, which lie in the helices of the wires 10 and 11, and connect them in operative relation.

The helically coiled wires are disposed in close relationship, and this is effected by developing their width to such dimension that a plurality of cross rods, in the present instance three, may lie in properly spaced relation within the helices of each of the helically coiled wires between and in properly spaced relation with respect to those cross rods which are engaged by the bights of any one of the helically coiled wires.

With a view of describing the fabric illustrated in Figs. 1, 2 and 3, but without limiting in any respect my invention, Fig. 1 shows a plurality of helically coiled wires of right-hand twist, indicated at 10; 10^a; 10^b; 10^c, et seq., and a plurality of wires of left-hand twist, indicated at 11; 11^a; 11^b; 11^c, et seq., and these several wires are continuous across the body of the fabric. The several wires are in nested relationship offset with respect to each other and in order that they may be maintained in connected condition, cross rods or wires are provided, as indicated at 12; 12^a; 12^b; 12^c; 12^d, et seq.

Considering Fig. 1, which shows a portion of the helically twisted wires broken away in the lower right hand portion, it will be noted that the bights of the wire 10, for instance, engage the cross wires 12 and 12^d; such bights being indicated at *x* and *x'*, respectively. The ends of the helically twisted wire 10 are shown as connected to the ends of the cross rod 12^d, preferably by welding, as indicated at *a*. The wire of left-hand twist, indicated at 11^a, is of exactly the same dimensions as the wire 10 and its bights, indicated at *y* and *y'*, engage the cross rods 12^c and 12^e; the ends of the helically twisted wire 11^a being connected to the ends of the cross rod 12^e, preferably by welding, as indicated at *a'*.

It will be noted that other cross rods lie between the cross wires or rods engaged by the bights of the wires 10 and 11^a in the manner referred to, and that all of the cross rods are spaced equidistantly throughout the extent of the fabric.

It will be observed, upon examination of Fig. 1, that in the fabric illustrated by such view, the alternate cross rods are engaged by helically coiled wires of one twist only; in other words, the cross rods 12; 12^b; 12^d; 12^f, et seq., are engaged by the bights of helically coiled wires of right-hand twist, while the cross rods 12^a; 12^c; 12^e; 12^g, et seq., are engaged by the bights of helically coiled wires of left-hand twist. By reason of such arrangement, the helices which appear to lie in longitudinal rows are slightly offset with respect to each other; that is to say, the bights of the several wires are separately aligned transversely but are in substantial alignment longitudinally of the fabric and transversely of the helically coiled wires.

The cross rods shown in Fig. 1 are straight. It may be desirable to use crimped cross rods and in Fig. 4 I have shown a section of fabric of the same general character as that shown in Fig. 1, in which the cross rods are of crimped form; each of the helically coiled wires of the fabric having its bights in engagement with a bend or offset of a crimped rod.

In Fig. 4, the wires of right-hand twist are indicated at 10; 10^a, et seq., and the wires of left-hand twist are indicated at 11; 11^a, et seq., as in Fig. 1. The crimped rods, however, are indicated at 120; 120^a; 120^b, et seq., and their offsets or bends, engaged by the bights of the helically coiled wires, are indicated at z. As in the form of fabric illustrated in Fig. 1, the wires of the respective twists engage alternate cross rods; in other words, the cross rods are engaged singly by wires of the respective twists.

My improved fabric is most flexible and when developed in the form of a belt it provides a smooth carrying surface with the helices of the respective wires in close and regular position throughout; admirably adapted for the transport of small articles, such as glass vials, through an annealing lehr. In addition, the alternating arrangement of wires of right- and left-hand twist throughout its extent insures that a belt made from the fabric will track true over driving and idler pulleys or sheaves.

The gauge of the helically coiled wires may be the same as the cross rods or wires, or the latter may be slightly larger or smaller than the helically coiled wires. My improved arrangement or construction provides a fabric with openings smaller than the wires composing the same.

It will be understood that modifications may be made without departing from the spirit of my invention and within the scope of the appended claims.

I claim:

1. Wire fabric comprising groups of helically coiled wires in nested relation, with wires of right-hand twist alternating with wires of left-hand twist, and cross rods extending longitudinally of the helically coiled wires; the alternate cross rods being engaged by helically coiled wires of different twist and each of the helically coiled wires accommodating a plurality of cross rods other than those directly engaged by the bights of their helices.

2. Wire fabric comprising groups of helically coiled wires in nested relation, with wires of right-

hand twist alternating with wires of left-hand twist, and crimped cross rods extending longitudinally of the helically coiled wires; the alternate crimped rods being engaged at their bends by bights of helically coiled wires of different twist and each of the helically coiled wires accommodating a plurality of crimped cross rods other than those directly engaged by the bights of their helices.

3. Wire fabric comprising a plurality of sets of helically coiled wires of right-hand twist and left-hand twist arranged in alternating relation; the several wires of different twist nesting in each other, and cross rods extending longitudinally of the helically coiled wires; each of said helically coiled wires engaging a pair of cross rods with the wires of one twist engaging cross rods in alternating relation and each of said helically coiled wires having its ends connected to the ends of a cross rod with which it is in engagement.

4. Wire fabric comprising a plurality of sets of helically coiled wires of right-hand twist and left-hand twist arranged in alternating relation; the several wires of different twist nesting in each other, and cross rods of crimped formation extending longitudinally of the helically coiled wires; each of said helically coiled wires having its bights in engagement with the bends of pairs of the crimped rods in offset relation and the wires of one twist engaging cross rods in alternating relation; each of said helically coiled wires having its ends connected to the ends of one of the crimped rods with which it is in engagement.

5. Wire fabric comprising a plurality of sets of helically coiled wires with wires of right-hand twist alternating with wires of left-hand twist and with the helices of the respective sets of wires in longitudinal alignment, and cross rods lying within the helices of the helically coiled wires; each of the helically coiled wires overlying a plurality of cross rods and in engagement with the outer rods of each group with different pairs of cross rods in engagement with the helically coiled wires so that the engagement of each helically coiled wire of one twist with a pair of cross rods is independent of the engagement of the helically coiled wire of different twist with a pair of said cross rods.

6. Wire fabric comprising a plurality of sets of helically coiled wires with wires of right-hand twist alternating with wires of left-hand twist and with the helices of the respective sets of wires in longitudinal alignment, and crimped cross rods lying within the helices of the helically coiled wires with the bights of the latter in engagement with the bends of said crimped rods in offset relation; each of the helically coiled wires overlying a plurality of cross rods and in engagement with the outer rods of each group with different pairs of crimped rods in engagement with the helically coiled wires so that the engagement of each helically coiled wire of one twist with a pair of crimped rods is independent of the engagement of the helically coiled wire of different twist with a pair of said crimped rods.

7. The method of making wire fabric of helically coiled wires in which wires of right-hand twist alternate with wires of left-hand twist in nested relation, which comprises assembling wires of different twist alternately in close transverse alignment; placing groups of cross rods within the helices of the helically coiled wires, the outer rod of each group engaging the bights of the helices of each helically coiled wire, and connecting the

ends of wires of different twist alternately to the ends of one of the cross rods in engagement with the bights thereof.

5 8. The method of making wire fabric of helically coiled wires in which wires of right-hand twist alternate with wires of left-hand twist in nested relation, which comprises assembling wires of different twist alternately in close transverse alignment; placing groups of cross rods of crimped formation within the helices of the helically coiled wires, the bends of the outer rods of each group engaging bights of the helices of each helically coiled wire in offset relation, and connecting the ends of wires of different twist alternately to the ends of one of the crimped rods in engagement with the bights thereof.

10 9. The method of making wire fabric of helically coiled wires of right-hand twist alternating with wires of left-hand twist in nested relation, which comprises assembling the wires of different twist alternately in close transverse alignment;

placing groups of cross rods within the helices of the helically coiled wires, the outer rods of each group engaging the helices of a helically coiled wire, and connecting the ends of the helically coiled wires to the ends of a cross rod in engagement with the bights thereof, wires of different twist being connected to alternate rods.

10 10. The method of making wire fabric of helically coiled wires of right-hand twist alternating with wires of left-hand twist in nested relation, which comprises assembling the wires of different twist in close transverse alignment; placing groups of crimped cross rods within the helices of the helically coiled wires, the outer rod of each group of crimped rods having its bends in engagement with the helices of a helically coiled wire, and connecting the ends of the helically coiled wires to the ends of a cross rod in engagement with the bights thereof, wires of different twist being connected to alternate crimped rods.

OTTO CARL SCHERFEL.