(No Model.)

F. SCHILLING.

WIRE NETTING MACHINE.

No. 336,020. Patented Feb. 9, 1886.

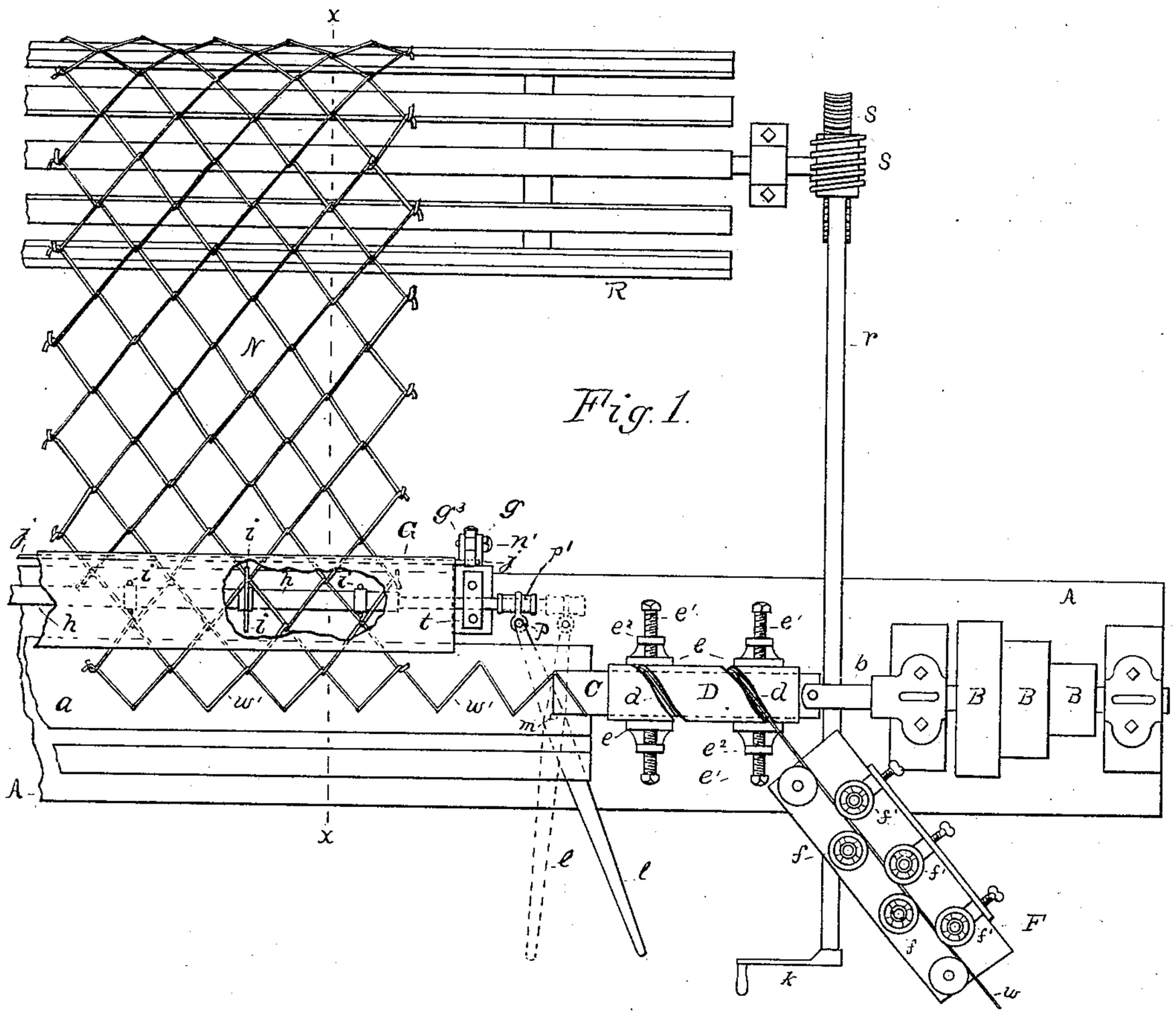


Fig. 1.

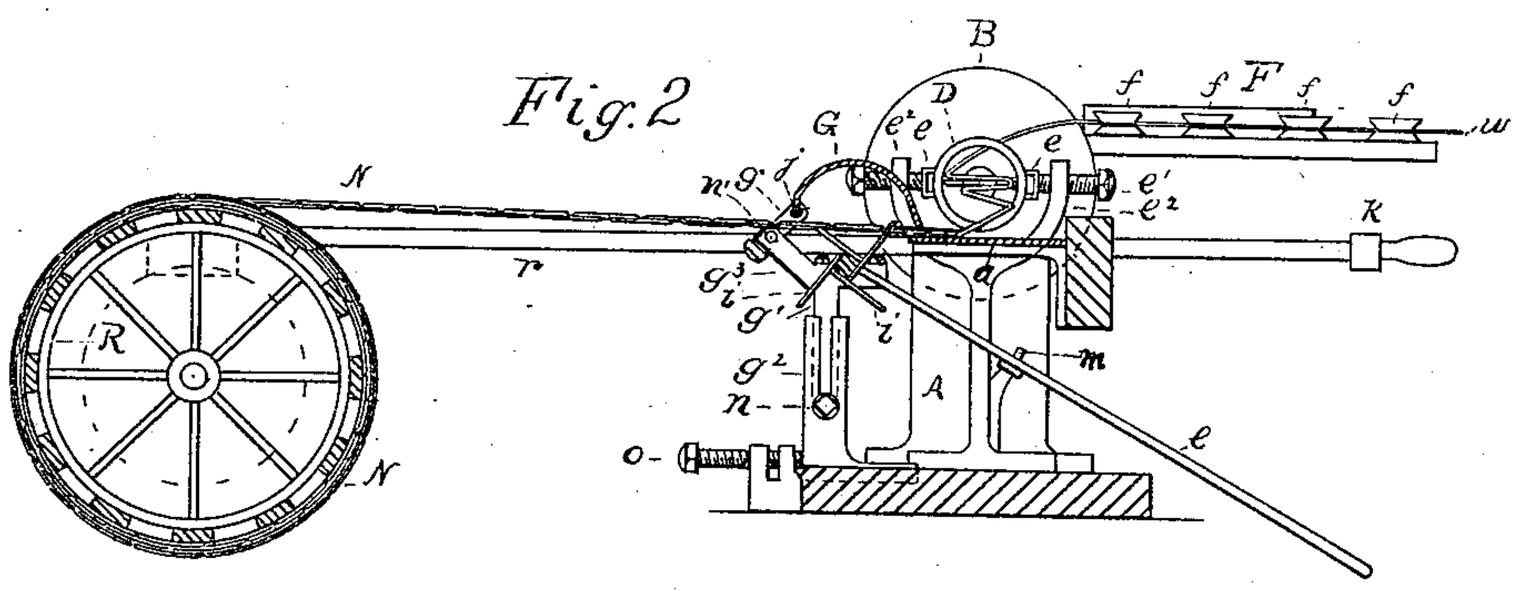
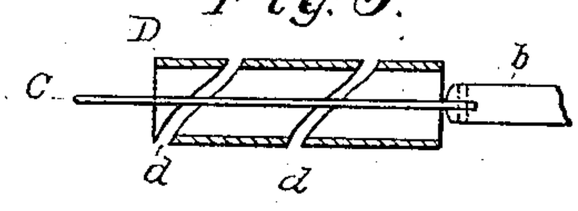


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK SCHILLING, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO CARGILL & CO., OF SAME PLACE.

WIRE-NETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 336,020, dated February 9, 1886.

Application filed April 24, 1885. Serial No. 163,204. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK SCHILLING, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Wire-Netting Machines, of which the following is a specification.

My invention relates to machines for the manufacture of wire-netting suitable for fencing and analogous purposes.

In the accompanying drawings, Figure 1 is a top view of the machine and a portion of the netting. Fig. 2 is a sectional elevation of the same on the line *x x* of Fig. 1, and Fig. 3 is a longitudinal sectional view of the spiral tube with its blade.

A in the drawings represents the framework, which may be of any suitable pattern for supporting the mechanism.

B B are pulleys or gears for communicating motion to the blade-spindle *b*. Several sizes of pulleys or gears are provided, so that a faster or slower motion can be given the spindle, as desired.

C is a steel blade coupled to the spindle *b*, and made as thin as is consistent with the requisite strength to bend the wire at short turns as it is wound about the blade.

D is a spiral tube, within which the blade C rotates close to the inner surface. The tube is supported by the clamping-pieces *e*, which are held to the tube by the set-screws *e'*, working in standards e^2 on the machine-frame. The spiral slit *d* of the tube serves to guide the wire as it is wound upon the blade C, and the general course of the spiral regulates the angle at which one portion of the wire is bent relatively to another. The length of the zigzag courses of the wire, and hence the size of the meshes, it is apparent, are regulated by the width of the blade C. The length of the tube should be sufficient to allow one or more complete turns of the spiral slit, and the length of the blade should be a little greater than the tube.

Before setting the machine in operation the operator gives the end of the wire a turn or two around the blade, after which the wire will be drawn in by the rotation of the blade. To straighten the wire and to hold it at proper tension as it is drawn onto the blade, there is provided an ordinary wire-straightener, F, having the fixed rollers *f* and adjustable rollers *f'*, which is set at a proper angle to the machine to feed the wire in line with the spiral slit *d*. The tension of the wire should be sufficient to draw the wire tight against the sides of the blade C, and hold it from bowing out from one edge to the other, and this tension may be regulated by the adjustable rollers *f'*. In this manner the zigzag courses of the bent wire will be made to lie in planes separated only by the thickness of the bending-blade, and the netting produced will, when stretched to the ordinary tension in a fence, be practically flat.

a is a table onto which the zigzag wire passes as it leaves the blade, and which table also supports the end of the netting, N, already formed.

It is apparent that the wire *w'*, as it is pushed onward from the blade, is continuously turned over in the same direction as that of the blade rotation, and that it will interlace with the meshes already formed when the latter are held in proper position.

To place the last-formed meshes in proper position to be thus caught by the wire, they must be removed both along the table and toward its rear from the place they occupied when formed.

The adjustment along the table is accomplished by means of the rod *h* along the rear of the table, which is movable lengthwise, and which carries a series of fingers, *i*, projecting through the netting. On the end of the rod is a lever, *l*, having a fulcrum at *m*, adapted to slide the rod in either direction, and with it carry the netting by means of the fingers engaging the netting. The fingers *i* project at right angles from the rod *h*, which may be square, as shown, and are fastened on each of the sides of the rod. The rod *h* near its end is round, and has bearings in suitable boxes, *t*, in which it may slide as well as turn. The lever *l* is connected by a pivot, *p*, to a sleeve, *p'*, on the end of the rod *h*, and the rod turns in the sleeve. The rod with its fingers *i* is thus permitted to turn as the netting is drawn from the table. It is preferable to have the sleeve *p* fit somewhat closely to the rod, so that the rod will not turn too freely,

but will enable the fingers *i* to assist in holding the netting to the table.

It is obvious that instead of having the rod *h* arranged to turn, it may be provided with fingers which turn on the rod, and in that case the sleeve *p* may be dispensed with and the end of the rod pivoted directly to the lever *l*. By either arrangement the netting can be drawn off as completed, and at the same time it can be adjusted along the table by means of the lever, so that the last-formed meshes will be in position to be caught by the advancing wire *w'*; and to draw the netting to the proper line toward the back of the table, and at the same time to dispose of the finished fabric, there is provided a reel, R, upon which the fabric is wound by means of the worm-gear *s s*, operated by the rod and crank *r* and *k*.

For the convenience of the operator the crank *k* and lever *l* are placed at the front of the machine, so that he can operate both at the same time.

G is an arched piece of wood or metal, preferably galvanized iron, the front edge of which rests upon the series of meshes last formed to hold them to the table, and by reason of its inclined face serves to guide the advancing wire *w'*, and prevent it from turning too far toward the back of the table, and catching the second series of meshes, the tendency of its rotation being to carry it in that direction.

As shown in the drawings, the piece G is of sheet metal, having its rear edge bent around a rod, *j*, which rod is pivoted to the arms *g*. The front edge of the piece G, being free, rests upon the netting. The arms *g* are fastened by set-screws *n'* to arms g^3, and are capable of adjustment along the arms g^3. These arms g^3 project from supports *g'*, which slide in grooved standards g^2, and are adjustable vertically by means of set-screws *n*, and the standards g^2 are capable of lateral adjustment by means of set-screws *o*. By means of these several devices the guide-piece G is capable of being raised or lowered as the thickness of the netting or the size of the meshes may require.

I do not claim, broadly, the invention of the combination of mechanism for coiling the wire, mechanism for bringing the final coil of the fabric into linear position for the next coil, and mechanism for moving the final coil of the fabric longitudinally into position to receive the coil next to be made; nor do I claim, broadly, the combination of a coiling mechanism, a rotating and lengthwise-adjustable rod provided with fingers for engaging the netting, and a lever for adjusting the rod longitudinally; but

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

1. The combination, in a wire-netting machine, of a wire-straightener, a spiral tube, and rotary blade, operating as described, with a holding and guiding device, constructed and arranged substantially as described.

2. The combination, in a wire-netting machine, of a rotating blade and a spiral tube, arranged to bend the wire into zigzags, with the laterally and vertically adjustable holding and guiding device, arranged to hold the meshes of the netting in place and to direct the moving wire into them, substantially as described.

3. The combination, with a rotating blade and a spiral tube constructed and arranged to bend wire into zigzag form, and a table to support the end of the finished netting and the moving zigzag wire, of an adjustable holding and guiding device, substantially as described, and means, substantially as described, for shifting and adjusting the netting.

4. The combination of the wire-straightener F, blade C, spiral tube D, and table *a* with the holding and guiding device G, the rod *h*, arranged to slide and rotate, and provided with fingers *i*, the lever *l*, and the reel R, constructed and arranged substantially as described.

5. The combination of the wire-straightener F, the rotating blade C, spiral tube D, and the standards e^2, clamping-pieces *e*, and set-screws *e'*, substantially as and for the purpose set forth.

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Witnesses:

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