

(Model.)

S. ROGERS.
WOVEN WIRE MAT.

No. 463,321.

Patented Nov. 17, 1891.

Fig. 2.

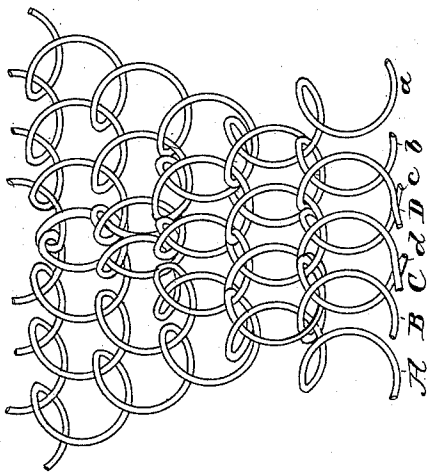


Fig. 1.

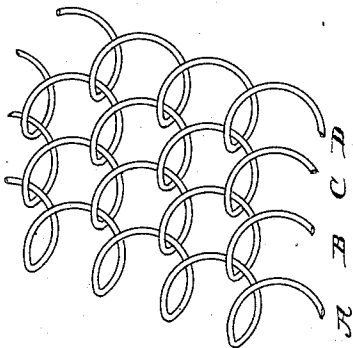


Fig. 3.



Fig. 4.



Fig. 5.

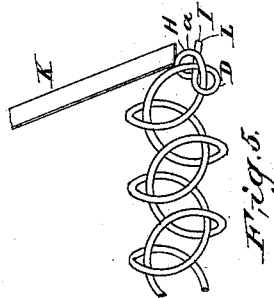
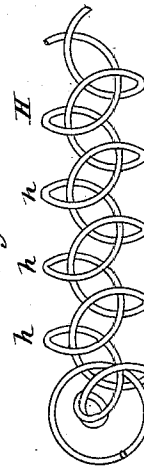


Fig. 6.



Attest:

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UNITED STATES PATENT OFFICE.

SEYMOUR ROGERS, OF BEAVER FALLS, PENNSYLVANIA, ASSIGNOR TO THE
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WOVEN-WIRE MAT.

SPECIFICATION forming part of Letters Patent No. 463,321, dated November 17, 1891.

Application filed January 13, 1891. Serial No. 377,640. (Model.)

To all whom it may concern:

Be it known that I, SEYMOUR ROGERS, of Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain
5 new and useful Improvements in Woven-Wire Mats, of which the following is a full, clear, and exact description.

The object of my invention is to produce a woven-wire fabric consisting of a series of primary coils of spiral wire intercoiled upon a
10 parallel plane and a secondary series of spiral wires intercoiled with each other upon a parallel plane, and with the primary series at a right angle with their plane to lock the free
15 ends of the several coils of both series upon the outer edges of the mat in such manner as shall leave the fabric flexible yet firm, and to construct upon such a mat a border or edge which shall be simple, effective, and eco-
20 nomical.

In the accompanying drawings, Figure 1 is a view of four primary coils A B C D intercoiled upon a parallel plane. Fig. 2 is a view of four secondary coils *a b c d* intercoiled with
25 each other and with the primaries A B C D at a right angle with said primary coils A B C D. Fig. 3 is a view of the edge of a mat constructed in this manner and with the ends of the ajuting spirals fastened by hand in the manner heretofore practiced. Fig. 4 is a
30 view of the edge of a mat fastened in my improved mode. Fig. 5 is a view of the same at right angle to Fig. 4; and Fig. 6 is an edge view of the same, showing the relation of the convolutions or ridges *h h* to each other and the relation of the spiral border to the mat.
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The letters A B C D denote the primary coils, and the letters *a b c d* the secondary coils, of a wire-woven mat, and there may be
40 any approved number of coils in each series, each coil being made of wire in the form of an elongated spiral and intercoiled with the others in the manner common in the art of making mats of this description.

Heretofore, a mat of the prescribed size having been constructed, the operative would seize the projecting ajuting ends of a primary coil, as D, and of a secondary coil, as at *d*, cut them off to a proper length and bend
50 them upon each other, as shown at J, Fig. 3.

As this operation has been performed, the process is tedious and expensive, there is a lack of uniformity in the tension under which each spiral wire end is bent and made fast, and the product is a mat not uniformly flexible, and
55 from the unequal tension of its coil liable to "buckle" or twist.

By my improvement the fabric may be woven of any desired length and may be finished as one mat or divided into several. In
60 either case a broad blunt die, as at K, Fig. 5, is pressed along the coil H and crushes that coil down, as shown in Figs. 4 and 5. By this means the terminal coil of each secondary spiral is flattened down to a point where it
65 embraces the end of the next secondary spiral on the one side and of the next primary spiral on its other side. A broad shear-blade operating in the same direction as the blunt
70 dies shears off these projecting ends, leaving a mat with a uniformly-locked edge having a uniform tension upon each spiral number of both primary and secondary series, and consequently uniform flexibility.

It will be seen by reference to Figs. 3 and
75 4 that the old process or method necessitated the bending of each end separately and that uniformity must be accidental, that the motion of the spirals was limited by the closeness of the bends of their ajuting ends and
80 that a strain was brought upon the edge of such a mat tending to buckle the fabric to cause it to lie "waved" or unevenly, and to render it stiff and non-flexible to a great extent. It will be noted in the edge illus-
85 trated in Fig. 4 that the tension is uniform and the ajuting ends of the several spirals are free to adjust themselves to the motion caused by tension of the spirals or rolling up of the fabric, while they easily allow the mat
90 to lie level upon the floor or to assume the contour of the surface upon which it is placed. At the same time it will be evident that the spirals are effectively locked against displacement in any direction—that the crushed
95 spiral *c*, for instance, prevents side motion at once of the spirals *d* and *b*, and is at the same time held in place by those spirals.

Where it is desirable to furnish such mats with smooth borders, a spiral of wire is woven
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in the usual manner of the art within the edge left by this process of finishing. It will be seen that an edge made in this way furnishes a uniform series of convolutions for the admission of such a spiral, and that this uniformity will permit the mat to lie level upon the floor without the twisting or crooking incident to a mat having its edge twisted or locked by hand in the usual way. It will be seen, further, that the compression of the coil H may be made to such a degree as to raise the mat from the floor when the border-spiral is woven into place or to depress the border-spiral below the level of the ridges $\frac{1}{2}h$, as desired. The crushing and shearing of the edges is best accomplished by means of a press and shear of ordinary construction, in which the die and knife are operated at an angle with the plane of the fabric body, as shown at K, Fig. 5; but it will be obvious that these steps in the process may be effected by any device in which the compression of the coil H by the die K or its equivalent may be regulated and the shearing of the ends L effected.

When the edge of a mat has been locked by hand in the old methods, there exists a lack of uniformity in the spaces left by the locked ends of wire, and the operative is forced to stop the process of weaving the border-coil within this edge to adjust the border-coil to the irregularities caused by the unequal hand-locking and to stretch or compress the leading-coil to meet the continually-changing spaces in the hand-locked edge. The result is that the mat, already stiff and non-flexible from the unequal tension of its edge, is rendered more so by the additional tension of the border-coil within and upon this hand-locked edge.

By my improvement the edge is a series of flexible loops of exactly similar contour and size, and a border-coil of the proper "pitch" runs continuously and easily from the machine upon these loops, and forms with them a flexible mat in which the tension is equal upon each member of the mat and upon each coil of the border.

By the word "ajuting" used in this specification and in the claims is meant the adjoining and crossing of the ends of the spi-

als of the primary and secondary coils. Inasmuch as the spirals of the primary series are at a right angle with those of the secondary series, their only point of contact is at that end where they cross each other, and this point has been described as the ajuting-point.

I claim—

1. In the manufacture of a wire-woven fabric of the class described, the herein-described method of locking or "tying" the edge of such fabric by first crushing or compressing the terminal coils of the secondary spirals so that they are caused to embrace the ends of the ajuting primary spirals, and then shearing off the projecting ends uniformly, whereby each spiral is caused to retain in place its neighboring spiral upon either side, and is itself retained by them and the locked ends are permitted to slide or play, thereby retaining the flexibility of the fabric, as shown and described.

2. A wire-woven mat consisting, essentially, of a parallel series of primary intercoiled spirals of wire, and a secondary series of like spirals intercoiled with each other in a parallel plane and with the primary series at a right angle to their parallelism, the two series being locked together by the crushing of the terminal coil of each secondary spiral upon the terminal coil of each primary ajuting spiral and the shearing of the projecting ends, whereby the locked ends are permitted uniformly to slide or "play," and the flexibility of the mat is retained, as shown and described.

3. The combination, with the herein-described crushed and sheared edge of a wire-woven mat of the class described, of a spirally-coiled border of wire intercoiled with and upon such crushed and sheared edge, as shown and described.

4. As a new article of manufacture, a wire mat, the edge of which is crushed and sheared and provided with a spiral coiled border of wire intercoiled with and upon such crushed and sheared edge, as shown and described.

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Witnesses:

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