

(No Model.)

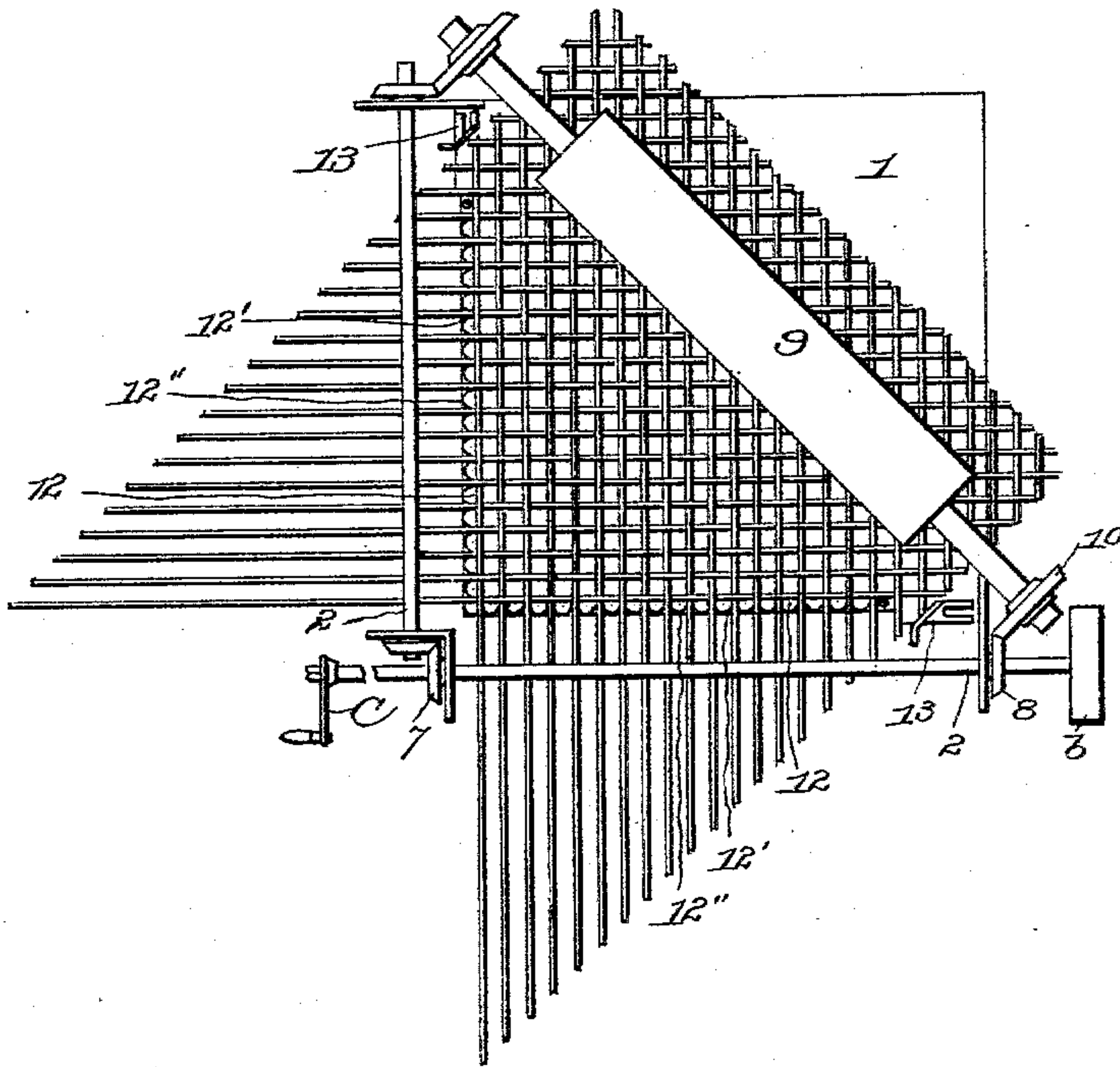
2 Sheets—Sheet 1.

W. W. McCALLIP.  
MACHINE FOR WEAVING WIRE.

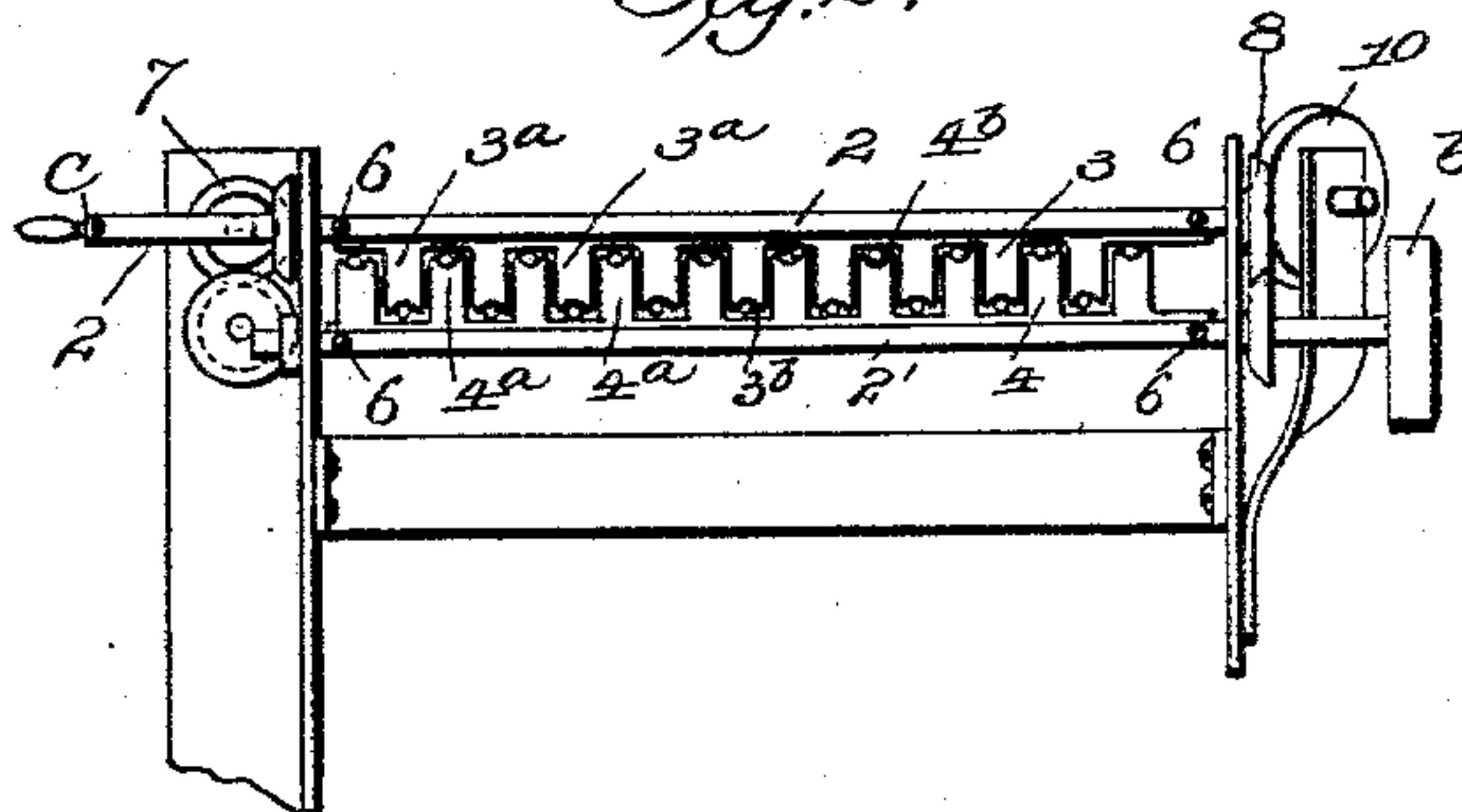
No. 562,641.

Patented June 23, 1896.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

*Harry S. Cohen.*  
*Grant B. Burroughs.*

INVENTOR

*William W. McCallip,*  
BY  
*Finckel & Finckel*  
ATTORNEYS.

(No Model.)

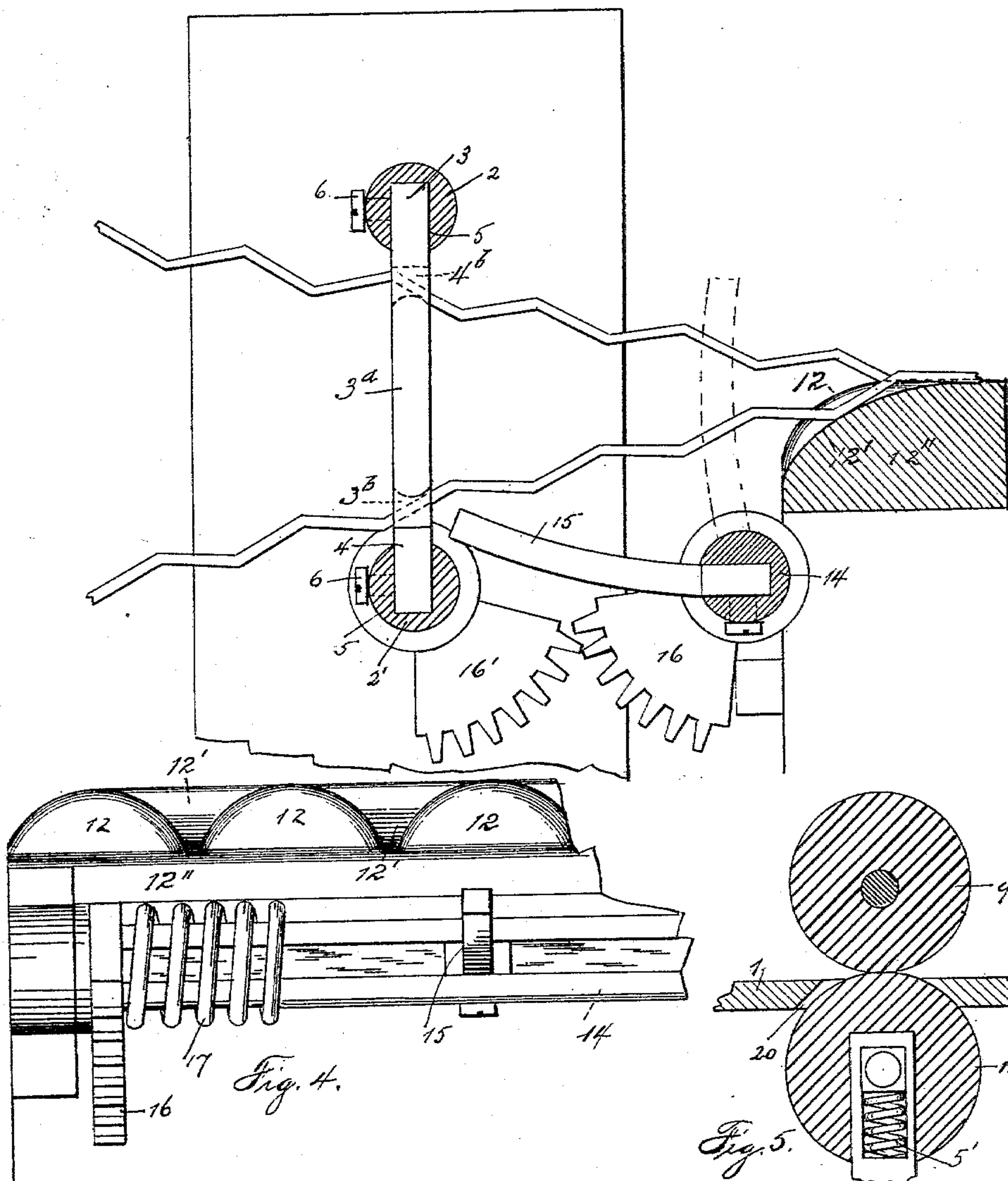
2 Sheets—Sheet 2.

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Fig. 3.



Witnesses

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*John J. ...*

Inventor  
*William W. McCallip,*  
By his Attorneys  
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# UNITED STATES PATENT OFFICE.

WILLIAM W. McCALLIP, OF COLUMBUS, OHIO.

## MACHINE FOR WEAVING WIRE.

SPECIFICATION forming part of Letters Patent No. 562,641, dated June 23, 1896.

Application filed November 6, 1895. Serial No. 568,073. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. MCCALLIP, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Machines for Weaving Wire; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

While my invention relates generally to machines for weaving wire, it is my particular object to produce a simple and inexpensive machine for weaving diamond or the so-called "diamond-mesh" wire fabric, that is, fabric in which the wires lie diagonally to the direction of the length of the fabric, whether the mesh be of square or rhombus form.

The invention consists generically of a machine comprising a single pair of devices, one of which has a series of elevators and the other a series of depressors, the elevators alternating with the depressors, and means for moving the fabric so that the strands will be carried forward and laterally along the line of the elevators and depressors to move the strands alternately from an elevator to a depressor to form the shed in the process of the weaving.

The invention further comprises details incident to the features already mentioned, all of which will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a plan view of the weaving-machine, parts being omitted for the sake of clearness. Fig. 2 is a view in side elevation of the upper part of the machine. Fig. 3 is a sectional and elevational view, on a larger scale, intended to illustrate the beater and its action. Fig. 4 is a fragmentary side view of the beater-shaft. Fig. 5 is a sectional view, on a small scale, illustrating the rollers for feeding or rolling the woven fabric.

Like characters of reference in the different views designate corresponding parts.

1 designates the table. In suitable housings on two adjoining edges of this are mounted the top shafts 2 2 and bottom shafts 2' 2', which support bars 3 and 4, respectively, having wire-elevating fingers 4<sup>a</sup> and depressing-

fingers 3<sup>a</sup>. The bars 3 and 4 are preferably removably attached to the shafts, and for this purpose the shafts may be made with a socket or groove 5, into which the bars are placed and held by set-screws 6; and the fingers are so cast, formed, or placed as to pass freely between each other when the shafts are rotated. Further, the ends of the fingers have notches or recesses 3<sup>b</sup> and 4<sup>b</sup>, as shown in Fig. 2, so as surely to engage and receive the wires when they are turned up or down against the same and retain them in parallel position.

In order that all four shafts or finger-bars may be rotated with the rotation of one of them, the upper two may be geared together by gears, as shown at 7, and these two to the two lower ones by gears, as shown at 8. Supported in suitable brackets, so as to extend diagonally across the table, and in a line subtending the angle of the two pairs of shafts, I arrange a roller 9, preferably having a roughened surface, which is geared, as shown at 10, to be rotated by the upper gears 8. An idle-roller 11, (see Fig. 5,) similar to the roller 9, is placed to extend along an opening 20 in the table under and parallel to the roller 9, and is held in contact therewith by suitable springs 5' in any well-known manner.

To secure the strands in place during the shedding operation, the edges of the table parallel to the finger-bars are furnished with strips 12'', removably secured thereto by set-screws, the said strips having beads 12 with rounded surfaces projecting upwardly and located at intervals, so as to form spaces or grooves 12' between them equal to the distance between the parallel wires of the fabric. The spaces or grooves between the beads receive and permit the depression of alternate wires, as shown in Fig. 3, and the walls of the grooves serve to retain the wires in proper position during the weaving process. As the corners of the beads are rounded they do not interfere with the lateral movement of the wires along the line of the fingers under the action of the rollers. These beaded strips, as well as the finger-bars 3 and 4, are made removable, so that others may be substituted in their places to adapt the machine for the weaving of fabric of different size of mesh.



On opposite corners of the table are adjustably-placed guides 13, (see Fig. 1,) by means of which the operator can determine the distance to which the cross or weft wire is to be inserted in the shed.

Journalled on the table, a little below and parallel to the edge or beaded strip thereof, is a shaft 14, (see Fig. 3,) which is made with a longitudinal groove to receive beater-arms 15, which are adjustably fixed in suitable number and at proper distance apart. Upon the shaft 14 is a segmental gear 16 to be engaged by a similar segmental gear 16', fixed on the shaft 2'. The shaft 14 is provided with a spring 17, which tends to hold the shaft so that the beater-arms normally stand in horizontal position, and the segmental gear 16' is arranged on its shaft so that it will not, in the course of its rotation, engage the gear 16 until after the cross or weft wire has been passed into the shed. The continued rotation of the shaft 2' throws the beater-arms up into a vertical position, (see dotted line, Fig. 3,) thus pushing the weft-wire into its proper place in the fabric. There are, of course, two of the shafts 14, one for each operating edge of the table, and they may be geared together in substantially the same way as are the upper shafts 2 2', the operation of one of them effecting the simultaneous operation of the other.

The machine may be driven by hand or other motive power. When it is desired to operate it by hand, a crank *c* may be provided, as shown at the left-hand side of Figs. 1 and 2, and when to be driven by steam or electricity a band-pulley *b* may be provided, as indicated at the right-hand side of said figures. When the band-pulley is employed, a clutch or other power shifting device may be serviceable to discontinue the rotation of the shaft during the insertion of the weft or cross wire.

Either crimped or plain wire may be woven with my machine, but crimped wire is now most frequently used and my construction, as shown, is more satisfactorily adapted to it.

The gear-wheels put upon the roller 9 are of such size or proportion with respect to gears 8 as to move or advance the fabric a distance equal to one mesh during one revolution of the finger-shafts 2 and 2', so that the fingers successively elevate and depress the wires to form the shed and permit the interweaving of the weft or cross wires.

In operation, the strands are cut to the proper length, that is, the diagonal width of the fabric in the direction in which the strands lie. A sufficient number are placed in the machine to start the weaving, and the work is then continued by introducing, by hand, the wires at the lower left-hand corner of the machine, the guides 13 serving to secure the proper alinement of the ends of the wires when placing them in the machine.

It will be understood, of course, that I do not confine myself to the various details of

construction shown, as they may be modified without departing from the scope of my invention.

It is also obvious that other mechanism equally well adapted for moving the fabric may be substituted for the roller 9 and its mate.

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

1. In a machine for weaving wire fabric, a pair of devices having alternate wire elevators and depressors, and means for moving the fabric so that the strands will be carried laterally from the elevators to the depressors, substantially as described.

2. In a machine for weaving wire fabric, a pair of devices having alternate wire elevators and depressors, means for moving the fabric so that the strands will be carried laterally from the elevators to the depressors, and means for retaining the strands in place during the shedding operation, substantially as described.

3. In a machine for weaving wire fabric, two sets of devices having alternate wire elevators and depressors the sets arranged at an angle to each other, and means for moving the fabric so that the strands will be carried laterally from the elevators to the depressors upon each set, substantially as described.

4. In a machine for weaving wire fabric, a pair of rotary shafts having alternate wire elevating and depressing fingers, and means for moving the fabric so that the strands will be carried laterally from one set of fingers to the other, substantially as described.

5. In a machine for weaving wire fabric, two sets or pairs of rotary shafts having alternate wire elevating and depressing fingers the sets arranged at an angle to each other, and means for moving the fabric so that the strands will be carried laterally from the elevating to the depressing fingers of each set, substantially as described.

6. In a machine for weaving wire fabric, two sets or pairs of rotary shafts having alternate wire elevating and depressing fingers the sets arranged at an angle to each other, and means for moving the fabric so that the strands will be carried laterally from the elevating to the depressing fingers of each pair, such means comprising a roller adapted to engage the fabric and arranged in a line subtending the angle of the aforesaid pairs, substantially as described.

7. In a machine for weaving wire fabric, a pair of rotary shafts having alternate wire elevating and depressing fingers, and means for moving the fabric so that the warp-strands will be carried laterally from one set of fingers to the other, such means comprising a roller adapted to engage the fabric and arranged with its axis at an angle to the line of the fingers, substantially as described.

8. In a machine for weaving wire fabric, a pair of rotary shafts having alternate wire elevating and depressing fingers, means for



moving the fabric so that the warp-strands will be carried laterally from one set of fingers to the other, and means for retaining the strands in place during the shedding operation, substantially as described.

9. In a machine for weaving wire fabric, a pair of rotary shafts having alternate wire elevating and depressing fingers, means for moving the fabric so that the warp-strands will be carried laterally from one set of fingers to the other, and means for retaining the strands in place during the shedding operation, such means comprising a series of beads having rounded surfaces to permit the lateral movement of the strands over them with recesses between the beads to receive the strands, substantially as described.

10. In a machine for weaving wire fabric, the combination with a table or frame and a pair of rotary shafts having wire elevating and depressing devices, of a rotary shaft having beater-arms, a segmental gear on the

beater-shaft and a segmental gear on one of the wire-elevating shafts adapted to engage the segmental gear on the beater-shaft to operate the beater-arms, substantially as described.

11. In a machine for weaving wire fabric, the combination with a table or frame and a pair of rotary shafts having wire elevating and depressing devices, of a rotary shaft with a spring for holding said shaft in position, a segmental gear on the beater-shaft and a segmental gear on one of the shafts of the wire-elevating devices adapted to intermittently engage the segmental gear of the beater-shaft, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM W. McCALLIP.

Witnesses:

GEO. M. FINCKEL,  
H. N. REID.