N. GREENING.

WIRE FABRIC.

APPLICATION FILED MAY 27, 1911.

1,036,997.

Patented Aug. 27, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

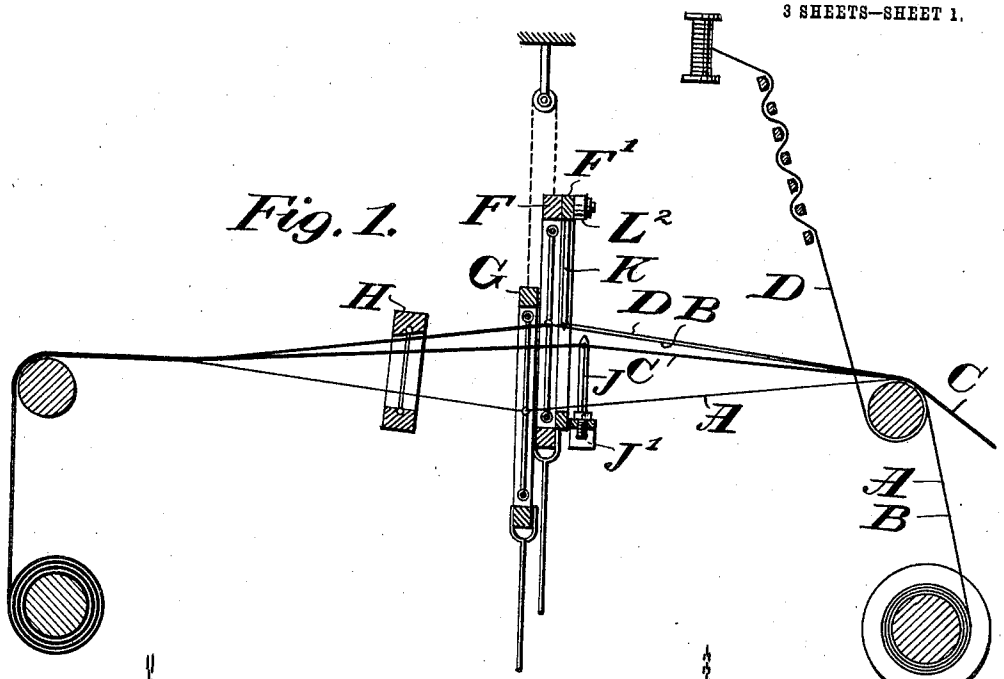
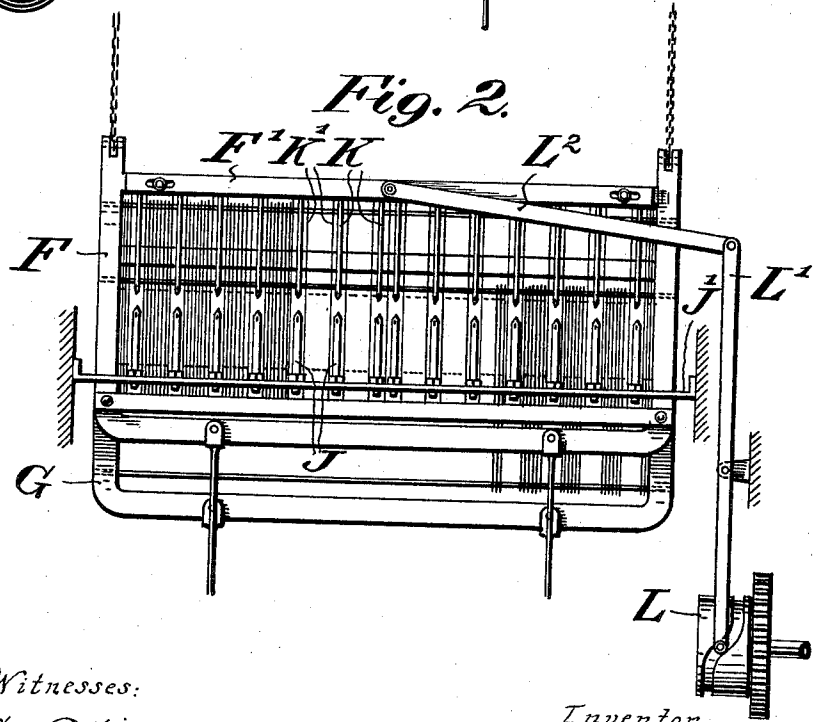


Fig. 2.



Witnesses:

Chas. P. Hidden

Walas M. Chapin

Inventor

Nathaniel Greening

by his attorneys,

Rosenbaum & Stockbridge

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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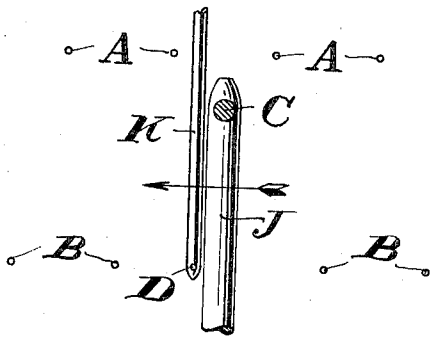

Fig. 3.

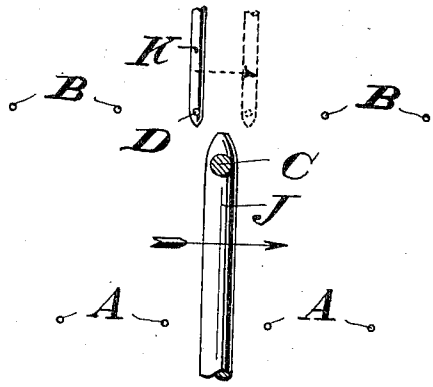

Fig. 4.

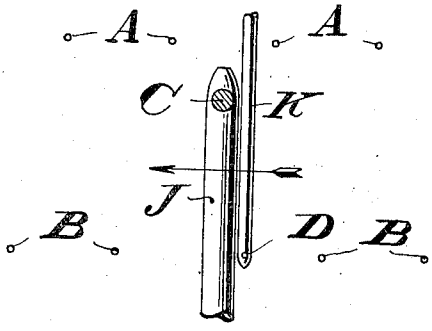

Fig. 5.

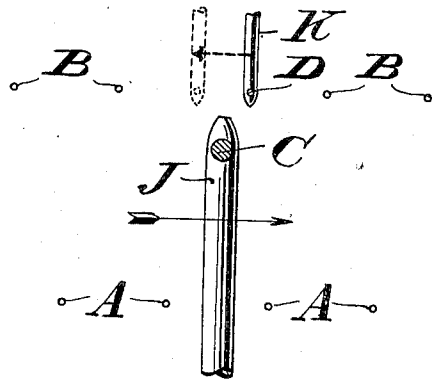

Fig. 6.

Witnesses:
Chas. P. Hidden
Waldo M. Chapin

Inventor
Nathaniel Greening
by his attorneys.
Rosenbaum & Stockbridge

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

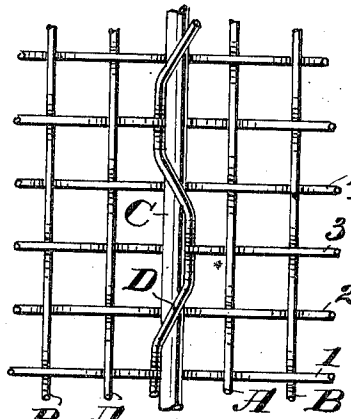

Fig. 7.

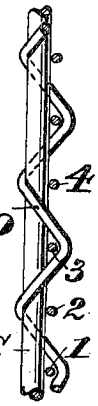

Fig. 8.

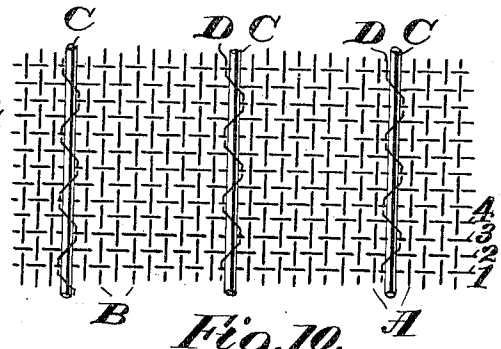

Fig. 10.

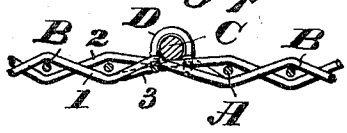

Fig. 9.

Witnesses:
Chas. P. Hidden
Walas M Chapin

Inventor
Nathaniel Greening
by his attorneys
Rosenbaum & Stockbridge

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

NATHANIEL GREENING, OF WARRINGTON, ENGLAND.

WIRE FABRIC.

1,036,997. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed May 27, 1911. Serial No. 629,852.

To all whom it may concern:

Be it known that I, NATHANIEL GREENING, a subject of the King of Great Britain and Ireland, and a resident of Warrington, in the county of Lancaster, England, have invented new and useful Improvements in Wire Fabrics, of which the following is a specification.

This invention relates to a new wire fabric which is produced by weaving or a process analogous to weaving.

The new fabric has disposed on its surface a number of straight or inextensible wires parallel to each other at convenient distances apart. These inextensible wires are not contained or inclosed between different picks or shoots of the weft or equivalent but are bound in place by certain wires which are disposed and operated in the manner of warp wires. The inextensible wires (which I will for convenience term girder wires) are of stiffer and more rigid material than the wires of the body of the fabric or than the wires by which they are bound in place so that they are not distorted or corrugated by such binding in wires and retain their straight and inextensible form. The new fabric is in effect the same as if the fabric had been woven in the ordinary manner and had then had straight wires laid on one face and secured or bound thereon without any distortion or corrugation of the straight wires or of the opposite face of the fabric.

The accompanying drawings illustrate different modes of preparing the new fabric and the fabric itself.

Figures 1 and 2 are views of the shedding and accessory parts of the loom in which an ordinary wire screening cloth is produced with the new girder wires bound on to it; Figs. 3, 4, 5 and 6 give details of the motion of the binding in wire to bind a girder wire on the face of the cloth; Fig. 7 is a plan view of part of such cloth drawn to a large scale; Fig. 8 is a section of this cloth parallel to a girder wire; Fig. 9 is a section of the cloth cut across a girder wire; Fig. 10 is a plan of a larger piece of fabric than that shown in Fig. 7 but drawn to a smaller scale.

In all these figures A and B indicate the warp wires disposed in different healds; 1, 2, 3 and 4 indicate the weft wires to complete a round, C indicates the girder wires, and D binding wires.

Referring to the drawings the ordinary warp wires A and B from the beam E are passed and threaded through the two shafts of healds F and G. These shafts of healds move up and down to shed the warps A and B as is usual in a loom, and the customary appliances cause a shoot or pick of weft wire to cross through the shed each time it is opened, such pick or shoot being then beaten up into the fabric by the reed H in the usual manner. Passing through the healds but not threaded therein are a suitable number of girder wires C from a separate beam or separate bobbins. These girder wires pass through eyes in the upper ends of needles or fingers J fixed upon the stationary bar J^1 and are laid parallel to the warp wires on the upper surface of the cloth to which they are bound. The girder wires have no motion up and down with the healds and simply slide forward through their needle eyes as the cloth on which they are being bound is wound up. The heald shaft F by which the warps B are moved up and down also carries from the top rail a number of downwardly projecting fingers K corresponding in number to the needles J and having eyes at their lower ends through which the binding wires D from separate bobbins are threaded.

The needles K are carried by a rail F^1 which is so secured to the top rail of the heald shaft F as to move up and down with it but so, also, as to be capable of slight lateral movement along it under the action of the cam L and lever and link L^1 and L^2. The binding wires D are not otherwise connected with the heald F than by the needles K. They shed up and down with the warps B but are capable of having an independent lateral motion as now to be explained. Each needle is guarded by stiff wires K^1 disposed on each side of it to prevent it being bent by coming into contact with ordinary warps during its lateral movement. Assume the heald F to be at the bottom of its stroke and the warps B, binding wire D, girder wire C and needle K to be in the position shown in Fig. 3. A pick or shoot of weft now takes place in the position and direction shown by the arrow and as indicated by weft 1 in Fig. 7. The warps B and binding

wires D now ascend to the position shown in Fig. 4, the needles K rising to the position shown in full lines, and the warps A descend. Another pick or shoot now takes place in the direction and position of the arrow in Fig. 4 and as indicated by the pick 2 in Fig. 7. The cloth, of course, including the girder wire has been wound up to the required extent to permit this shoot to follow the first. The needle K is carried to the position indicated in dotted lines in Fig. 4. The warps A now ascend and the warps B and binding wire D descend to the position shown in Fig. 5. Another pick or shoot now takes place in the direction and position of the arrow, Fig. 5, and as indicated by pick 3 in Fig. 7. From Figs. 5 and 7 it will be seen that the binding wire is now down and passes under a weft shoot on the other side of the girder wire C to Fig. 3 and pick 1, and crosses the girder wire. The warps B and the binding wire D now rise and the warps A descend, as shown in Fig. 6, the needles K taking up the position shown in full lines in that figure. Another shoot of weft now takes place in the position and direction of the arrow and as indicated by the pick 4 in Fig. 7. At the same time the cam L operates to move the needle K to the position shown in dotted lines, in which position it is ready to again descend as in Fig. 3 and the operations are repeated.

Fig. 7 clearly shows how the binding wire D crosses a girder wire and is bound under alternate picks of weft on opposite sides of the girder wire. How such a girder wire is bound on the face of the fabric only and is not inclosed between weft wires is clearly shown in Figs. 8 and 9. In Fig. 8 the ordinary warp wires are not shown so as to illustrate with greater clearness the rest of the wires.

A fabric formed as herein described has many uses. If used as a screen the material to be screened or sieved is fed to the surface on which the girder wires are not laid. The tension on the binding wires D is preferably sufficient to sink them slightly below the working surface of such screen. For other uses as for example in reinforced concrete, the fabric may be of widely open nature. After being combined with the fabric the girder wires may be additionally secured in place as for example by being electrically welded to their binding or shoot wires.

Although the girder wires are herein described as straight and inextensible such terms are not to be considered as absolute in sense. Included in the invention are girder wires which are practically inextensible in the ordinary use to which the fabric is put.

What I claim as my invention is:

A meshed wire fabric having ordinary woven and intersecting warp and weft wires to form the meshes, straight and inextensible girder wires laid warpwise on one face of such fabric at convenient distances apart, and warpwise binding wires interwoven with the girder wires and the weft wires, substantially as set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

N. GREENING.

Witnesses:
JOHN O'CONNELL,
LLEWELLYN THOMAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."