

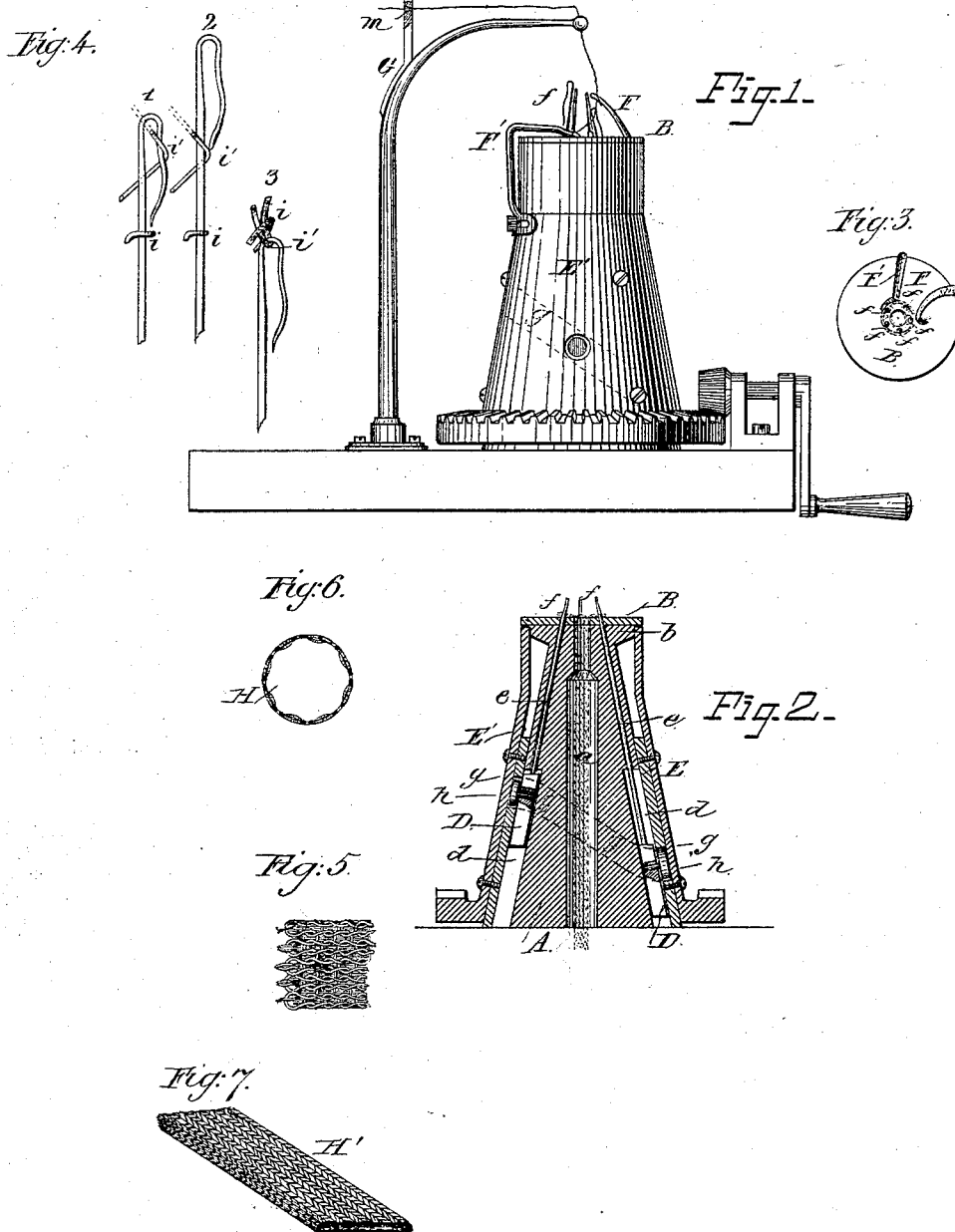
(No Model.)

J. SIMONSON.

WIRE FABRIC AND THE ART OF MAKING THE SAME.

No. 281,804.

Patented July 24, 1883.



WITNESSES:

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WIRE FABRIC AND THE ART OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 281,804, dated July 24, 1883.

Application filed March 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, JACOB SIMONSON, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Wire Fabrics and the Art of Making the Same, of which the following is a specification.

The object of my invention is to produce wire fabrics for the manufacture of jewelry and for similar purposes, which may be given a double thickness without cutting the wire of which the fabric is formed.

The invention consists, first, in the method of manufacturing the wire fabric, the same being knitted from a continuous strand of wire by one operation in the form of a cylinder or tube; and, secondly, in forming the cylindrical fabric into the desired shape by rolling, pressing, or drawing the tube or cylinder with suitably-shaped dies, and thereby giving the fabric the proper shape for chains, bracelets, and other articles of jewelry, with a double thickness of the fabric and without seams or rough edges; and, thirdly, in the articles thus produced.

In the accompanying drawings, Figure 1 represents a side elevation of a machine for manufacturing the wire fabric; Fig. 2, a vertical sectional view, and Fig. 3 a top view, of the same. Fig. 4 represents on an enlarged scale the needles which knit the fabric and the several operations of forming the stitch. Fig. 5 represents highly magnified a section of the fabric, showing the formation of the stitches. Fig. 6 represents an end view of the fabric as it comes from the machine, showing its cylindrical form; and Fig. 7 represents the fabric as it appears when the process is completed.

The machine for knitting the wire fabric (which I do not claim in this application, it being shown and described only for the purpose of illustrating the manufacture of the fabric) is constructed substantially like circular-knitting machines, and operates on the same principle as such machines. The wire-fabric machine is illustrated in Figs. 1, 2, and 3. It consists of an interior conoidal stand, A, provided with a central tubular opening, *a*, contracted at the top, and a flanged or rimmed head, *b*, on which is fastened a plate, B, having a central hole coinciding with

the opening *a*. In the lower part of the stand A are longitudinal grooves or ways *d* for the needle-slides, and from the upper ends of these grooves holes *e* are made in the stand, which extend upward through the stand and the plate B. The needles *f*, which knit the fabric, are placed in the holes *e* and fastened at their lower ends to the slides D, which are placed in the ways *d*. The needles are thus held at an angle to the axis of the stand A, and thereby their hooked upper ends are projected inward toward each other over the tubular opening *a*, so that the fabric as it is formed by the needles, passes down through the opening *a*, as indicated by the dotted lines.

E represents a thimble which is placed over or around the stand A, so as to form the outer walls of the slideways or grooves *d*. This thimble is provided with a cam-groove, *g*, which engages the friction-wheels *h*, placed on studs projecting from the slides. The thimble is designed to revolve for the purpose of giving motion to the needles. The cam-groove *g*, acting on the friction-wheels *h*, gives a reciprocating motion to the needles. For the purpose of revolving the thimble, it is connected with the shell E', which surrounds the thimble and stand, and is held under the plate B. The said shell is held in place by the thimble E, which has its bearings on the conical sides of the stand A. The shell, and with it the thimble, may be revolved by any suitable known mechanism, a beveled crown-gear on the base of the shell meshing with a beveled pinion on a shaft operated by a crank, being the operating devices shown in the drawings.

F is a revolving guide, attached to the shell E' and projecting over the plate B, with its upper end, through which the wire passes to the needles, in close proximity to the needles, around which it is carried when the machine is in operation.

F' is a binder or presser finger, which is attached to the revolving shell, so as to move with it. The upper end of the binder is bent over the plate B and lies close to the needles. The binder serves to press the points of the needle-hooks inward, so that they will pass through the loops on the needle-shanks in the operation of forming the stitches, as hereinafter described.

G is a fixed guide, through which the wire

from the bobbin is led to the revolving guide F. The stitch formed by this machine is a loop-stitch, one loop being drawn through a loop previously made, as shown in Fig. 5. The operation of forming the stitch is shown in Fig. 4, and is as follows; At the commencement of the operation a loop, *i*, is formed of the wire on the shank of the needle. The wire *i'*, which is fed to the machine in a continuous strand from the bobbin, is led by the guide F against the needle, as shown at 1. The needle moves upward until the point of the hook is above the wire *i'*, which is then drawn against the shank below the hook by the strain or tension, as shown at 2. The needle now moves downward, and the hook catches the wire *i'*, forming a bight, and when the point of the hook reaches the binder F' the latter forces the point inward against the shank of the needle, causing it to pass downward through the loop *i*, through which it carries the bight in the wire *i'*, which thus forms another loop, and loop *i* is thrown off the needle, as shown at 3. The looped interlocked stitches are formed in parallel rows, as shown in Fig. 5 on a magnified scale, and the fabric is knitted in the form of a cylinder, as shown in Fig. 6. As the wire is apt to kink or knot, a plate, *l*, is attached to the guide, and provided with a conical hole, *m*, through which the wire is passed, the conical hole serving to straighten out the kinks and knots.

After the cylinder is knitted, it is next to be pressed, rolled, or drawn through a draw-plate, for the purpose of condensing the wire stitches to give a more or less compact appearance to the fabric, and also to more or less flatten the fabric, so as to destroy its cylindrical form, and thereby make the fabric stronger and give it a rectangular, ovoid, or square shape when viewed in cross-section. By such means it will be understood a double thickness of the fabric will be produced without cutting it and without bending it and turning over the edges, as heretofore.

H', Fig. 7, represents the fabric after it has been operated upon by pressure. It will be seen that the stitches are pressed together closely, the fabric is doubled, and there are no seams, cut stitches, or raw or jagged edges, but both sides are left precisely alike.

A wire fabric made in the above-described manner is stronger than that heretofore made, can be manufactured more cheaply, and, as there are no cut stitches, there is no liability of the wearer of jewelry manufactured from the fabric being injured by it.

I have described herein the mode of manufacturing the cylinders by knitting; but I do not wish it to be understood that I confine myself to that mode, as the cylinders may be woven or otherwise made. In shaping the cylinders to compress the fabric, plain smooth-faced rollers may be employed, adapted to form flat rectangular fabrics, as shown in Fig. 7; or they may be adapted to compress the cylinders into semi-oval, ovoid, and square forms, or to press them flat or rounded in the center, and with a raised bead or beads on the edges, and in other forms, as may be desired.

I claim—

1. The method of manufacturing wire fabrics for bracelets, chains, and other jewelry, consisting in knitting the wire into a cylinder from a continuous strand, and then compressing the cylinder so formed into the desired shape, thereby forming the fabric without seams or cut edges, substantially as herein set forth.

2. As a new article of manufacture, a wire fabric having a double thickness without seams or cut edges, and formed from a continuous strand of wire, substantially as herein shown and described.

JACOB SIMONSON.

Witnesses:

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