(No Model.) 3 Sheets—Sheet 1.

G. F. WRIGHT.

WIRE NETTING MACHINE.

No. 561,303. Patented June 2, 1896.

Fig. 1.

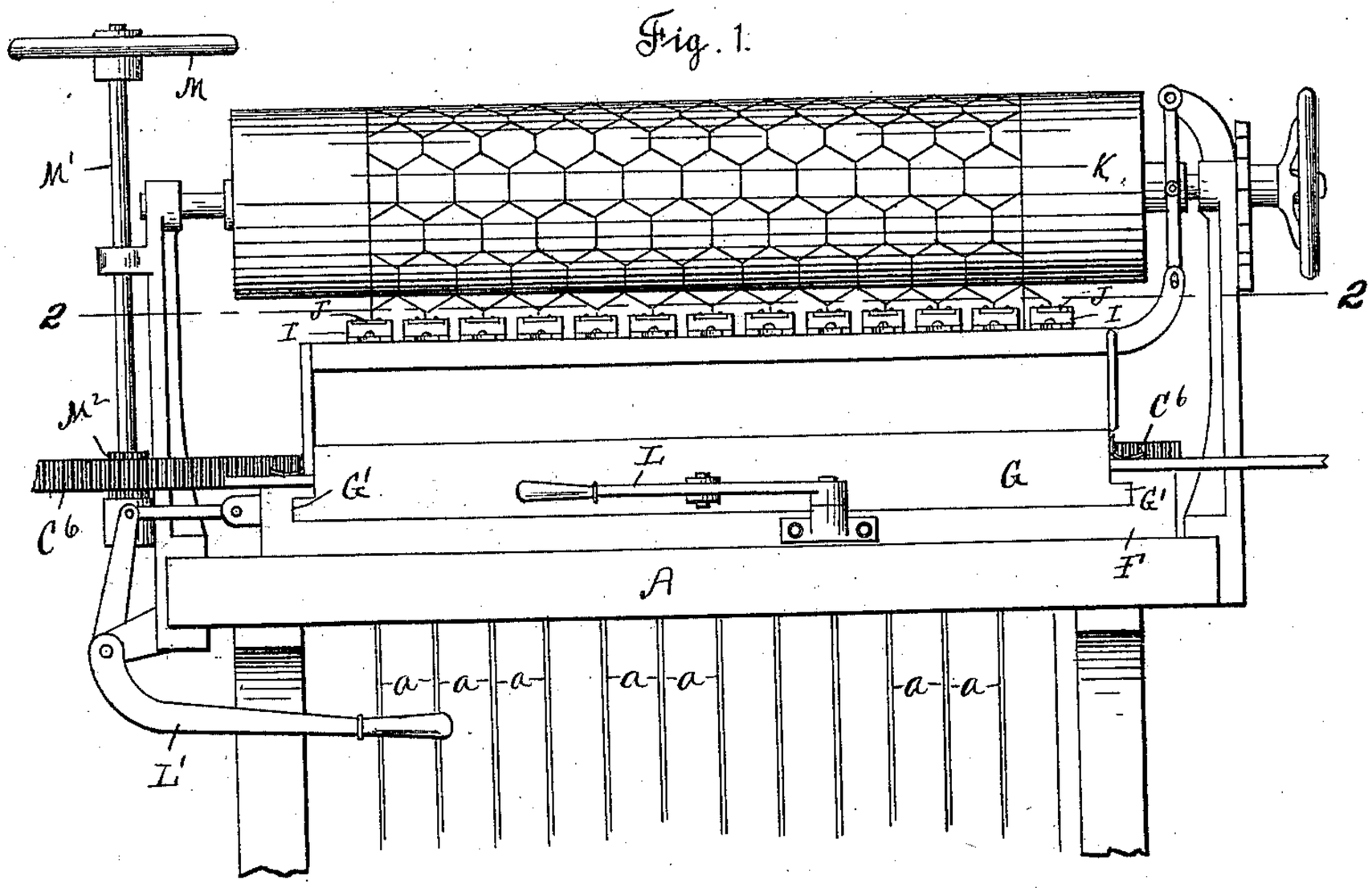
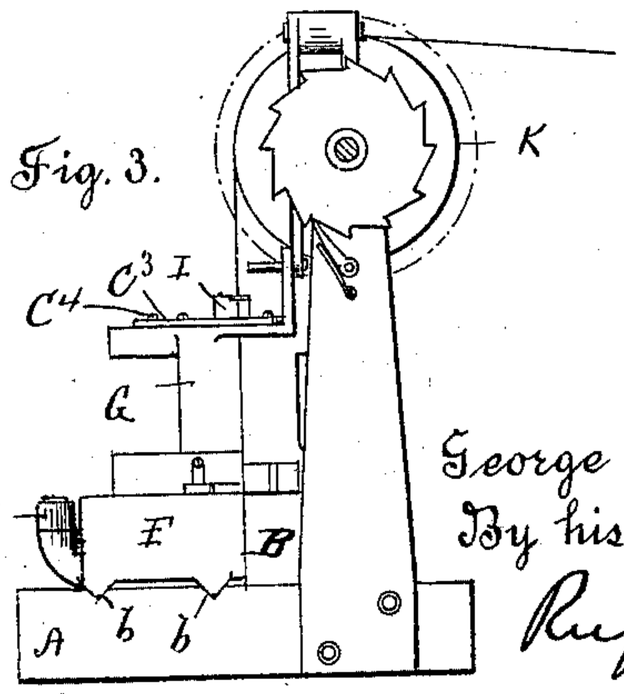


Fig. 2.

Fig. 3.



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G. F. WRIGHT.

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Fig. 4.

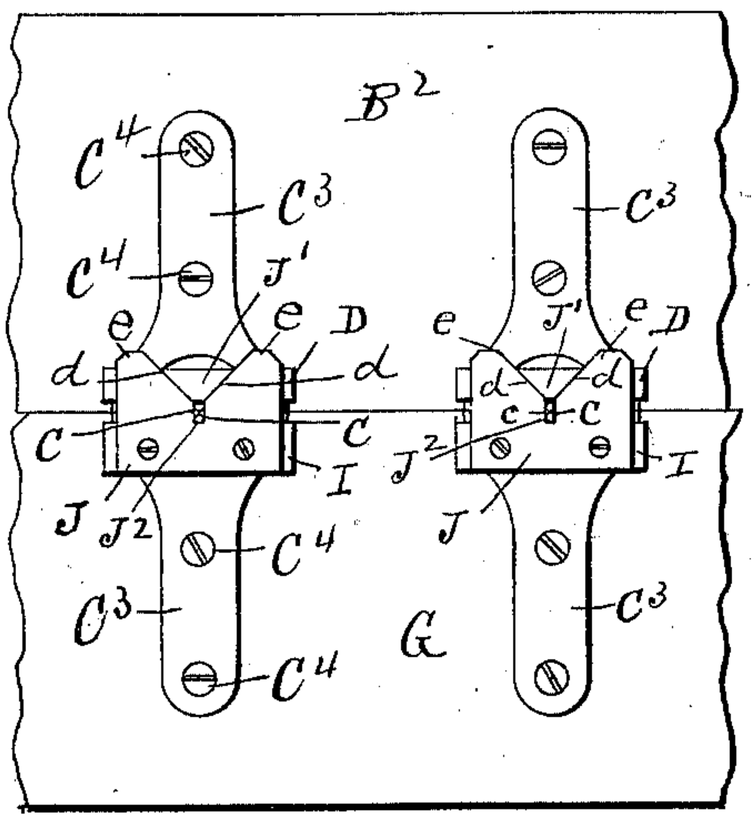
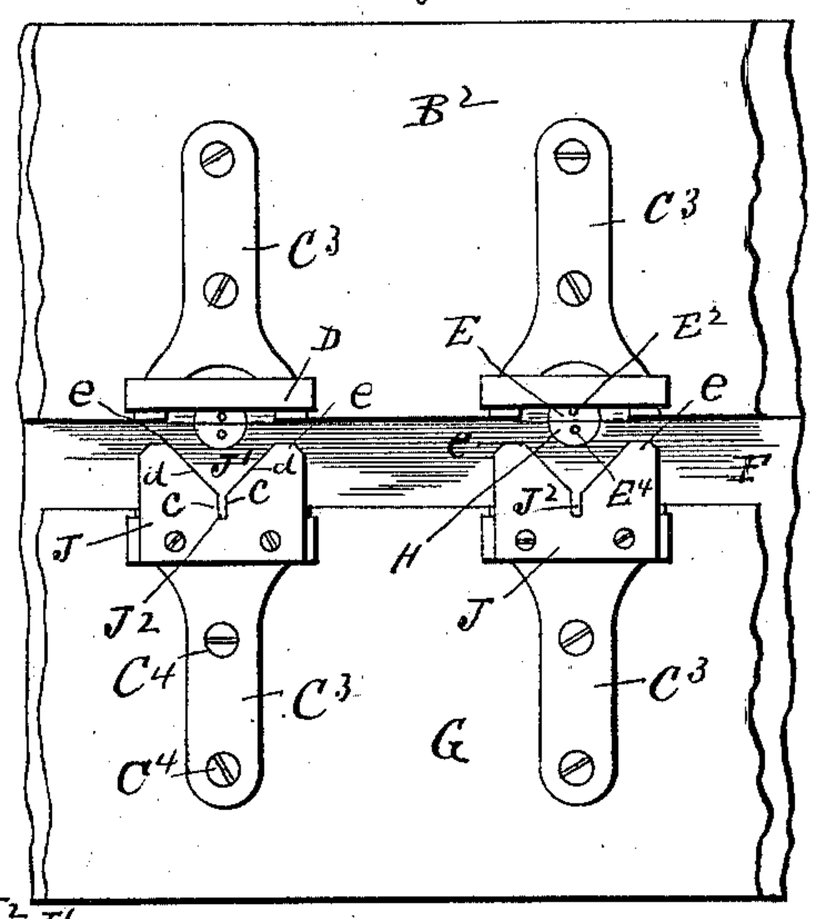


Fig. 5.



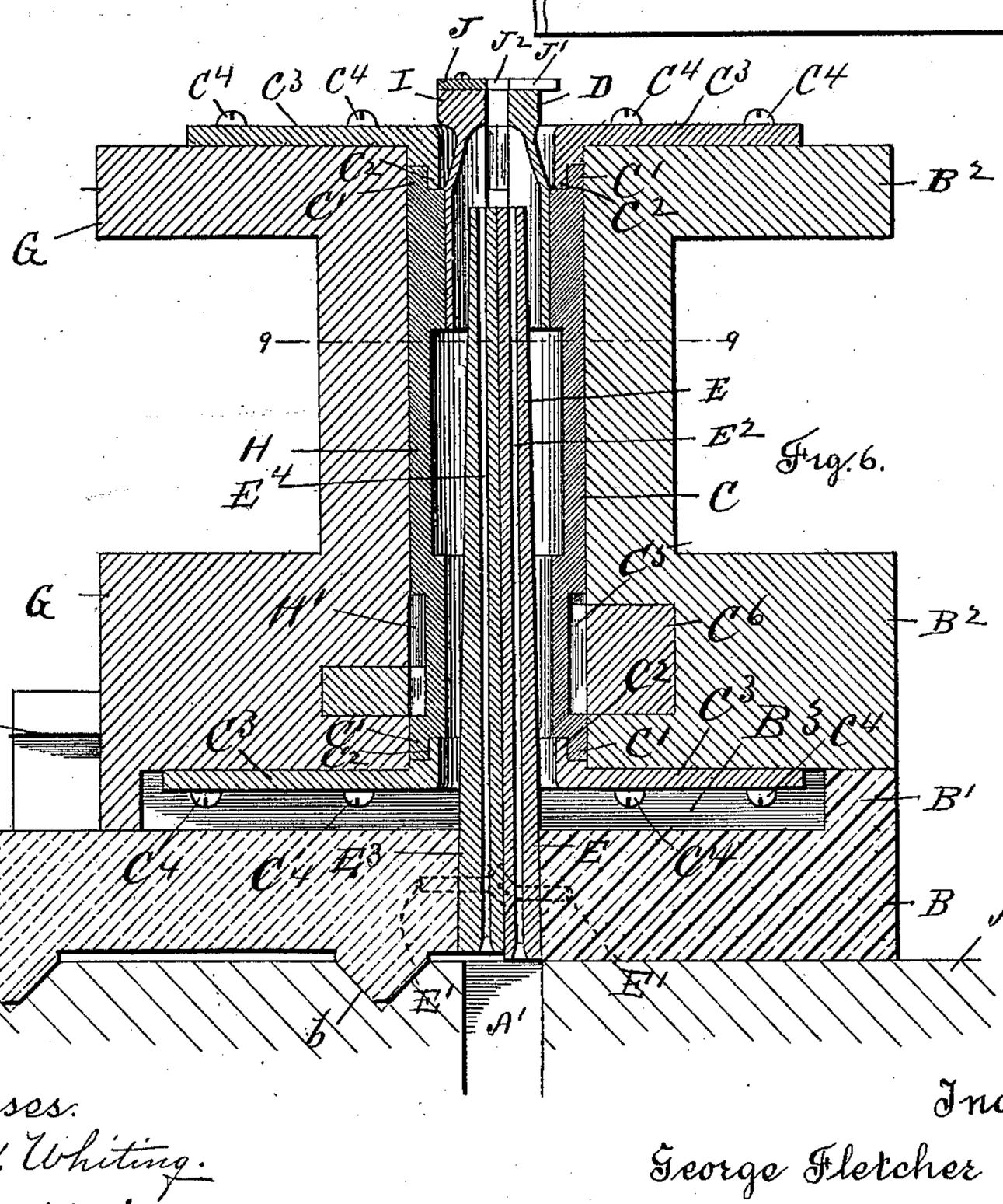


Fig. 6.

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(No Model.) 3 Sheets—Sheet 3.

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WIRE NETTING MACHINE.

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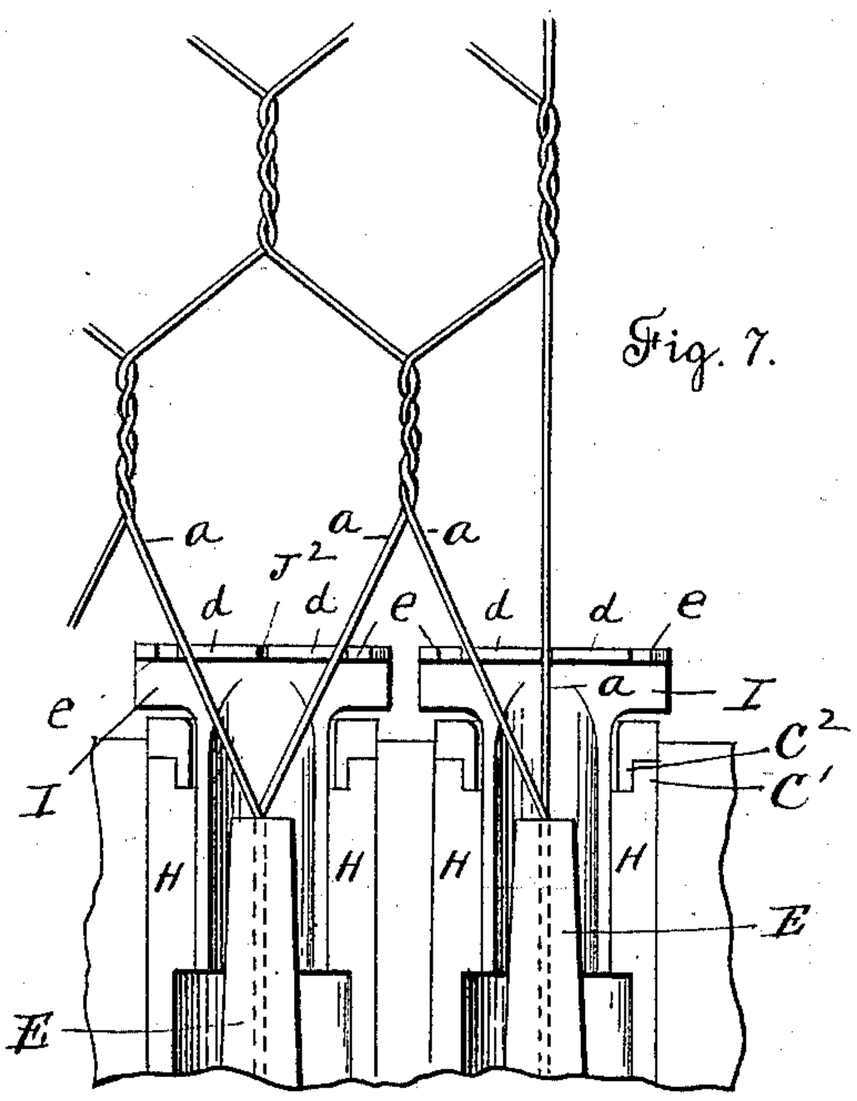

Fig. 7.

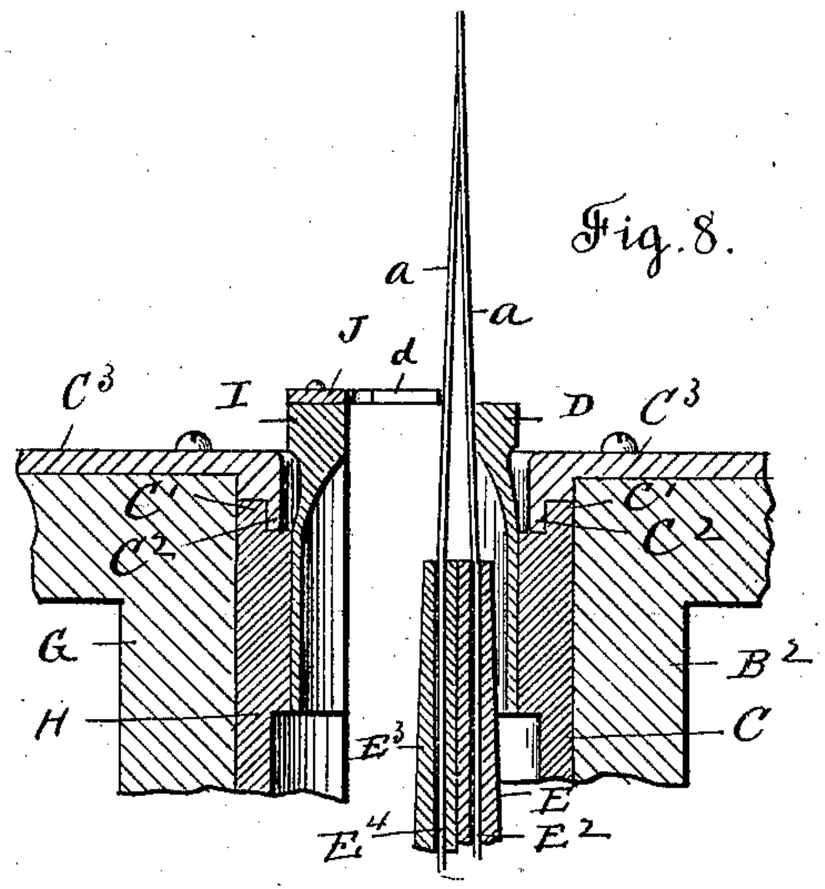

Fig. 8.

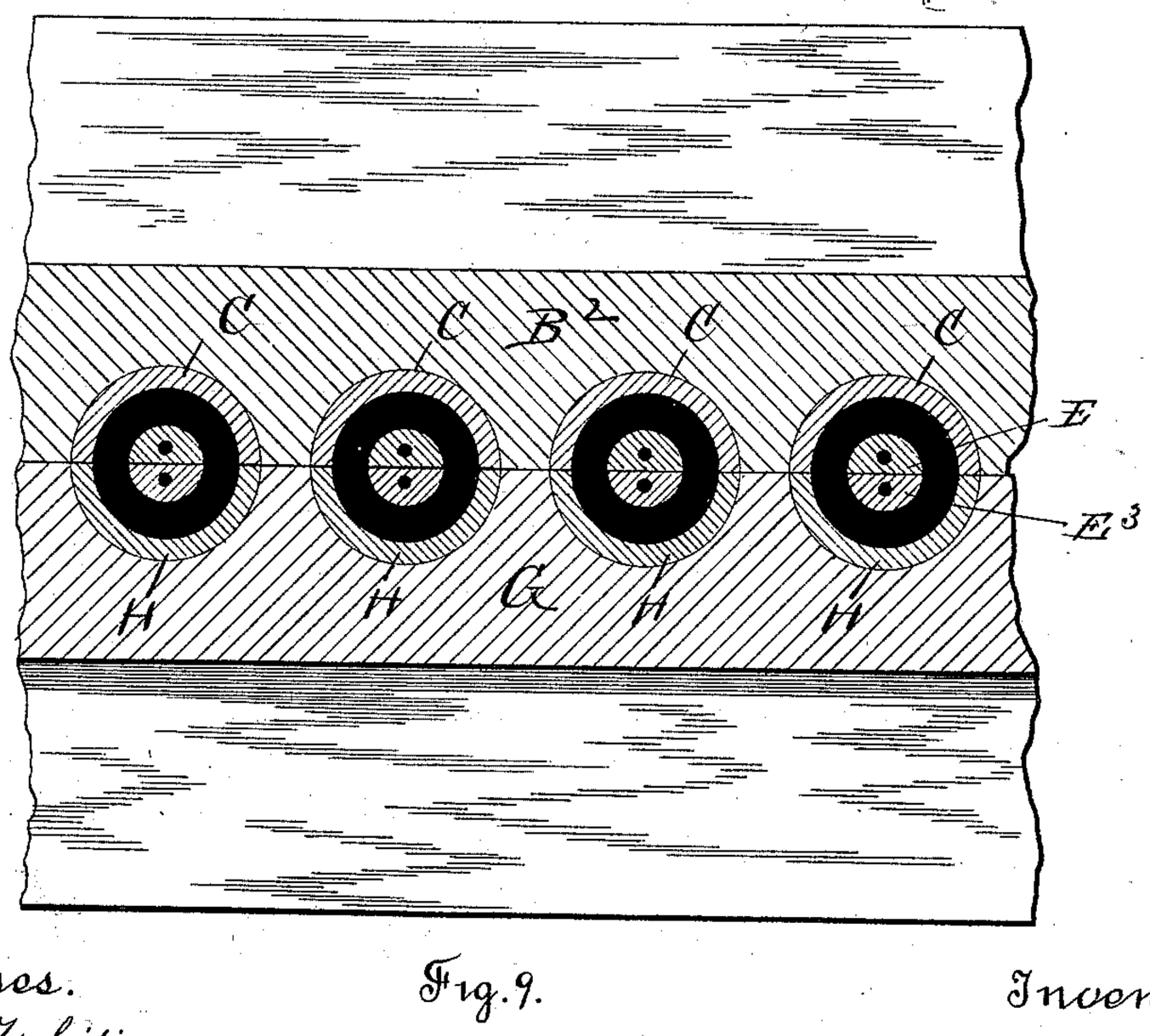

Fig. 9.

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UNITED STATES PATENT OFFICE.

GEORGE FLETCHER WRIGHT, OF WORCESTER, MASSACHUSETTS.

WIRE-NETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,303, dated June 2, 1896.

Application filed February 19, 1892. Serial No. 422,132. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FLETCHER WRIGHT, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Wire-Netting Machines, of which the following is a specification, accompanied by drawings representing a machine for making wire-netting and embodying my invention, and in which—

Figure 1 represents a front view of so much of the machine as comprises the operative mechanism by which the meshes of the netting are formed. Fig. 2 is a top view of the same with the take-up roll removed, the section being taken on line 2 2, Fig. 1. Fig. 3 is an end view of the same. Fig. 4 is a top view of two pairs of wire-holding jaws shown in position during the operation of twisting the wires. Fig. 5 is a top view of the same with the jaws withdrawn, showing their position while the jaw-supporting carriages are being shifted. Fig. 6 is an enlarged central vertical sectional view on line 6 6, Fig. 2. Fig. 7 represents two of the wire-jaws in front view, the corresponding and opposing jaws having been removed, and also showing the position of the wires with reference to the wire-jaws at the beginning of the twisting operation. Fig. 8 is a sectional view of the wire-jaws and the upper ends of the stationary wire-tube, said jaws being shown as separated or in their position while the wire-carriages are being shifted. Fig. 9 is a sectional view on line 9 9, Fig. 6.

Similar letters refer to similar parts in the different figures.

My invention relates to certain improvements in machines for making wire-netting, and particularly to that class of wire-netting machines in which the wires are twisted together in opposite directions, making one half of each twist a right-hand twist and the other half a left-hand twist.

The object of my present invention is to provide means whereby the wires to be twisted may be gathered together and twisted above and below the wire-holding jaws without producing a lateral strain upon the wire-twisting mechanism and without requiring the use of a twisting-pin inserted between the wires.

My present invention relates to the construction and operation of the jaw by which the wires are seized and twisted together, and it is applicable to those netting-machines in which the meshes are formed by twisting together the wires by a right and left hand twist.

In the accompanying drawings I have represented so much of a machine for making wire-netting as will clearly set forth the nature and operation of my present improvement.

A denotes the supporting-table, having a central opening A′, Fig. 6, through which the wires *a* are conducted to the twisting mechanism from spools or bobbins beneath the table, but not shown in the drawings.

Held in a fixed position upon the table A is a plate B, provided upon its ends and rear side with a flange B′, on which is supported a flanged frame B^2, forming a chamber B^3 between the frame B^2 and plate B. The flanged frame B^2 is provided with a series of semicircular recesses in which are journaled a series of half-cylinders C, (shown in transverse sectional view in Fig. 9,) and provided at their upper and lower ends by flanges C′, which are inclosed by the semicircular flanges C^2 of the cylinder-holder C^3, attached by screws C^4 to the flanged frame B^2.

The half-cylinder C is provided with gear-teeth C^5, which are engaged by a rack C^6, capable of a sliding movement within the frame B^2, and to the upper portion of the half-cylinder C is attached a wire-holding jaw D.

A wire-tube E (shown in central sectional view in Fig. 6) is attached to the fixed plate B by means of screws, one of which is indicated by the broken lines E′, Fig. 6. The wire-tube E extends upwardly nearly the entire length of the half-cylinder C and is provided with a central hole E^2, through which passes one of the wires to be twisted.

Sliding upon ways *b b* upon the bed A is a plate F, to one edge of which are attached the wire-tubes E^3 similar to the wire-tubes E.

G denotes a flanged frame, capable of sliding in ways G′ transversely to the plate F, and provided with a series of semicircular recesses, in which are journaled the half-cylinders H, provided with gear-teeth H′ similar to the half-cylinder C, so that when the frames

G and B^2 are brought together and their semicircular recesses made to correspond, the half-cylinders C and H will be matched together, forming a series of cylinders journaled within the flanged frames B^2 and G and capable of being rotated around the wire-tubes E and E^3 by means of the longitudinal movement of the rack C^6, engaging the teeth C^5 and H'.

The half-cylinder H has a wire-holding jaw I attached to its upper end, similar to the wire-holding jaw D, attached to the half-cylinder C, and upon the upper surface of the wire-holding jaw I is attached a plate J, having a triangular notch J', at the apex of which is a narrow recess J^2, the distance between the opposite sides *c c* being equal to the diameter of the wires *a a* to be twisted and its depth being equal to twice the diameter of the wires. The wires *a a* are carried through the holes in the wire-tubes E and E^3 and their upper ends attached to a take-up roll K. The flanged frame G is then moved toward the flanged frame B^2, carrying the half-cylinder C, the flanged frame G being moved by means of the hand-lever L from the position shown in Figs. 5 and 8 to the position shown in Figs. 4 and 6. As the jaw I is carried toward the jaw D the plate J slides over the top of the jaw D, the inclined sides *d d* of the triangular notch J' drawing the wires along the edge of the jaw D toward the center and causing them to enter the recess J^2 as the jaws I and D approach each other. When the half-cylinders C and H have their flat sides brought into contact, the distance between the jaws I and D is equal to twice the diameter of the wires or the depth of the recess J^2, causing the wires to be held within the recess J^2 and to be twisted by the rotation of the half-cylinders C and H. The flanged frame G is then moved away from the flanged frame B^2, separating the jaws I and D, releasing the twisted wires from the recess J^2, and also from the triangular notch J' and permitting the sliding plate F to be moved along the ways *b b* by means of the lever-handle L', shifting the half-cylinders H and wire-tubes E^3, so the wires held in each of the wire-tubes E^3 will be twisted at the next operation with the wire in the next adjacent fixed tube. The frame G is then moved toward the frame B^2 by the hand-lever L and the cylinders again rotated, as already described, by the longitudinal movement of the driving-rack C^6, actuated by the hand-wheel M, shaft M', and pinion M^2, the take-up roll K being rotated at every operation of twisting far enough to take up the completed row of meshes and draw off a new supply of wire from the wire-spools.

During the operation of twisting, each pair of wires to be twisted together are held between the opposing faces of the jaws I and D and inclosed within the recess J^2 in the plate J, which is attached to the upper surface of the jaw I, and as the distance between the opposite sides *c c* of the recess J^2 equals the diameter of the wires the two wires to be twisted will be held side by side and rotated by the rotation of the plate J as it is carried by the rotating jaw I. That portion of the wires *a a* inclosed in the recess J^2 will thus be held from twisting, causing the wires above and below the plate J to be twisted together by the rotation of the plate J, the twist above and below the plate being in opposite directions.

The above-described mechanism, consisting of the rotating twisting-cylinders having the movements herein described through connected actuating mechanism and rotating about the fixed wire-tubes E and E^3, forms no part of my present invention, mechanism substantially the same in its essential features being common in wire-netting machinery.

I do not claim as my invention the method of twisting the wires in wire-netting by a right and left hand twist, as such has heretofore been done, but by the methods heretofore employed the wires to be twisted have either been seized by the faces of the jaws I and D and held from rotation during the rotation of the jaws, causing the wires to be twisted above and below the jaws, or a twisting-pin has been inserted in the face of one of the jaws passing between the wires to be twisted and entering a recess in the opposite jaw.

When the wires are held between the jaws I and D, a lateral strain is brought upon the jaws tending to separate them, and any wear in the rotating cylinders will allow the jaws to become slightly separated so the wires will slip past each other. If a twisting-pin is employed extending between the wires when the twisting operation is completed and the pin withdrawn, the wires are left separated, forming an eye the size of the twisting-pin between the twisted sections of wire, which is objectionable for several reasons.

By my present invention the wires are held in the recess J^2 of the fixed plate J, and the strain during the operation of twisting is brought upon the fixed sides *c c* instead of upon the faces I and D, so that the strain exerted by the wires *a a* will not tend to separate the jaws, and when the twist has been completed the wires inclosed within the recess J^2 will lie side by side and close together. In the operation of separating the jaws the frame G is withdrawn from the frame B^2 far enough to allow sufficient space between the face of the jaw D and the tips *e e* of the plate J to allow the wires *a a* to pass as the sliding plate F is moved along the ways *b b* in order to shift the wire-tubes E^3 and half-cylinders H. When the jaws are again brought together, the wires *a a* are held against the face of the jaw D, while the inclined sides *d d* bring the wires together and cause them to enter the recess J^2.

Although I have herein described the operating parts as forming part of a hand-ma-

chine, yet it is obvious that they can be connected with power-driven mechanism, by which the several operations will be automatically performed in the manner common and well-known in machines for making wire-netting.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for making wire-netting, the combination of wire-tubes through which the wires to be twisted are conducted, and a rotating plate rotating in a plane at right angles with said wire-tubes and provided with a recess in which the wires to be twisted are held, whereby said wires are twisted in opposite directions above and below said plate, substantially as described.

2. In a machine for making wire-netting, the combination with a pair of wire-tubes through which the wires to be twisted are conducted, and a pair of rotating jaws, of a plate attached to one of said jaws, said plate being provided with a recess within which the wires to be twisted are held, substantially as described.

3. In a machine for making wire-netting, the combination with a pair of jaws I and D, of a plate J attached to one of said jaws and arranged to slide over the opposite jaw, said plate having a triangular notch J′ provided with inclined sides *d*, *d*, and having a recess J^2 at the apex of said inclined sides.

4. In a machine for making wire-netting, the combination of a stationary frame B^2, a series of half-cylinders journaled in said frame, jaws D carried by said cylinders, a frame G capable of a sliding motion toward and away from said stationary frame, half-cylinders journaled in said sliding frame, plates J carried by said half-cylinders, said plates being provided with inclined sides *d*, *d*, and wire-holding recesses at the apex of said inclined sides, substantially as described.

5. In a machine for making wire-netting, the combination of a take-up mechanism, by which the completed netting is held, wire-tubes through which the wires to be twisted are conducted, and a rotating plate interposed between said take-up mechanism and said wire-tubes, said plate being provided with a recess in which the wires to be twisted are held, so as to be twisted upon opposite sides of said plate by a right and left hand twist, substantially as described.

Dated this 12th day of February, 1892.

GEORGE FLETCHER WRIGHT.

Witnesses:
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H. W. FOWLER.