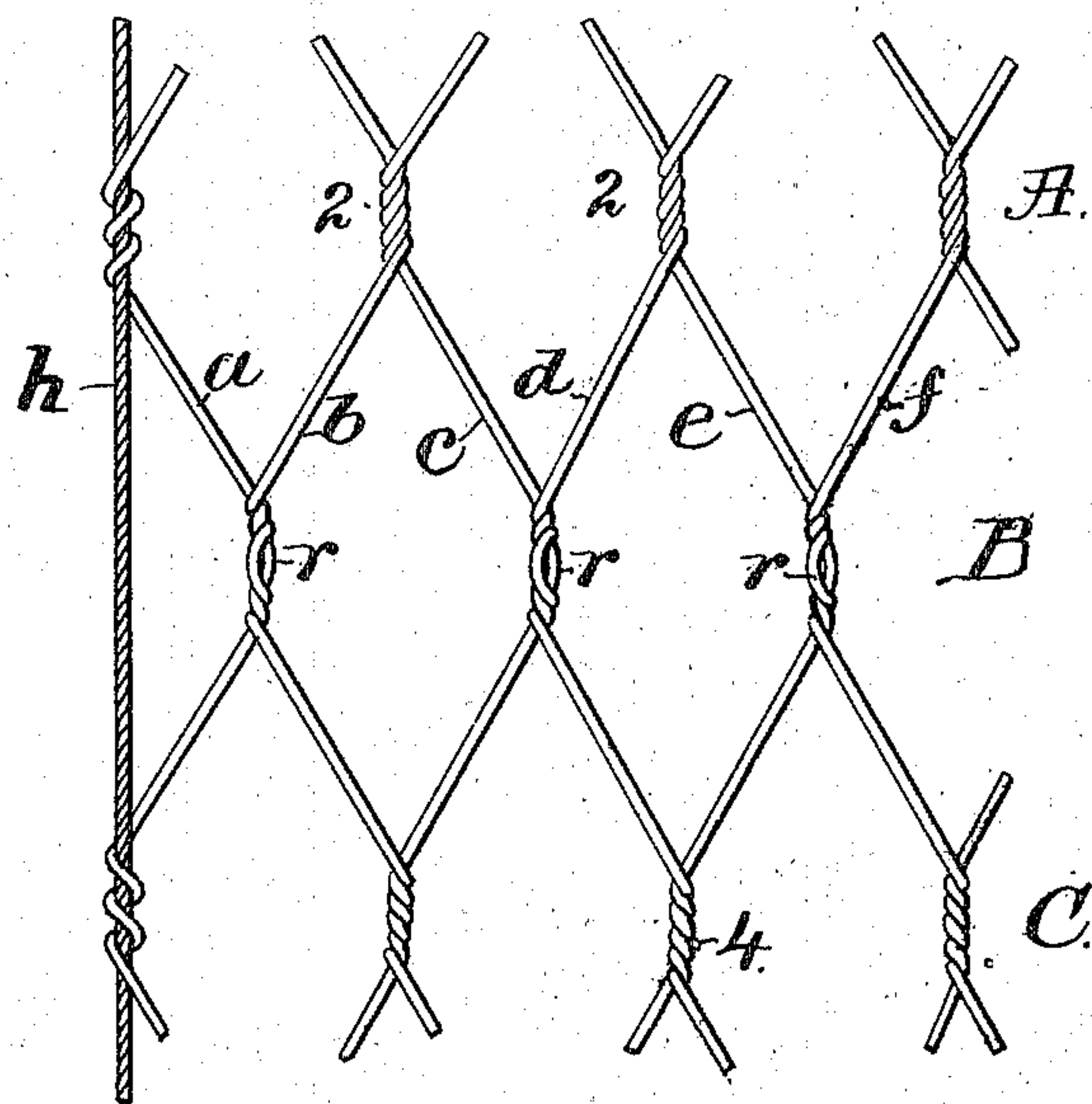


(No Model.)

H. K. SWINSCOE.
WIRE NETTING.

No. 573,370.

Patented Dec. 15, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY K. SWINSCOE, OF CLINTON, MASSACHUSETTS.

WIRE-NETTING.

SPECIFICATION forming part of Letters Patent No. 573,370, dated December 15, 1896.

Application filed October 17, 1892. Serial No. 449,106. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY K. SWINSCOE, of Clinton, county of Worcester, State of Massachusetts, have invented an Improvement in Wire-Netting and Methods of Manufacturing the Same, of which the following description, in connection with the accompanying drawing, is a specification, like letters and figures on the drawing representing like parts.

This invention has for its object the production of a novel wire-netting which may be rapidly and economically made and yet have wires so twisted together as not to untwist when subjected to strain.

Heretofore it has been customary in hexagonal netting to form all the joints by direct twists, and in making such netting it is necessary that one half the number of wires be wound in cop form while the other half of the wires are taken from spools. These cops, containing but a limited amount of wire, are incased in tubes, and as the wire is withdrawn from the interior of the cops the tension necessarily varies, while the tension on the wire coming from the spools is uniform. This lack of uniformity in tension has a tendency to distort the meshes, and the winding of the wires into cop form and the necessary stopping of the machine for renewal of cop-wire, together with the heavy machinery required for rotating the cop carriers or tubes and the inclosed cops, add very materially to the cost of the netting. So, also, prior to my invention it has been customary to make hexagonal netting from wire by connecting adjacent wires alternately to the right and left by reverse twists, but for some uses, under great strains, reverse twist-joints are not as desirable, nor obviously are they as substantial as direct twists, yet the netting having reverse twists, as stated, may be more cheaply made than the direct twists, for in the reverse-twist netting all the wires may be taken directly from spools and be used in longer lengths.

In my experiments to cheapen the production of netting as compared with methods now known to me and yet produce a novel netting having greater strength than wholly reverse netting I have devised a netting containing both direct and reverse twists, and I have devised a method of producing the same from continuous wires, my improved

method enabling me to interpose a reverse twist after a direct twist, or a series of twists composed in whole or in part of direct twists, and thereafter I may repeat the previous twist or series of twists in backward or opposite order, the direct twists having right and left hand correspondence, as may be necessary to avoid snarling of the wires.

In accordance with my method of making netting with continuous wires the twist put into said wires during the formation of meshes preceding a reverse twist may be taken out in the production of meshes following the formation of the reverse twist.

My improved netting presents continuous wires joined to the right and left by not only direct but also by reverse twists, and the direct and the reverse twists may follow each other in any desired order, having regard only to the formation of a reverse twist or twists between twists which have a right and left hand correspondence. The introduction of these reverse twists enables the long loose twists then in the wires to be taken out, and consequently the wires may be continuous.

The drawing shows a piece of wire-netting embodying my invention in one simple form, the reverse twist being preceded and followed by but a single direct twist.

Referring to the drawing, it shows a series of wires *a b c d e f*, all of which will come from spools, bobbins, or equivalent bundles or sources adapted to contain and supply wire of substantially indefinite length. These wires, arranged parallel to each other, are twisted together, as shown, in the form in which I have herein chosen to illustrate my invention, in the following manner, *i. e.*, in the transverse row A of meshes the adjacent wires are twisted by direct twists, as 2, but in the next transverse row B of twists the wires are carried from the row A to the right and left and are united by reverse twists 7, while the next or third row C of twists are direct twists 4; but these twists of the row C instead of being right-hand twists are left-hand twists, as 4, or twists just the reverse of the twists 2 in the row A, or, in other words, the twists in the rows A and C, separated by the row of reverse twists B, have right and left hand correspondence. In this way I am enabled to produce a wire-netting showing transverse rows of direct twists and reverse twists. By twisting the wires in this

manner it will be obvious that the wire may be of substantially indefinite length, and if this twisting is to be done by machinery the said wires may be run through holes in usual twisting-segments and the said segments be rotated in one direction to form a row of direct twists A, and then the fabric will be fed and the segments be shifted and the row B of twists may be made by twisting the wires in one direction for part of the twist, then gripping the partially-formed mesh, and twisting the wire in the opposite direction by reversing the movement of the segments. Then the fabric may be again fed and the segments shifted into their original position and be rotated to form the row C of twists in a direction opposite to that of the twists in the row A. In this manner it will be seen in the formation of the particular netting shown that in the production of each third row of twists, as C, the long loose opposite twists previously put into the wire below the twisting devices in the formation of the row A are all taken out, and hence in the formation of my improved netting it is not necessary to revolve the source of supply of one wire about the other wire as when all the meshes are direct twists.

By the term "direct twists" I mean a twist formed by rotating the wire continuously in one direction throughout the twist, and by the term "reverse twist" a twist in which the wires are rotated in one and then in a reverse direction in the formation of a single twist. Reverse-twist netting, while it may be made more cheaply than direct-twist netting, is, however, objectionable, because of its weakness and of its liability to untwist under strain, as, for instance, the net at or near the junction of the wires *c* and *d* might be subjected to strain sufficient to cause them to be untwisted at *r* without breaking the wire, and if the twists in the next transverse row of twists were also reverse twists the continued application of strain might effect the parting of the netting for an indefinite distance and leave a large hole; but by interspersing direct twists with the reverse twists, as herein provided for, it becomes practically impossible to part the netting for any distance without breaking the wire. In other words, the interposition of the direct twists adds to the security of the reverse twists, and the introduction of the two kinds of twists at established intervals into one and the same fabric makes not only a better fabric, but, as stated, a cheaper fabric.

In the drawing I have shown in one longitudinal row of direct twists a selvage-wire *h*, and it will be understood that these selvage-wires may be introduced in any longitudinal row of twists in the usual manner; and in my invention as herein embodied it will be understood that it is possible to make netting from wires of indefinite length by interposing a reverse twist between two direct

twists, one of which is twisted in an opposite direction to the other, and it is evident that I may unite wires by a series of direct twists, interpose a reverse twist, and then make another series of direct twists, each one of which shall be in the opposite direction to the twist of the first series equally distant from the reverse twist. In other words, the second series repeats the first series in backward order and opposite direction.

In my method it is not essential that each transverse row of twists should be of only one kind of twist, for the twists may be combined in one transverse row in any desired way, *i. e.*, they may alternate direct and reverse, or the direct twists may not be all in the same direction.

By practicing the broad principle of my invention—which is that any series of twists of any description may be used in netting made from practically continuous wires by interposing a reverse twist and then repeating the series in backward order, making each twist in the opposite direction from its corresponding twist in the first series—it is obvious that any desired combination of twists may be used. All of these combinations possess the advantages of the simple form of netting shown in the drawing and can be made with equal rapidity and from continuous wires.

From the foregoing description it will be obvious that my invention is not limited to the production of a netting having its direct and reverse twists distributed in the particular order shown.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described wire-netting composed of a series of continuous wires joined together in the length of the netting by direct and reverse twists.

2. The described wire-netting composed of a series of substantially continuous wires each of which is united to the wire on one side of it by a reverse twist and to the wire on the other side of it by a direct twist, the netting thus presenting transverse rows of reverse twists and transverse rows of direct twists, substantially as described.

3. The described wire-netting composed of a series of wires, united one to another by transverse rows or series of direct twists, some twisted to the right and others to the left, and transverse rows or series of reverse twists, the right and left direct twists following each other in predetermined order, for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY K. SWINSCOE.

Witnesses:

GEO. W. GREGORY,
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