

(No Model.)

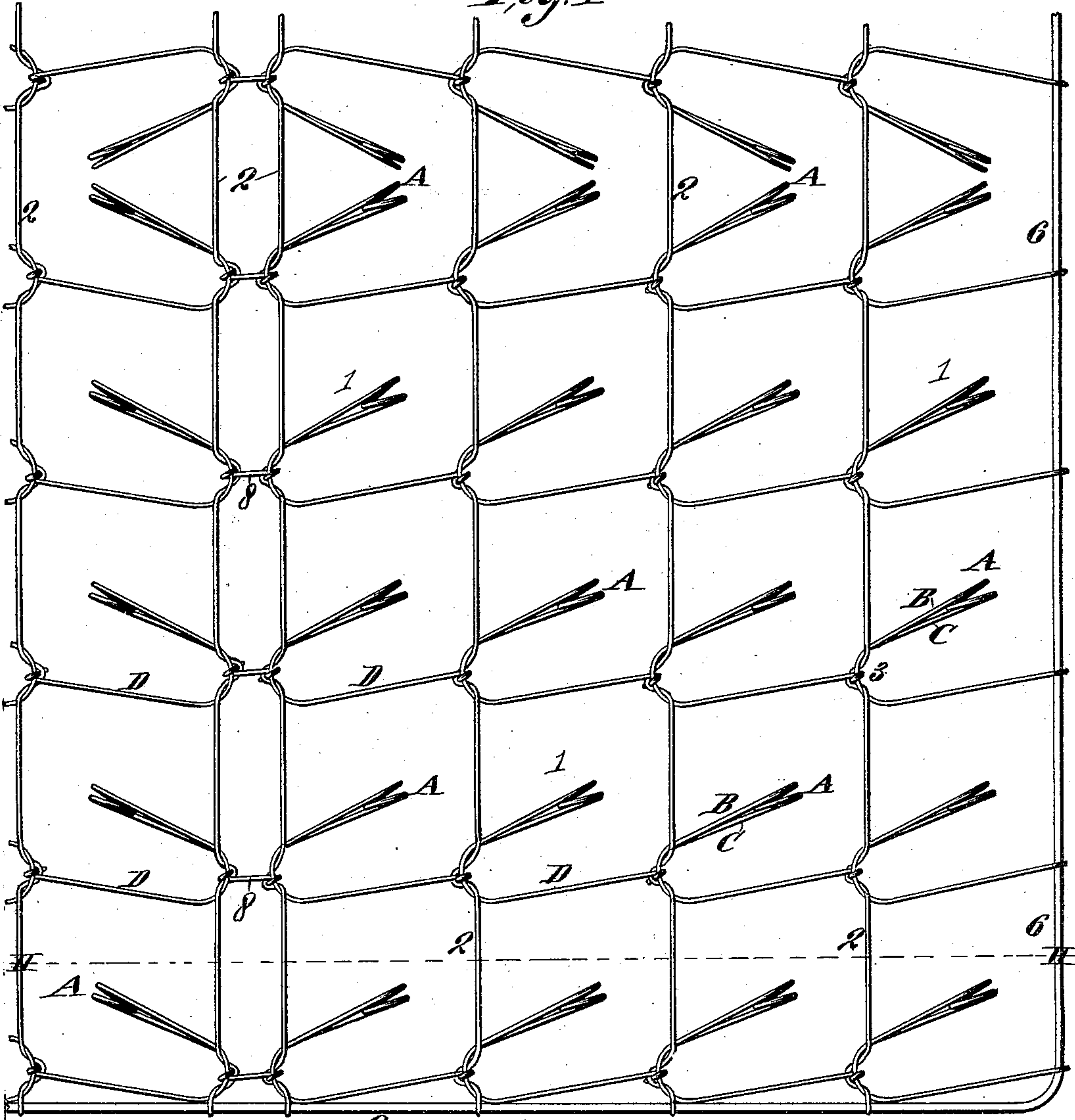
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W. E. FRANK.  
SPRING BED BOTTOM.

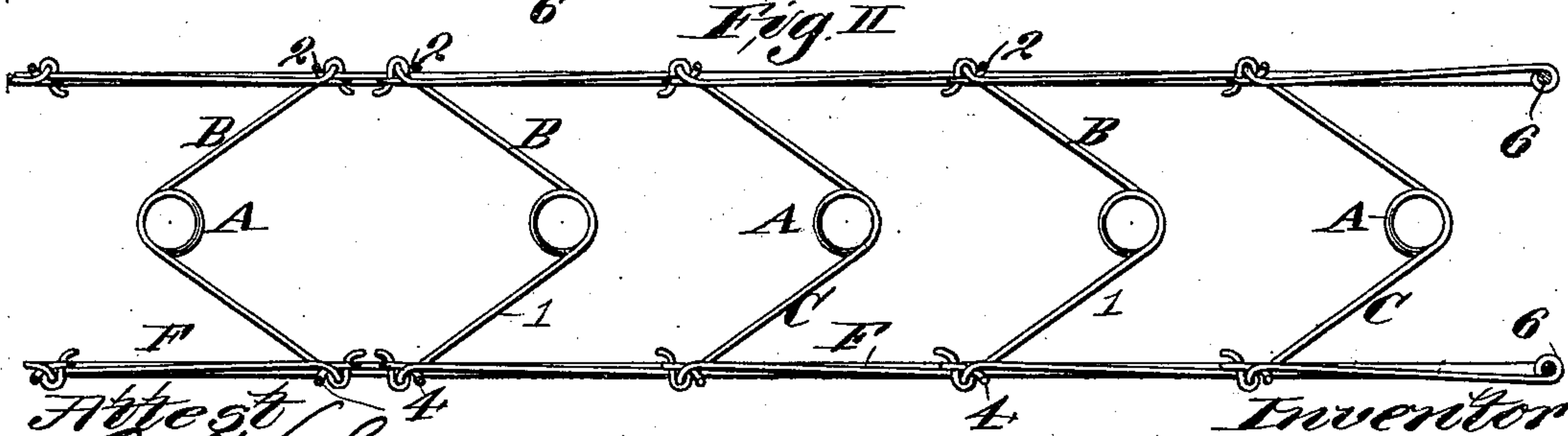
No. 547,604.

Patented Oct. 8, 1895.

*Fig. I*



*Fig. II*



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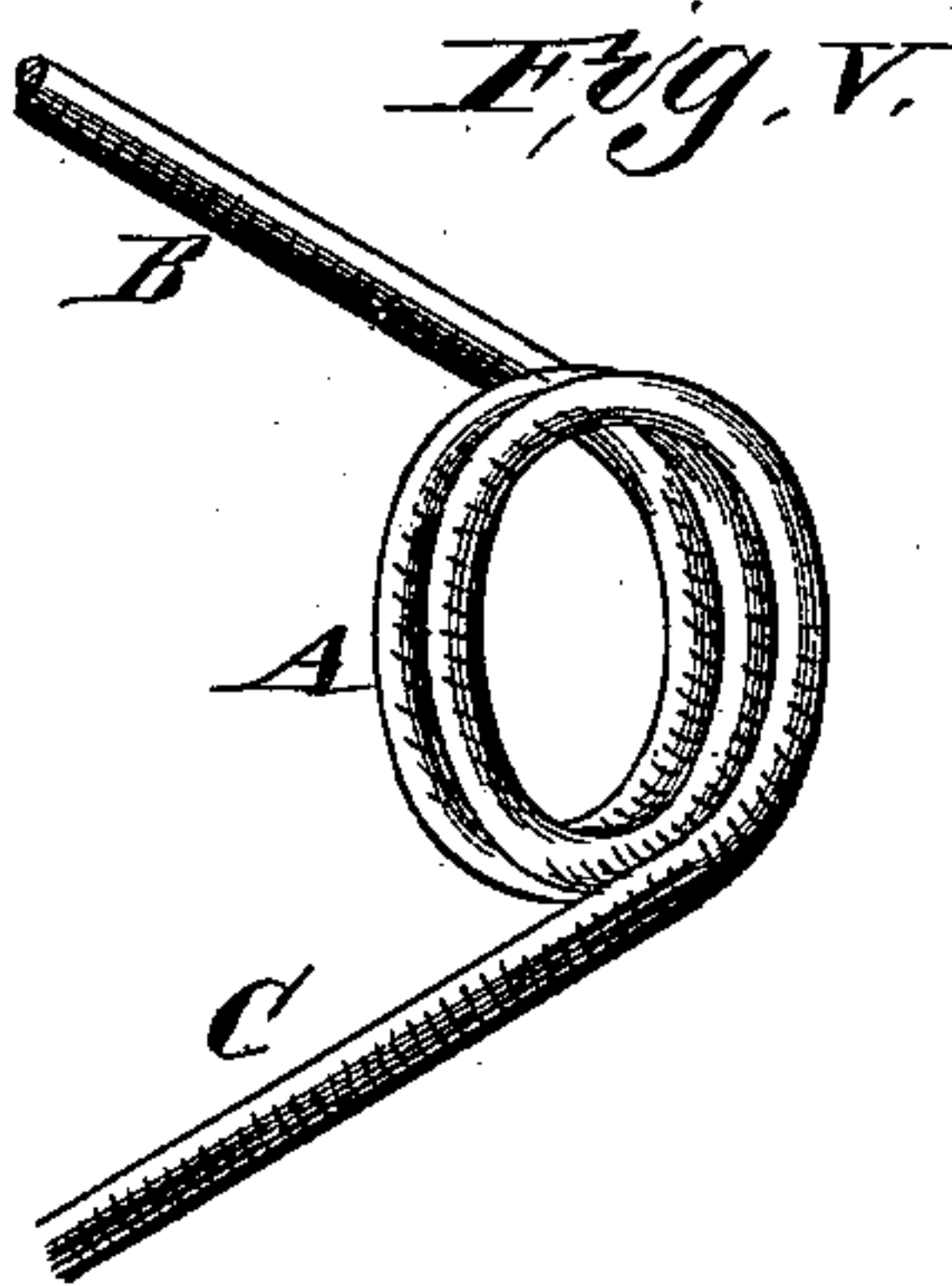
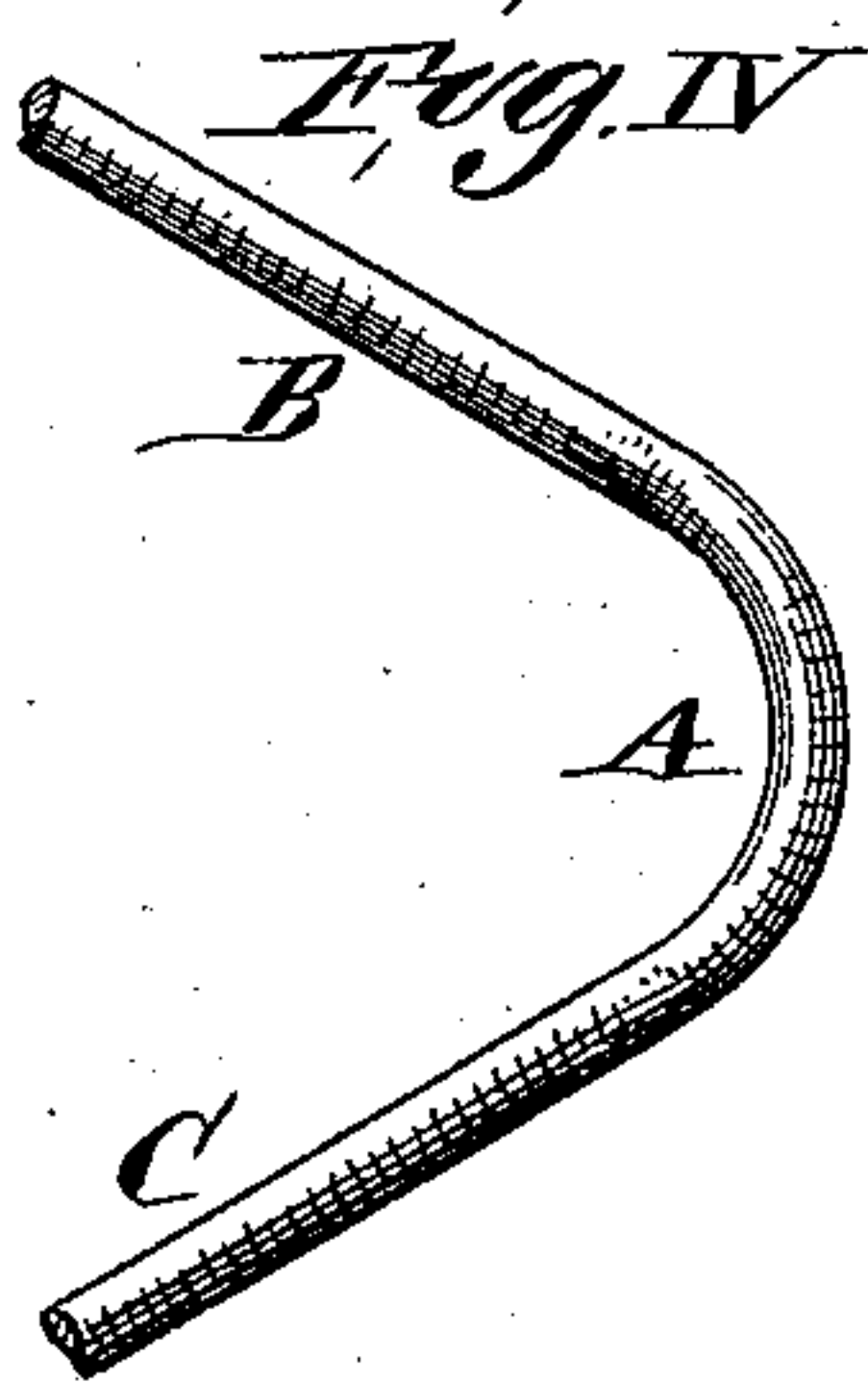
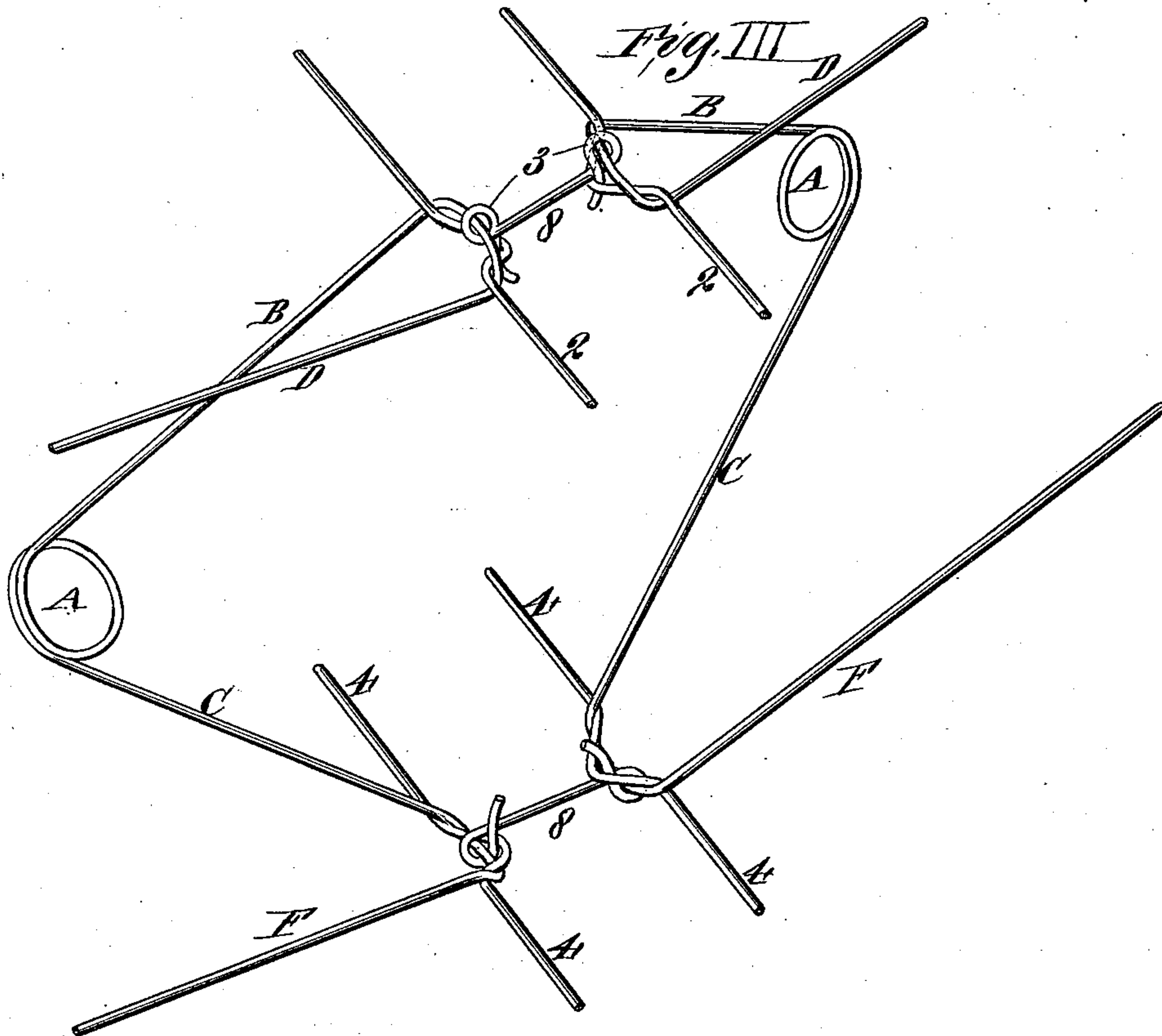
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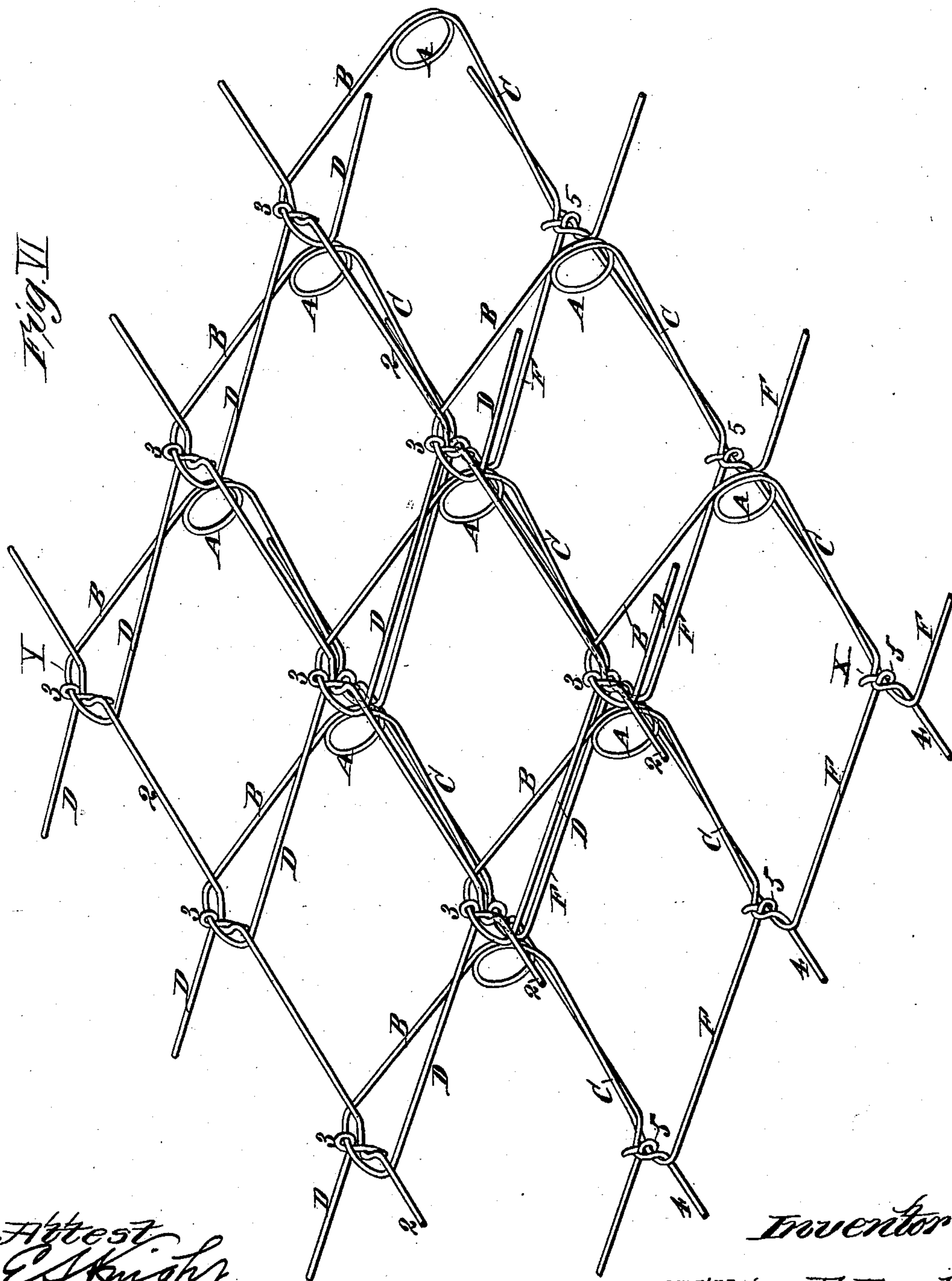
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Fig. VII



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# UNITED STATES PATENT OFFICE.

WILLIAM E. FRANK, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE FOSTER BROTHERS MANUFACTURING COMPANY, OF SAME PLACE.

## SPRING BED-BOTTOM.

SPECIFICATION forming part of Letters Patent No. 547,604, dated October 8, 1895.

Application filed July 7, 1894. Serial No. 516,782. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. FRANK, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Spring Bed-Bottoms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved spring bed-bottom, the object being to provide a bottom having the advantages of the ordinary spring bed-bottom—such as strength, durability, and flexibility—and at the same time make a bottom which will contain less material than the ordinary bottom and which affords cheapness and lightness as compared with bed-bottoms in use.

My invention consists in features of novelty hereinafter fully described and claimed.

Figure I is a detail top or plan view of a part of my improved bed-bottom. Fig. II is a section taken on line II II, Fig. I. Fig. III is an enlarged detail perspective view showing two springs with the ends of their arms cut off and showing the tie-wires at the central part of the bed-bottom. Fig. IV is an enlarged detail view showing the return-bend of one of the springs, and Fig. V is a similar view showing the spring coiled at the bend. Fig. VI is a detail perspective view showing a number of the springs and parts of the tie-wires.

Referring to the drawings, 1 represents the springs, which fold and are obliquely arranged with relation to their tie-wires. Each spring is formed with a return-bend, a portion extending from the bend to the upper tie-wire and a portion extending from the bend to the lower tie-wire, and each spring has an obliquely-arranged arm extending from its tie-wire to the tie-wire of the adjacent row of springs, so as to serve as a connection between the tie-wires transversely of their length. Thus each spring has a bend A, which may be a simple bend, as shown in Fig. IV, or may be formed into a single coil, as shown in Fig. VI, or a double coil, as shown in Fig. V, or still more coils may be used. From the bend A each spring has an upwardly-extending portion B and a downwardly-extending portion C. The portion B passes to the upper tie-wire 2, to which it is made fast at the crimp of the wire by means of the extended arm of the adjacent spring, as shown at 3, Fig. VI. From here the upper portion B extends back in an arm D to the next tie-wire, where it is employed to connect the adjacent spring outside the crimp, as does the arm D of the spring on the other side connect it to the wire 2, as shown at 3. The lower member C of the spring extends to the lower tie-wire 4, that is directly beneath the tie-wire 2, where it is connected to the tie-wire 4 at the crimp by the arm of the adjacent spring, as shown at 5, Fig. VI. From here the portion has an extended arm F, that reaches to the adjacent lower tie-wire, as does the arm D reach to the upper adjacent tie-wire. The bed-bottom is thus made up of a bank of springs, each consisting of the parts A, B, C, D, and F, with the ends of the arms F bent to connect the adjacent springs to the tie-wires. Each spring contains much less wire than is used in making the cone or double cone, or the helical or double helical spring bed-bottoms, which results in cheapness and lightness, while the bottom has the advantages which exist in the ordinary bed-bottom. The bed-bottom is surrounded by a finishing-border 6, both at top and bottom, as shown in Figs. I and II. I have shown the springs connected to the two central tie-wires by means of short links 8, the ends of which lock the springs to the crimps of the tie-wires, as shown in Fig. III. If made of the proper size, my improved article is well adapted for upholstering different kinds of furniture, such as lounges, sofas, chairs, &c. By referring to the part of Fig. VI indicated at Y it will be seen that the upwardly-extending portion B passes inside the tie-wire, then across outside the crimp of the tie-wire, and then back inside the tie-wire in the arm D, and in like manner by referring to the part X of Fig. VI it will be seen that the downwardly-extending portion C of the spring passes inside of the tie-wire, then across outside of the crimp, and then back on the inside of the tie-wire again in the arm F. The ends

of the arms D and F pass outside of their crimps and encircle and extend between their respective portions B and C and the crimps. The object of thus passing the wires with  
5 relation to the tie-wires is that the latter brace the former, so that the springs do not depend entirely upon the flexibility of the bends A nor upon the flexibility of the upwardly and downwardly extending portions;  
10 but they are braced at the points where they are connected to the tie-wires, so that the tie-wires act as a lever upon the upper and lower extensions.

I claim as my invention—

15 A bed-bottom of springs comprising parallel upper and lower tie-wires having crimps and the folding springs arranged obliquely with relation to the tie-wires; each spring

consisting of a bend having upwardly and downwardly extending portions passed inside 20 of the tie-wires, outside of the crimp thereof and inside the tie-wires and formed with obliquely arranged arms having their ends extending outside of the crimps of the adjacent tie-wires, and encircling respectively the up- 25 wardly and downwardly extending portions of the adjacent springs and passed inwardly between said portions and the crimps; the bends of the springs being located in an approximately central position between the tie- 30 wires and the arms of the springs; substantially as described.

WILLIAM E. FRANK.

In presence of—

GEO. H. KNIGHT,  
E. S. KNIGHT.