

(No Model.)

2 Sheets—Sheet 1.

J. B. CLEVELAND.
WIRE BRAIDING MACHINE.

No. 529,021.

Patented Nov. 13, 1894.

Fig. 3.

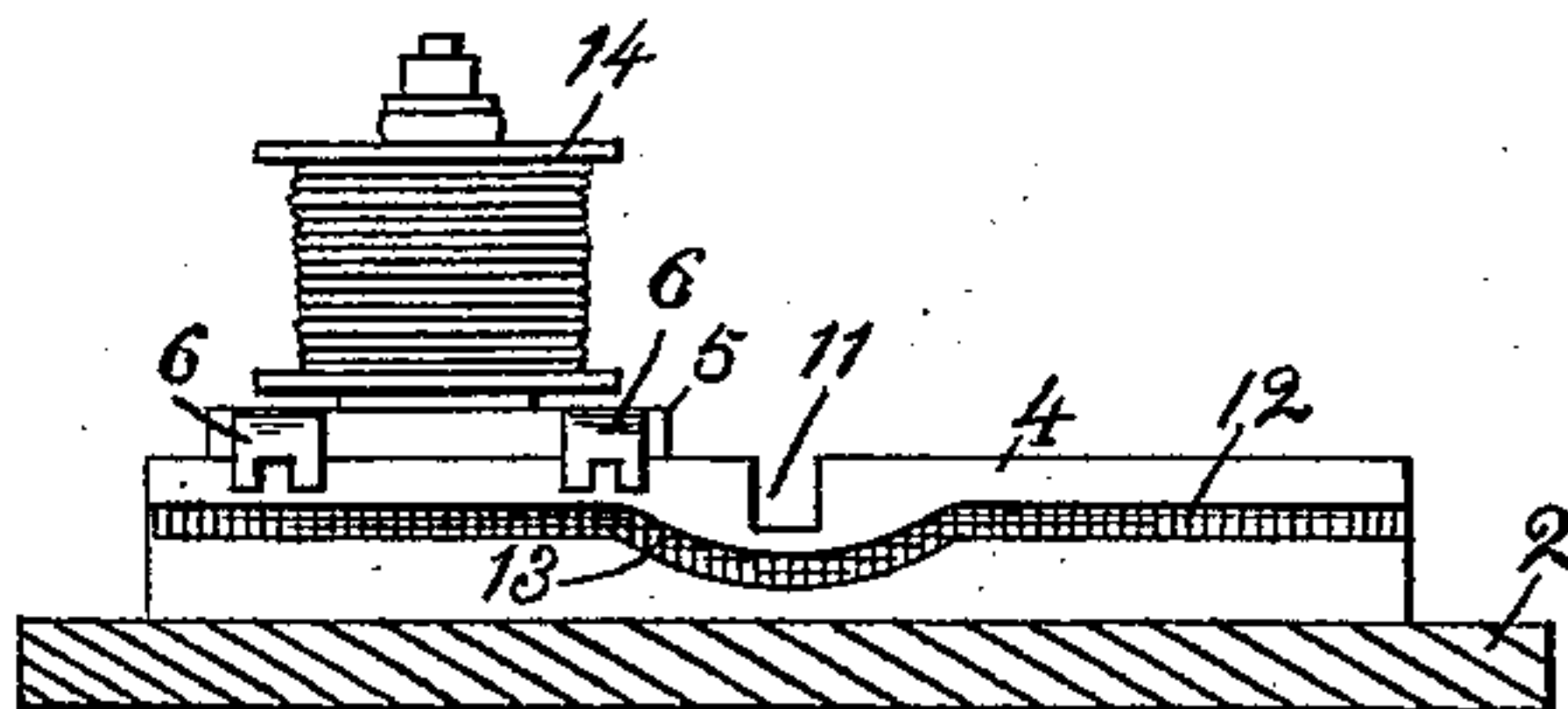
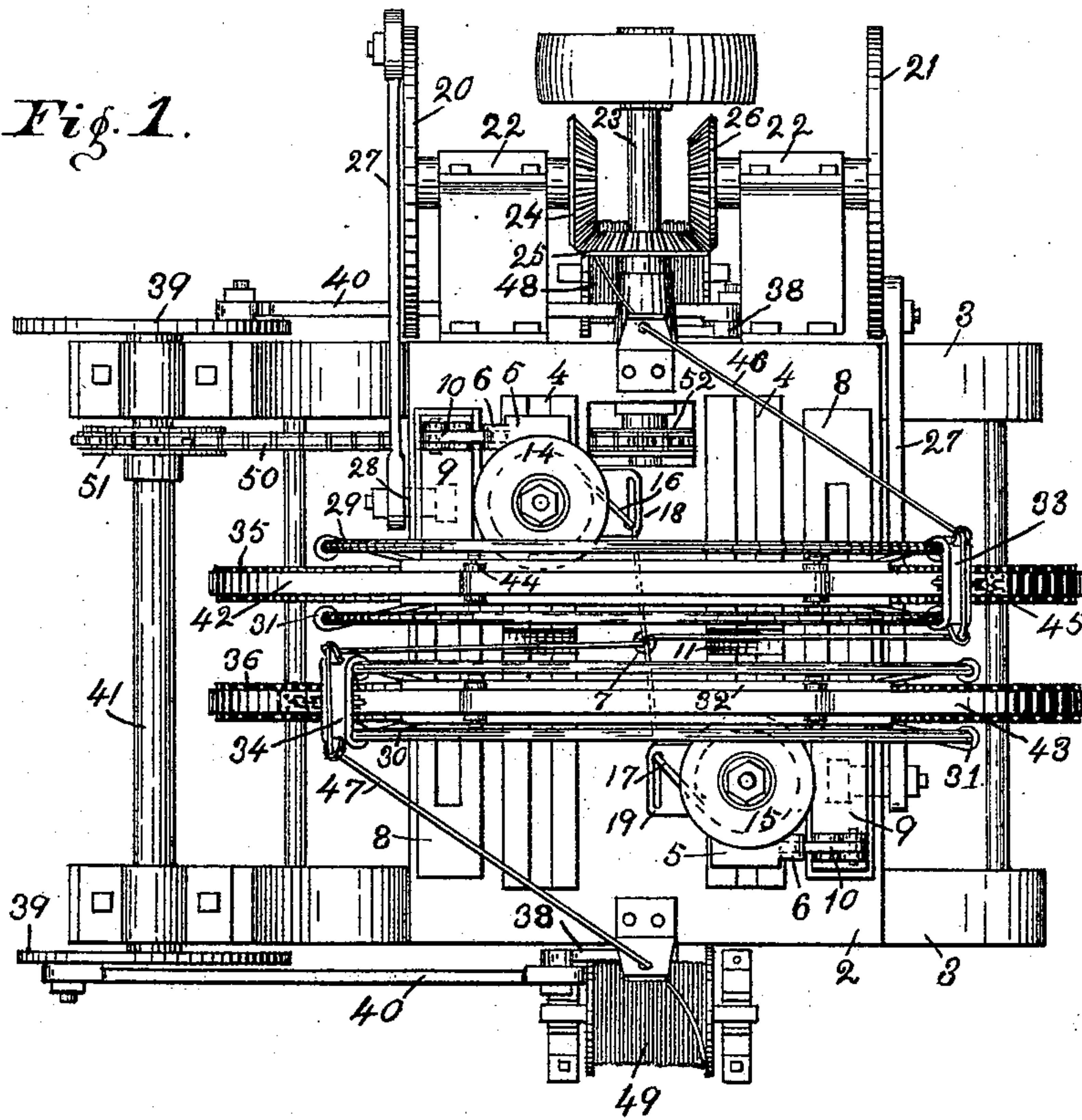


Fig. 1.



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John B. Cleveland.

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H. P. Hood.

(No Model.)

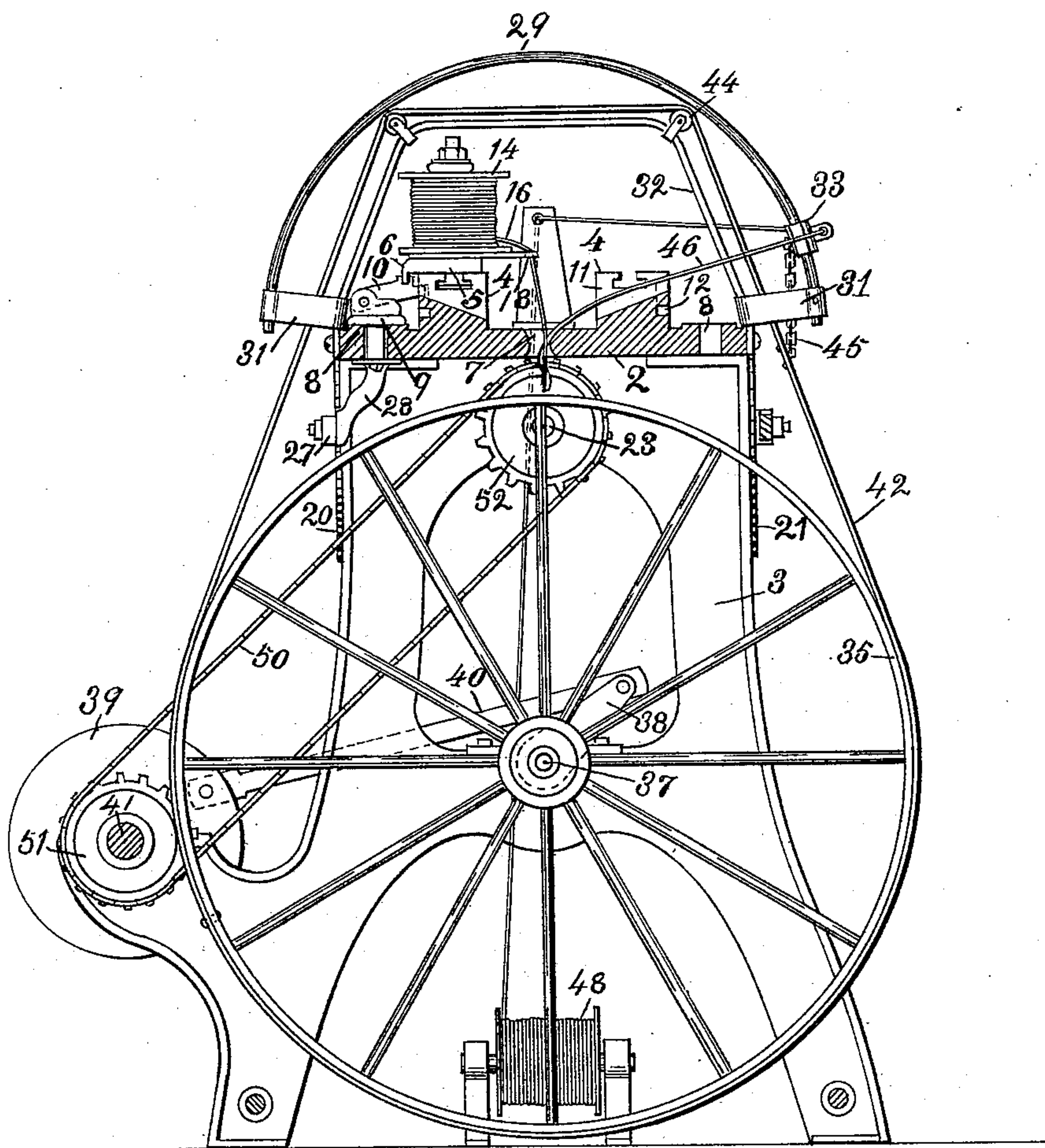
2 Sheets—Sheet 2.

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WIRE BRAIDING MACHINE.

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Patented Nov. 13, 1894.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN B. CLEAVELAND, OF INDIANAPOLIS, INDIANA.

WIRE-BRAIDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,021, dated November 13, 1894.

Application filed January 29, 1894. Serial No. 493,293. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CLEAVELAND, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Wire-Braiding Machines, of which the following is a specification.

My invention relates to a machine for forming a braided fence-wire which is shown in United States Patent No. 516,886, issued to me March 20, 1894.

The object of my invention is, to provide a machine for forming a braided fence-wire which consists of two pairs of strands arranged in planes at right angles to each other, the wires forming each pair being arranged side-by-side in parallel planes and bent into serpentine form, to form loops which are interwoven so that each of the strands operates to hold the other pair together without any twisting whatever.

The accompanying drawings illustrate my invention.

Figure 1 represents a plan of the machine. Fig. 2 represents a central transverse section. Fig. 3 represents a section of the table, and a side elevation of one of the sliding ways, with a spool-carrier mounted thereon.

In the drawings, 2, indicates a flat table, forming, together with the legs, 3, 3, the main-frame of the machine. The table 2 is provided with a pair of straight slide-ways, 4, 4 on which are mounted spool-carriers, 5, 5, each of which is provided with a pair of notched arms, 6, 6, which project laterally over one edge of the sliding way. The straight slide-ways 4, 4, are arranged on opposite sides of a vertical central opening, 7, formed in the table. Arranged parallel with the straight slide ways 4, 4, are a pair of slotted ways, 8, 8, on which are mounted a pair of sliding-carriers, 9, 9, which are provided, at each end, with a dog, or latch, 10, which is pivoted at one end to the sliding carrier 9, and engages at its opposite end with one of the notched arms 6, projecting from the spool carriers 5, so that the spool-carriers 5 are caused to move in unison with the sliding-carriers 9, 9, as hereinafter set forth. Each of the slide-ways 4, 4, is provided at its cen-

ter with a transverse notch, 11, the purpose of which will be hereinafter explained.

For the purpose of disengaging the dogs 10 from the arms 6, 6, during the passage of said arms across the notch 11, each of the straight slide ways 4, is provided, on its outer side, with a longitudinal groove, 12, having at its center a depression 13; the arrangement being such that the end of the dog 10 projects into the groove 12, and its upper edge engages the notch in the arm 6, when said arm is opposite the straight portion of the groove, but is disengaged therefrom by the depression 13 when the arm is opposite the notch 11.

On the spool-carriers 5, 5, are mounted a pair of spools 14 and 15, carrying wires 16 and 17, which, passing through guides 18 and 19, attached respectively to the spool carriers 5, 5, extend through the center opening 7, in the table.

A reciprocating movement is imparted to the sliding carriers 9, 9, alternately in opposite directions along the slotted ways 8, by means of a pair of crank-plates, 20 and 21, mounted on shafts in bearings, 22, secured to the main-frame; said crank-plates being driven simultaneously by means of the driving-shaft 23, and bevel gears 24, 25 and 26, and the plates being connected respectively, by means of a connecting rod 27, with an arm 28 depending from the sliding carrier 9.

Mounted upon and extending transversely above the table 2, are a pair of semi-circular slide-ways 29 and 30, each slide-way being formed of two cylindrical rods bent to the required shape and secured at the ends to brackets, 31, projecting from a support, 32, erected on the table.

Mounted upon the semi-circular slide-ways 29 and 30 are a pair of wire carriers, 33 and 34. A reciprocating movement is imparted to the wire carriers 33 and 34, alternately in opposite directions, by means of a pair of band-wheels, 35 and 36, each mounted on an independent shaft, as at 37, which shaft is mounted in bearings on the main-frame, and is provided with a crank 38, which is connected with the crank-plate, 39, by means of a connecting rod, 40; the relation of the cranks 38 and 39, being such that crank 38 is of greater radius than

crank 39, so that a complete revolution of crank 39 produces but a partial revolution of crank 38; and, there being a crank-plate 39 upon each end of the shaft 41, an oscillating movement, in opposite directions, is imparted simultaneously to the band-wheels 35 and 36, which motion is imparted to the wire carriers 33 and 34 by means of the belts, 42 and 43, which are mounted, respectively, on the band-wheels, and, passing over idlers 44, are each connected by means of a short chain, 45, with one of the wire carriers. The purpose of the chains 45 is to allow a short rest to the wire carriers at each end of their paths, so that the wire strands, 46 and 47, carried thereby, and extending from reels 48 and 49, respectively, to the opening 7, in the table, are held down and at rest in the notches 11, in the ways 4, while the spool carriers 5 are passing over said wires. Shaft 41 is driven continuously in one direction by means of a chain-belt, 50, passing over sprocket-wheels, 51 and 52, secured respectively to the shafts, 41 and 23.

The operation of my machine is as follows:
 25 The ends of the wire strands, 16 and 17, and 46 and 47, having been passed from their respective spools, as before described, to the central opening 7, the ends of all the wires are conducted to a take-up mechanism, of any
 30 suitable form. (Not shown in the drawings.) Shaft 23 being put in motion, and the parts being in the position shown in Fig. 1, wires 46 and 47 are laid in opposite directions in the notches 11 across the straight slide ways
 35 4, 4, by means of the wire carriers 33 and 34, and, while thus laid, the spool-carriers 5 pass in opposite directions over the wires 46 and 47, thus laying the wires 16 and 17 in planes at right angles thereto, and forming, as the
 40 individual wires are laid alternately in opposite directions, two series of interlacing loops arranged in planes at right angles to

each other, the whole being bound into one strand without twisting, and forming an exceedingly strong and elastic fence-wire.

I claim as my invention—

1. In a wire-braiding machine, the combination of the following instrumentalities, namely, a table having a central vertical opening therein, a pair of spool-carriers mounted on said table and arranged to reciprocate thereon in a horizontal plane upon opposite sides of said opening, and a pair of wire carriers also mounted on said table, and arranged to oscillate thereon on opposite sides of said opening in vertical planes which intersect the plane of the reciprocal motion of the horizontal spool-carriers, means for imparting a continuous reciprocating movement in opposite directions to said spool-carriers, and means for imparting an intermittent reciprocating movement to said wire-carriers, all substantially as and for the purpose set forth.

2. In a wire-braiding machine, the combination with the table, the semi-circular slide-way extending across and above said table, and the wire-carrier mounted on said slide-way of the band-wheel arranged beneath the table, means for imparting an oscillating movement to said band-wheel, the belt mounted upon said wheel and upon idlers arranged beneath and adjacent to said slide way, and a flexible connecting member connecting the belt and the wire-carrier, whereby an intermittent reciprocating movement is imparted to the said carrier by the continuous oscillating movement of the band-wheel, substantially as set forth.

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