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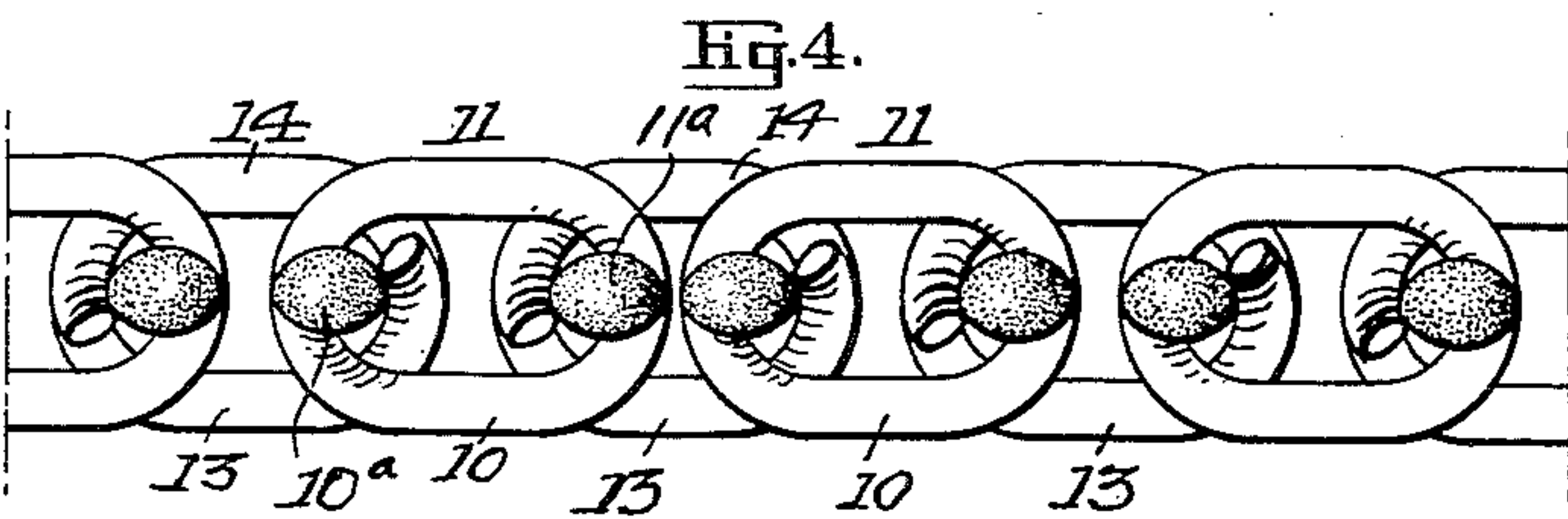
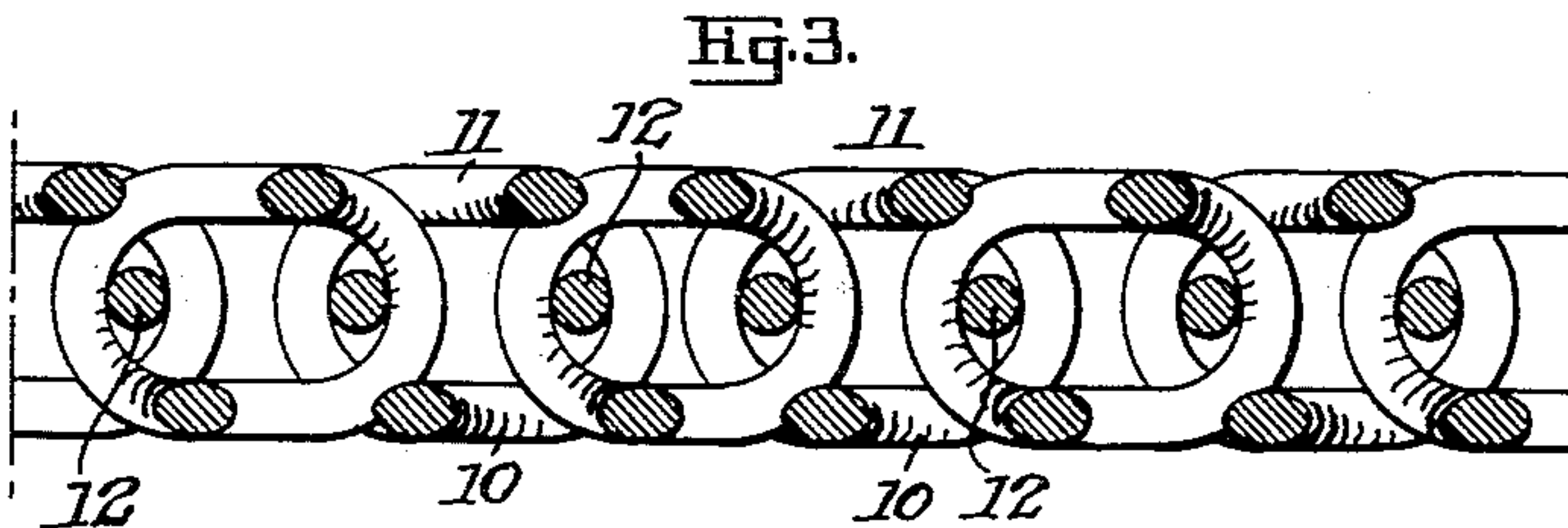
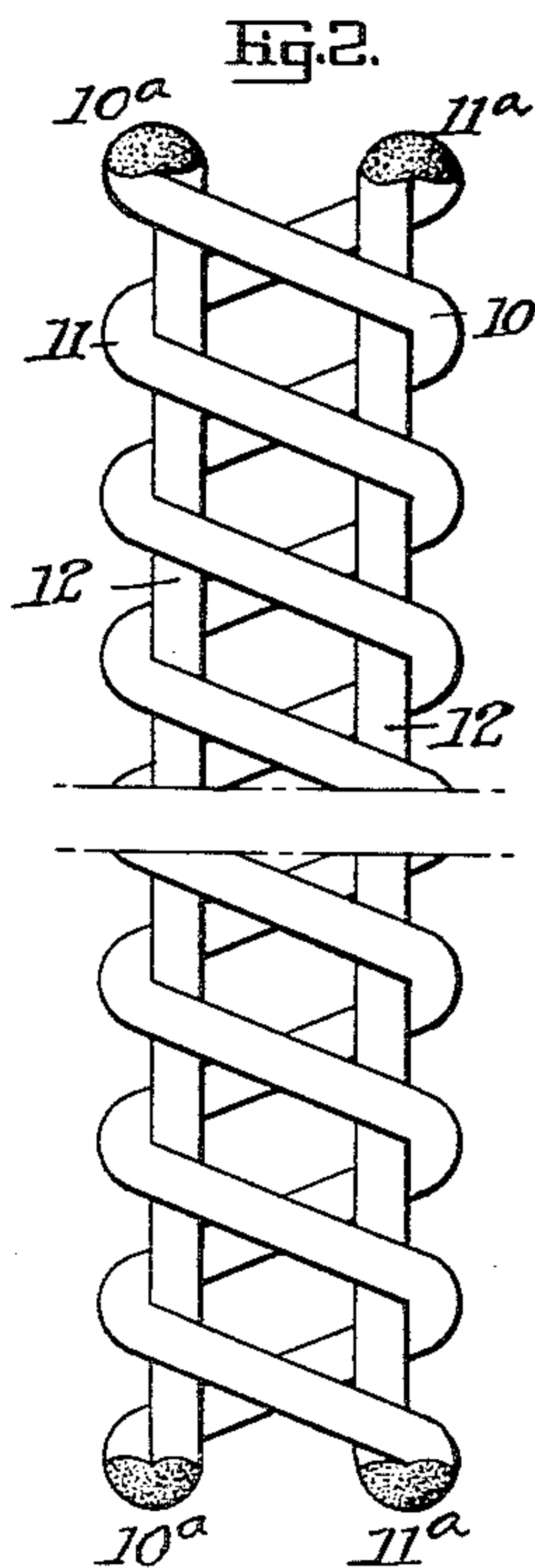
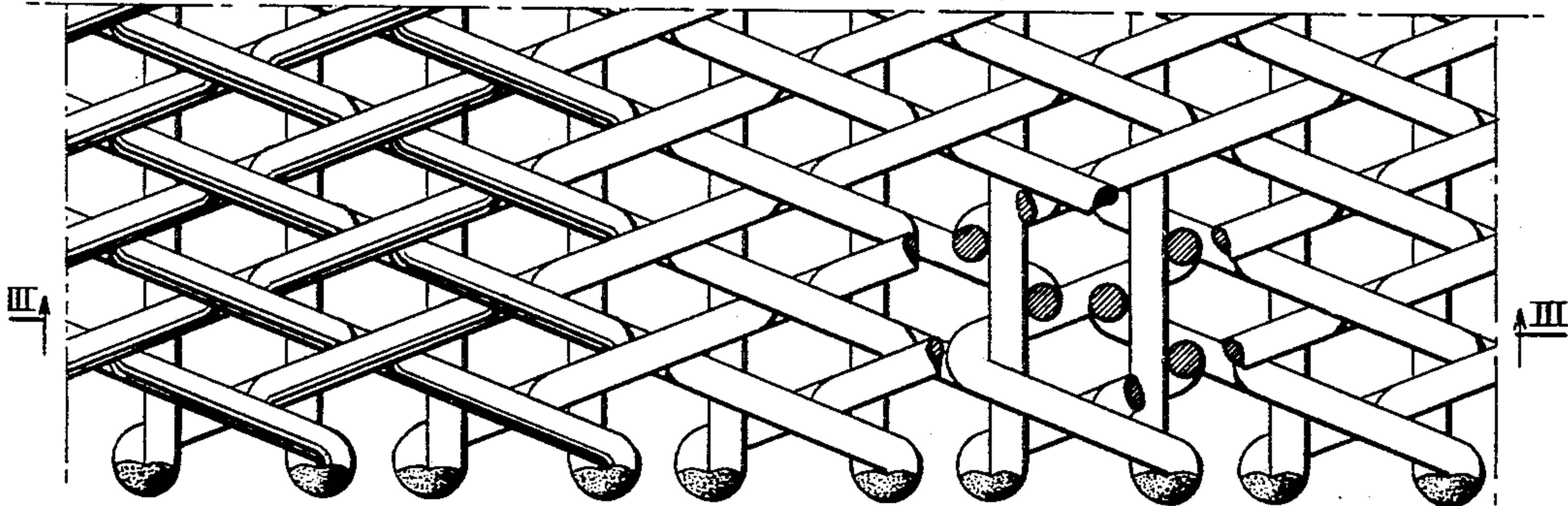
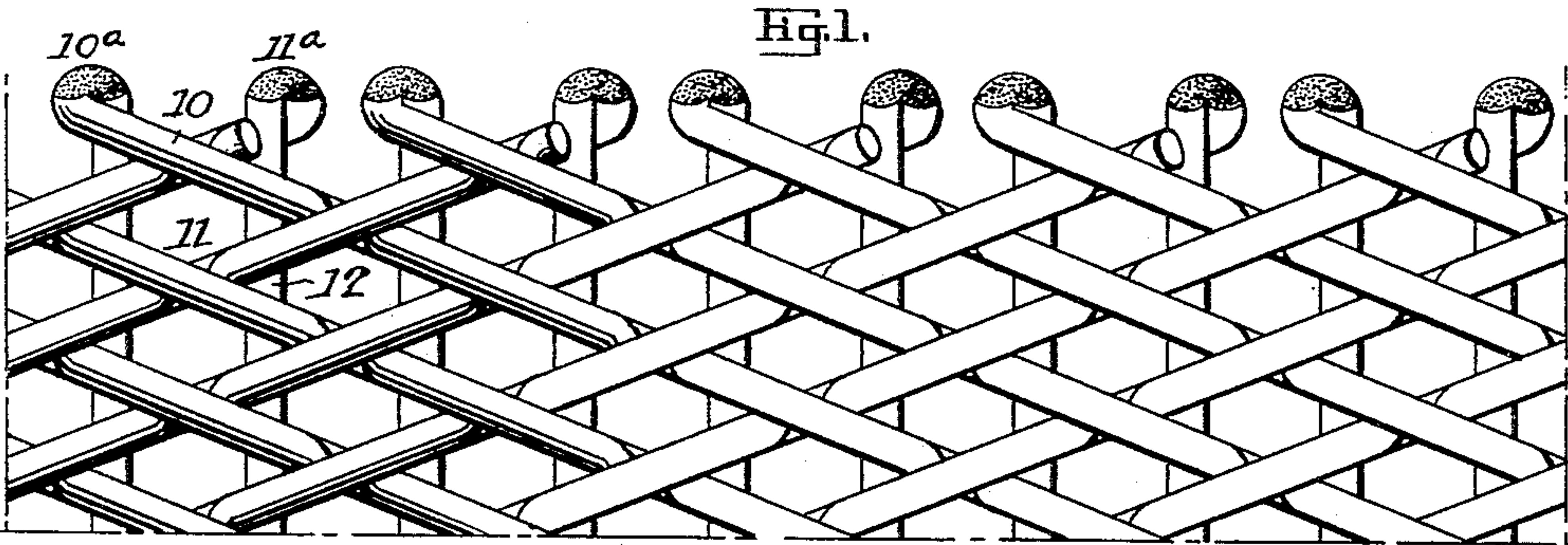
R. J. GUBA

2,125,717

WIRE FABRIC AND METHOD OF MAKING THE SAME

Filed May 20, 1937

2 Sheets-Sheet 1



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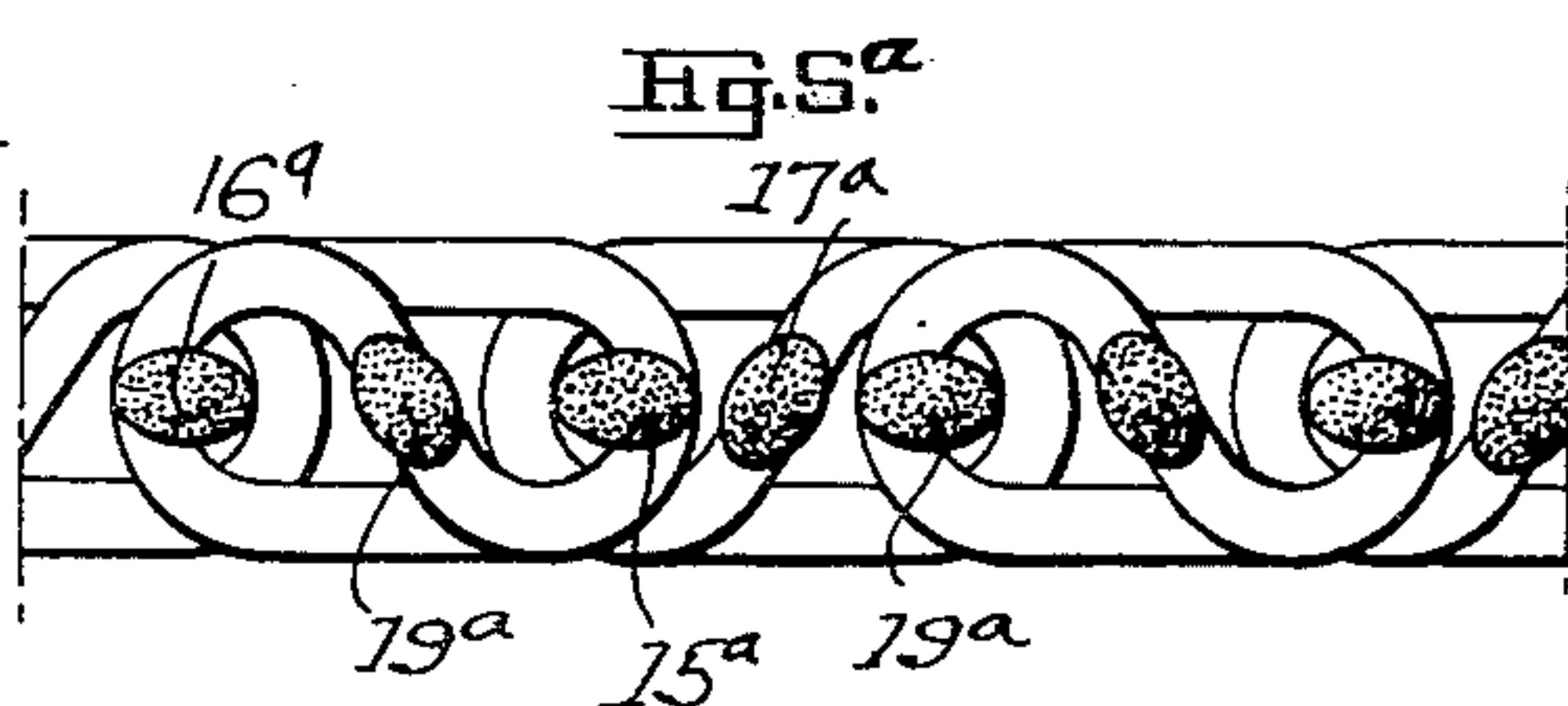
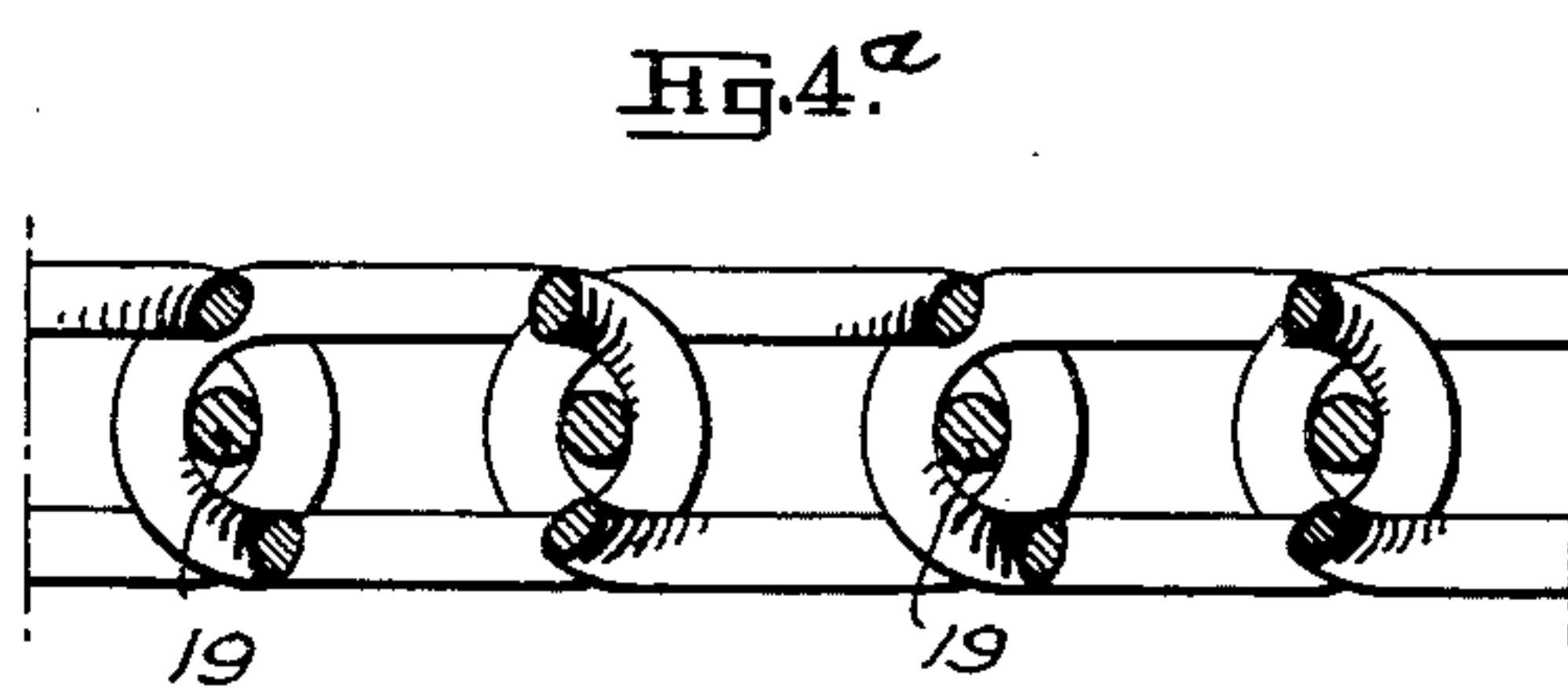
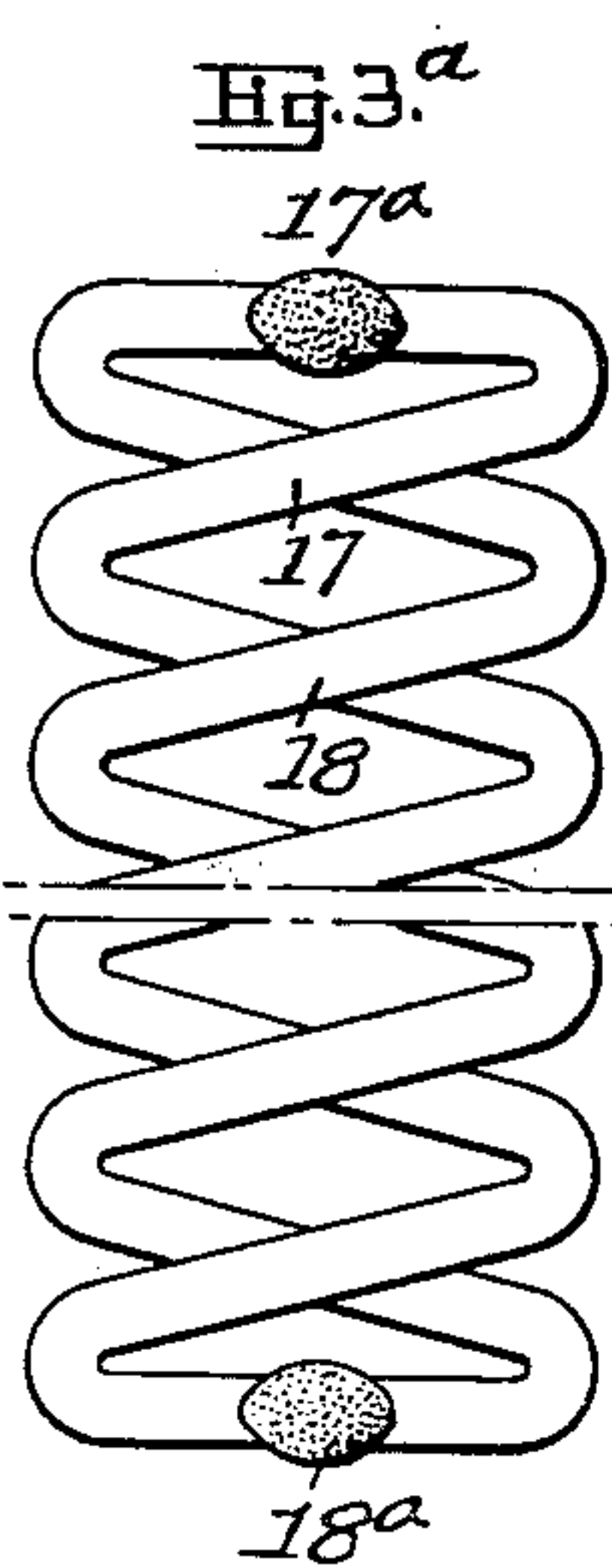
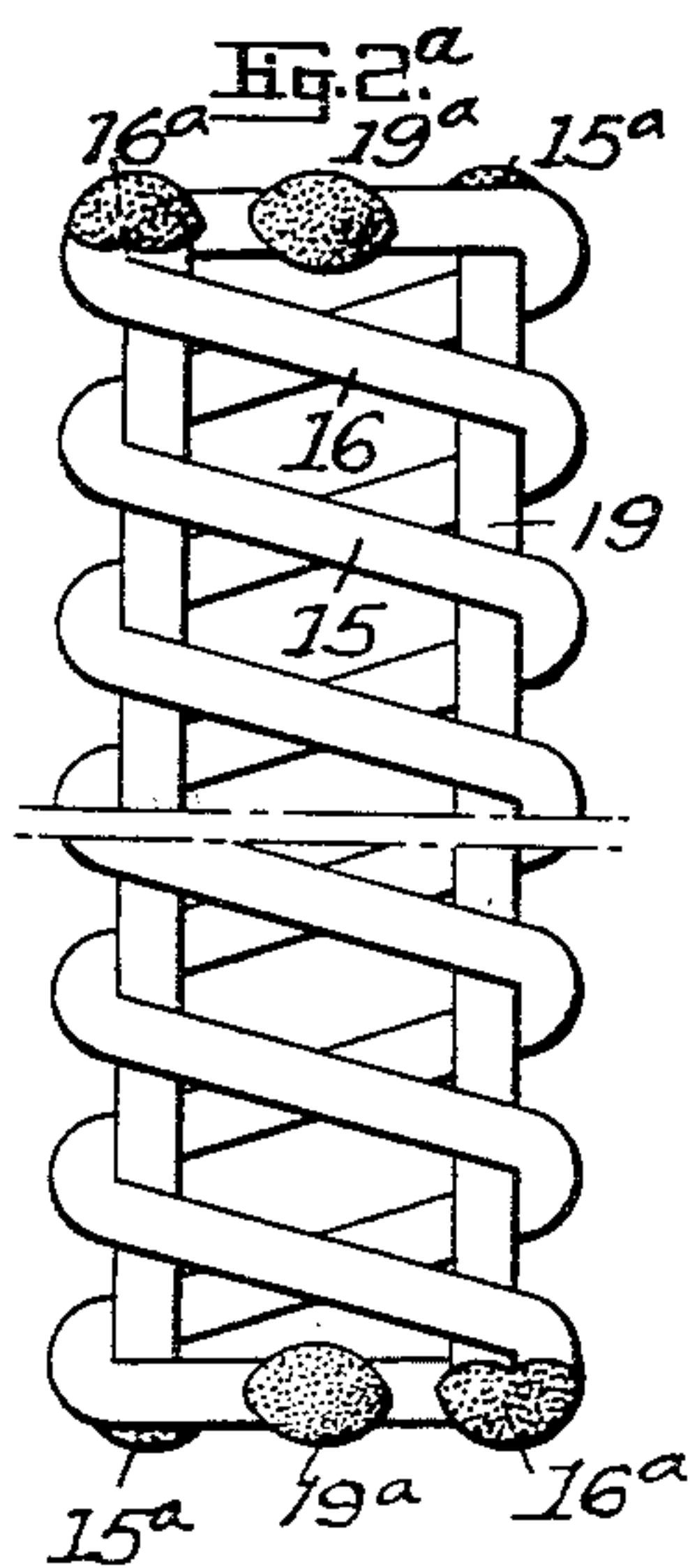
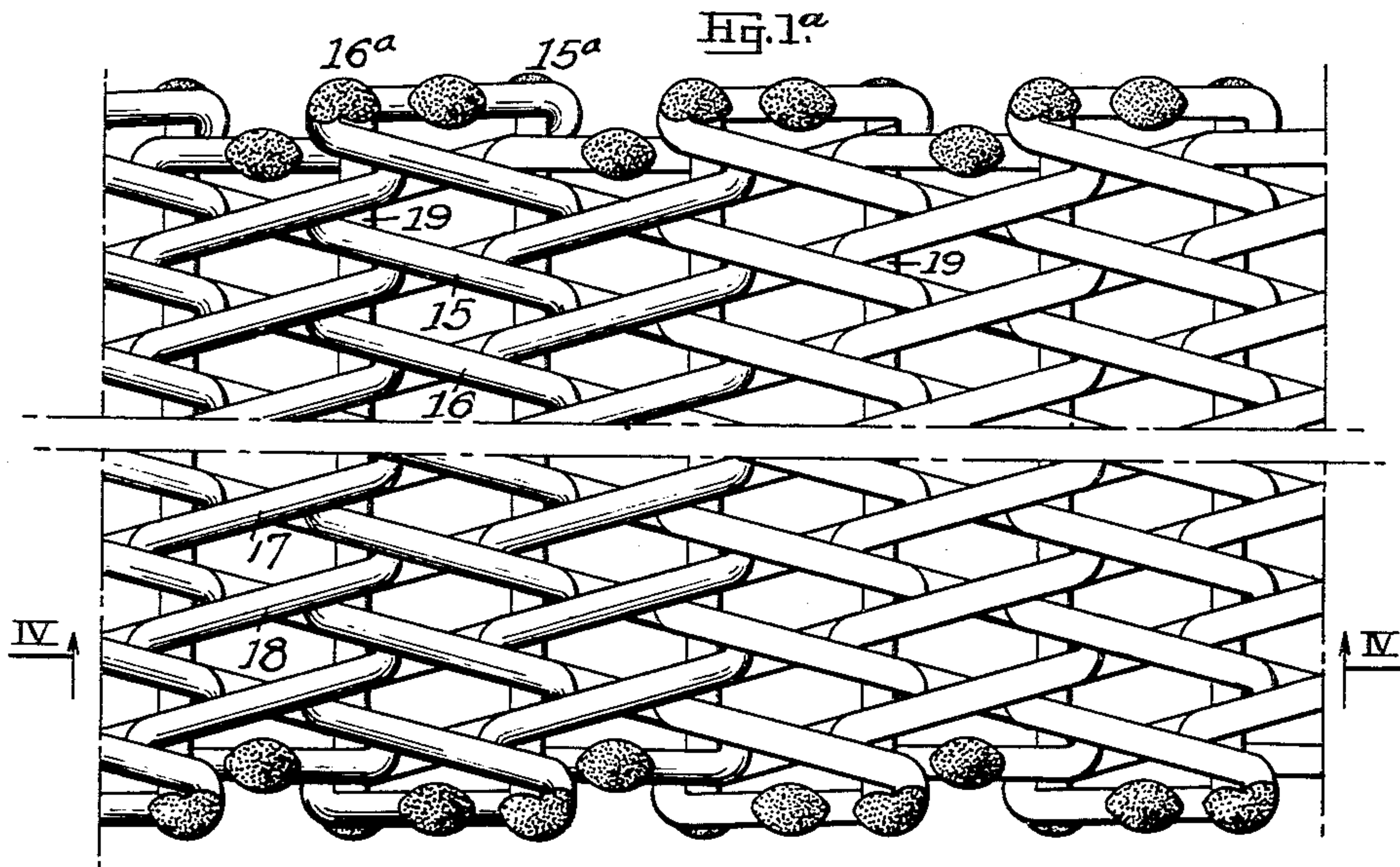
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WIRE FABRIC AND METHOD OF MAKING THE SAME

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2 Sheets-Sheet 2



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2,125,717

WIRE FABRIC AND METHOD OF MAKING
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Pa., a corporation of New Jersey

Application May 20, 1937, Serial No. 143,801

19 Claims. (Cl. 245—6)

My invention relates to woven wire fabric made of helically coiled or twisted wires, which type of fabric is largely employed in the production of carrying belts available for use in many of the industries.

One object of my invention is to provide a wire fabric of great flexibility, high tensile strength, and with substantially flat and smooth surfaces made up of alternating coils extending in opposite directions so that all tendency of a belt composed of my improved fabric to creep laterally when passing over drive pulleys or rolls is avoided.

A further object of my invention is to provide a fabric made up of alternately arranged right and left hand helically twisted wires which are maintained in the desired relationship by cross rods engaging the bights of the several wires; such cross rods forming the connections between the wires of different helical twist.

A further object of my invention is to arrange the wires in unit pairs with respect to the cross rods; pairs of wires of right hand twist alternating with pairs of wires of left hand twist throughout the entire extent of the fabric, with the spirals of the wires of each pair passing through each other and lying in the same plane.

A further object of my invention is to connect pairs of wires of one twist to the cross rods associated with the same; the adjacent pairs of wires of the opposite twist being unconnected in some instances and having their ends lying within the marginal edges of the fabric produced by the connections of the adjacent wires with the respective cross rods.

A further object of my invention is to provide a form of fabric made up of unit pairs of wires of different twist wherein each pair of wires have joined ends; in one instance the ends of pairs of wires of one twist are joined to the ends of the cross rods—as by welding—while in the other instance the ends of the wires which alternate with those connected directly with the cross rods, are connected together, as by welding.

A further object of my invention is to provide a simple method of making my improved fabric, which will be provided with clean firm and straight marginal edges by reason the manner of welding the ends of the wires, and a still further object of my invention is to provide an efficient belt of the character described of great strength and of a construction that avoids contraction during use; such belt being highly efficient in use and simple in construction.

These and other features of my invention are

more fully set forth hereinafter; reference being had to the accompanying drawings, more or less diagrammatic in character, in which:

Figure 1 is a plan view, partly broken away, of a section of one form of my improved wire fabric.

Fig. 2 is a plan view of a single connected unit of the type of fabric shown in Fig. 1.

Fig. 3 is a sectional elevation of the fabric shown in Fig. 1, taken on the line III—III.

Fig. 4 is a view of the marginal edge of the type of fabric shown in Fig. 1.

Fig. 1a is a plan view, partly broken away, of a section of another form of my improved fabric.

Fig. 2a is a plan view of a connected unit of the fabric shown in Fig. 1a.

Fig. 3a is a plan view of another connected unit of the fabric shown in Fig. 1a.

Fig. 4a is a sectional elevation of the fabric shown in Fig. 1a, taken on the line IV—IV, and

Fig. 5a is a view of the marginal edge of the fabric shown in Fig. 1a.

In carrying out my invention I produce a type of woven wire fabric made up of unit sets of helically coiled wires arranged in pairs and connected together by cross rods which extend longitudinally of the respective sets of coiled wires; pairs of wires of one twist—right hand for instance—alternating with pairs of wires of left hand twist throughout the extent of the fabric.

Referring more particularly to Figs. 1, 2, et seq., I show pairs of helically twisted wires of one twist—left hand, for instance—indicated at 10 and 11, in connected relation with cross rods 12; such rods lying in the bights of the coils of the wires 10 and 11 which pass through each other and lie in the same plane. The ends of the wires 10 and 11 are connected at 10^a and 11^a to the ends of the cross rods 12, and a unit involving a pair of helically coiled wires of one twist connected to the cross rods, is indicated in Fig. 2; such wires being of left hand twist.

The other units are composed of helically coiled wires of opposite twist—right hand, for instance—and these wires, which are arranged in pairs which pass through each other and lie in the same plane, are or may be in loosely arranged condition, as indicated at 13 and 14; the ends of the latter wires lying within the marginal connections of the other wires indicated at 10 and 11.

The fabric is made of these units disposed in alternating relation, that is to say, each pair of wires of one twist, which may be a left hand twist, have the cross rods in engagement with

their bights, and such cross rods are held in such position by reason of the permanent connection of their ends with the ends of the helically coiled wires with which they are associated. These
 5 connected units are hingedly connected with the other pairs of wires of opposite twist—right hand, for instance, indicated at 13 and 14; such wires 13 and 14 having their bights of the re-
 10 spective coils engaged by the cross rods 12 forming part of the directly adjacent units which include the helically coiled wires 10 and 11. The ends of the wires 13 and 14 lie within the margins provided by the connections formed by the ends of the wires 10 and 11 and the ends of the
 15 cross rods 12, and are thereby prevented from endwise separation transversely of the fabric; a condition that in addition prevents contraction of the fabric when employed as a belt.

In constructing my improved fabric, the several wires in associated pairs are laid side by side; the coils of each pair passing through each other and lying in the same plane; then the cross rods are placed so as to engage the wires of opposite twist; then the ends of the several wires are
 20 trimmed to form the marginal edges of the fabric, and then the necessary welds are made. Such fabric will be made up of connected units of pairs of wires of one twist and interconnected pairs of wires of an opposite twist, alternating
 25 with such connected unit pairs of wires.

Fabric thus produced will have on both surfaces, sets of wires of one twist alternating with sets of wires of opposite twist and the coils of these respective wires will extend in opposite di-
 30 rections, alternately. Such type of surface is substantially flat and by reason of the long oval character of the coils, with the flat portions, it is relatively smooth. By reason of the fact that the coils of the adjacent wires extend in opposite
 35 directions over the entire surface of the fabric, belts made of such fabric will track true and will avoid all danger of creeping laterally when passing over drive rolls or pulleys.

The fabric shown in Fig. 1a is of substantially the same type as that shown in Figs. 1, 2, et seq., excepting that the coils are somewhat longer and both sets of paired wires have their ends joined. These wires are shown at 15, 16, 17 and 18, and the cross rods are indicated at 19. The wires of
 40 one set pass through each other and lie in the same plane—wires 15 and 16, for instance—and these wires have their ends connected at 15^a and 16^a to the cross rods 19; such connections being separated, as clearly shown in the drawings.
 45 The wires of the other set and having an opposite twist are engaged with the first mentioned set in the same manner as the wires of the respective sets shown in Fig. 1, and after such engagement, the ends of the wires 17 and 18 are
 50 joined together as indicated at 17^a and 18^a.

It will be observed that the respective wires hinge on each other and on the cross rods in each form of fabric, and that in the case of the fabric shown in Fig. 1a, the wires of the connected units
 55 hinge on the cross rods; the fabric shown in Fig. 1 being slightly more flexible than that shown in Fig. 1a.

By reason of the fact that when the respective wires are disposed in the paired relation the bights of the coils are close together and the further fact that the wires of alternate pairs are permanently connected to the cross rods making up such units, there is in practice no contraction
 60 of the belt when in use; a condition that is due

to the truss relation of the pairs of wires connected to the cross rods associated therewith.

While I have shown fabric made up of unit sections comprising pairs of wires which pass through each other and lie in the same plane; pairs of wires of one twist alternating with pairs of wires of opposite twist, it is within the scope of my invention to provide unit sections of inter-
 5 connected wires made up of a plurality of pairs of wires of one twist alternately arranged with sections of interconnected wires made up of a plurality of pairs of wires of opposite twist, and to associate cross rods with pairs of wires of either or both twists, and with all of the pairs of wires or only with those employed to connect
 10 wires of opposite twist.

While I have shown specific embodiments of types of fabric within the scope of my invention, I do not wish to be limited to the constructions illustrated and modifications of the same em-
 15 bodying the same principle are deemed to be within the scope of the appended claims.

I claim:

1. A wire fabric composed of helically coiled wires arranged in pairs of right hand twist and left hand twist alternately disposed with the spirals of the wires of each pair passing through each other and lying in the same plane, and cross rods forming hinges connecting the respective pairs of wires of different twist throughout the length of the fabric and having their ends per-
 20 manently connected to the ends of pairs of wires of the same twist which pass through each other and lie in the same plane.

2. A wire fabric composed of helically coiled wires arranged in pairs of right hand twist and left hand twist alternately disposed with the spirals of the wires of each pair passing through each other and lying in the same plane, and cross rods connecting the respective pairs of wires of different twist and having their ends permanently connected to the ends of pairs of wires of the same twist which pass through each other and lie in the same plane; the alternate pairs of wires of the opposite twist having their ends terminating within the connections for the other pairs of wires and the cross rods.

3. A wire fabric composed of helically coiled wires arranged in pairs and of right hand twist and left hand twist in alternate disposition; the spirals of each pair of wires passing through each other and lying in the same plane, cross rods connecting the respective pairs of wires of different twist which pass through each other and lie in the same plane, and welded connections for the ends of the cross rods and individual pairs of wires of one twist engaged thereby.

4. A wire fabric composed of helically coiled wires arranged in pairs and of right hand twist and left hand twist in alternate disposition; the spirals of the wires of each pair passing through each other and lying in the same plane, cross rods connecting the respective pairs of wires of different twist which pass through each other and lie in the same plane, and welded connections for the ends of pairs of wires of one twist and the ends of the rods engaged thereby.

5. A wire fabric composed of helically coiled wires arranged in pairs with pairs of wires of right hand twist alternating with pairs of wires of left hand twist throughout the extent of the fabric; the spirals of each pair of wires passing through each other and lying in the same plane, cross rods connecting the respective pairs of wires, and welded connections between the

ends of pairs of wires of the same twist and the ends of said rods; the pairs of wires of opposite twist being unconnected and having their ends lying with the end connections of the other wires transversely of the fabric.

6. A wire fabric composed of helically coiled wires arranged in pairs with pairs of wires of right hand twist alternating with pairs of wires of left hand twist throughout the extent of the fabric; the spirals of each pair of wires passing through each other and lying in the same plane, cross rods connecting the respective pairs of wires, and welded connections between the ends of pairs of wires of the same twist which pass through each other and lie in the same plane and the ends of said rods; the pairs of wires of opposite twist having their ends lying within the connections of the other wires transversely of the fabric.

7. A wire fabric composed of helically coiled wires of right hand twist arranged in pairs alternating with helically coiled wires of left hand twist also arranged in pairs; the spirals of the wires of right hand twist passing through each other and the spirals of the wires of left hand twist passing through each other and all of said spirals lying in the same plane, cross rods connecting the wires of each pair, and welded connections between the ends of pairs of wires of the same twist which pass through each other and lie in the same plane and the ends of said cross rods; the ends of the pairs of wires of opposite twist lying within the connections of the other wires transversely of the fabric.

8. A wire fabric composed of helically coiled wires arranged in pairs with pairs of wires of right hand twist alternating with pairs of wires of left hand twist; the spirals of the wires of each pair passing through each other and lying in the same plane, cross rods connecting the wires of the respective pairs, welded connections between the ends of the paired wires of the same twist which pass through each other and lie in the same plane and the ends of said rods, and welded connections for the ends of the paired wires of opposite twist.

9. A wire fabric composed of helically coiled wires arranged in pairs with wires of right hand twist alternating with wires of left hand twist; the spirals of the wires of each pair passing through each other and lying in the same plane, cross rods connecting wires of the respective pairs, welded connections between the ends of said rods and the ends of the wires of one twist which pass through each other and lie in the same plane through which said rods pass; said connections being in separated relation, and welded connections for the ends of the paired wires of opposite twist.

10. A wire fabric composed of helically coiled wires arranged in pairs with wires of right hand twist alternating with wires of left hand twist; the spirals of the wires of each pair passing through each other and lying in the same plane, cross rods connecting wires of the respective pairs, welded connections between the ends of said rods and the ends of the wires of one twist which pass through each other and lie in the same plane through which said rods pass, and independent welded connections for the ends of the paired wires of opposite twist; the latter connections lying within the connections of the wires with the cross rod ends.

11. A wire fabric composed of helically coiled wires arranged in a plurality of sets of unit pairs

with pairs of wires of one twist alternating with pairs of wires of another twist; the spirals of the wires of each pair passing through each other and lying in the same plane, and sets of cross rods permanently connected to the wires which pass through each other and lie in the same plane making up one of said sets of unit pairs and hingedly connected to the wires of the other unit pairs.

12. A wire fabric composed of helically coiled wires arranged in a plurality of sets of unit pairs with pairs of wires of right hand twist alternating with pairs of wires of left hand twist; the spirals of the wires of each pair passing through each other and lying in the same plane, cross rods connecting the adjacent wires of each set which pass through each other and lie in the same plane, welded connections between the ends of said cross rods and the ends of pairs of wires of one twist, and welded connections for the ends of the other pairs of wires.

13. The method of making fabric of helically coiled wires, which comprises arranging said wires in pairs with their spirals passing through each other and lying in the same plane; alternating pairs of wires of right hand twist with pairs of wires of left hand twist; assembling the respective wires of different twist in connected relation by cross rods extending longitudinally of the same, and connecting the ends of pairs of wires of one twist which pass through each other and lie in the same plane with the ends of said cross rods.

14. The method of making fabric of helically coiled wires, which comprises arranging said wires in pairs with the spirals of each pair passing through each other and lying in the same plane; alternating pairs of helically coiled wires of one twist with helically coiled wires of opposite twist; assembling the respective pairs of wires of different twist in connected relation by cross rods extending longitudinally of the same, and connecting the ends of said cross rods to the ends of wires of one twist which pass through each other and lie in the same plane in separated relation.

15. The method of making fabric of helically coiled wires, which comprises arranging said wires in pairs with the spirals of the wires of each pair passing through each other and lying in the same plane; alternating pairs of wires of one twist with pairs of wires of another twist; assembling the pairs of wires of different twist in connected relation by cross rods extending longitudinally of the coils of the same; welding the ends of said cross rods to the ends of paired wires of the same twist which pass through each other and lie in the same plane, and welding together the ends of the wires of the alternating pairs.

16. The method of making fabric of helically coiled wires, which comprises arranging said wires in sets of pairs with the spirals of the wires of each pair passing through each other and lying in the same plane; alternating pairs of helically coiled wires of right hand twist with pairs of helically coiled wires of left hand twist; assembling the sets of paired wires of different twist in connected relation by cross rods extending longitudinally of the coils of the same in engagement with adjacent wires of the respective sets; welding the ends of pairs of wires of one twist with the ends of the cross rods in separated relation, and independently welding the ends of the alternate pairs of wires.

17. A wire fabric composed of helically coiled

wires arranged in a plurality of unit sets; the spirals of the wires of each unit passing through each other and lying in the same plane, and pairs of cross rods engaging the opposite bights of the

5 wires of alternate unit sets and permanently connected to the ends of the same; the wires of directly adjacent units being in looped engagement with said cross rods.

- 10 18. A wire fabric composed of helically coiled wires arranged in a plurality of sets of unit pairs; the spirals of the wires of each pair passing through each other and lying in the same plane, and cross rods connected to each alternate unit pair of wires and welded to the ends of the same;

the wires of directly adjacent unit pairs being in looped engagement with said cross rods.

19. A wire fabric composed of helically coiled wires arranged in a plurality of sets of unit pairs; the spirals of the wires of each pair passing through each other and lying in the same plane, and cross rods connected to each alternate unit pair of wires and welded to the ends of the same; the wires of directly adjacent unit pairs being in looped engagement with said cross rods and having their ends permanently connected together independently of the cross rods.
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