

(No Model.)

4 Sheets—Sheet 1.

J. B. CLEVELAND.
WIRE BRAIDING MACHINE.

No. 486,823.

Patented Nov. 22, 1892.

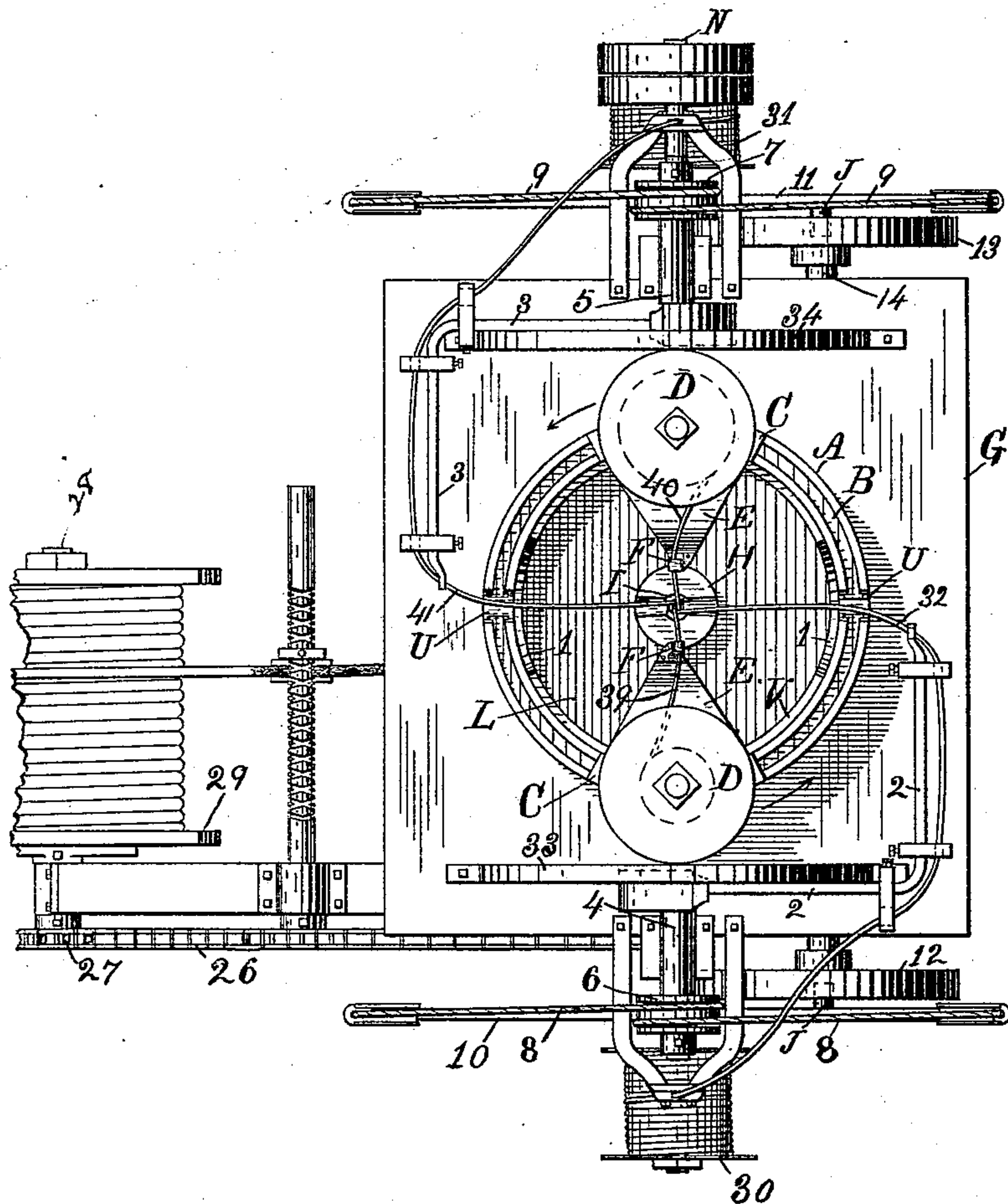


Fig 1

WITNESSES:
A. M. Hood.
T. M. Hood

INVENTOR
John B. Cleveland.
BY
H. P. Hood.
ATTORNEY.

(No Model.)

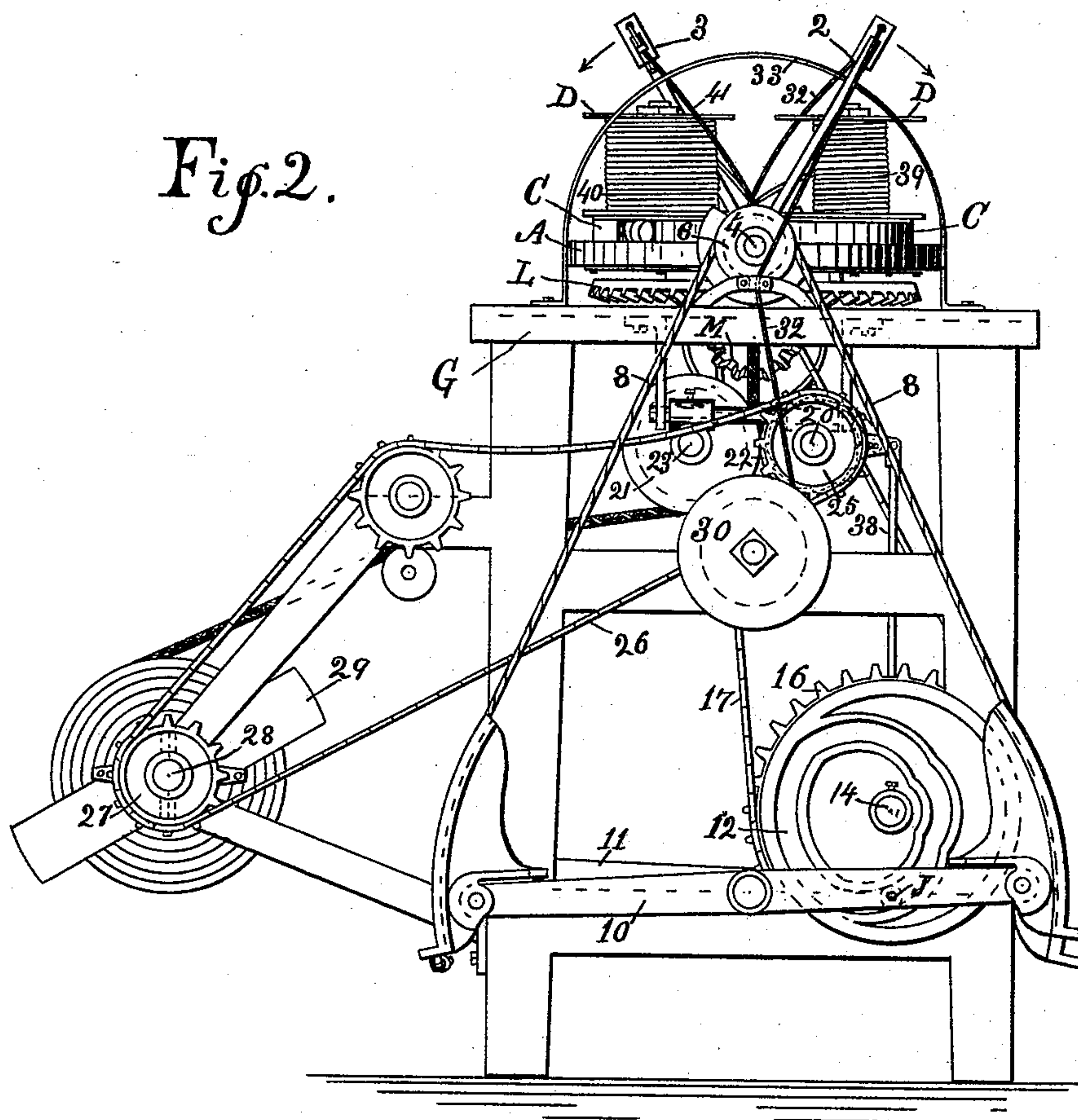
4 Sheets—Sheet 2.

J. B. CLEVELAND
WIRE BRAIDING MACHINE.

No. 486,823.

Patented Nov. 22, 1892.

Fig. 2.



WITNESSES:
Q. M. Hood
V. M. Hood

INVENTOR
John B. Cleveland
BY
H. P. Hood.
ATTORNEY.

(No Model.)

4 Sheets—Sheet 3.

J. B. CLEVELAND.
WIRE BRAIDING MACHINE.

No. 486,823.

Patented Nov. 22, 1892.

Fig. 3.

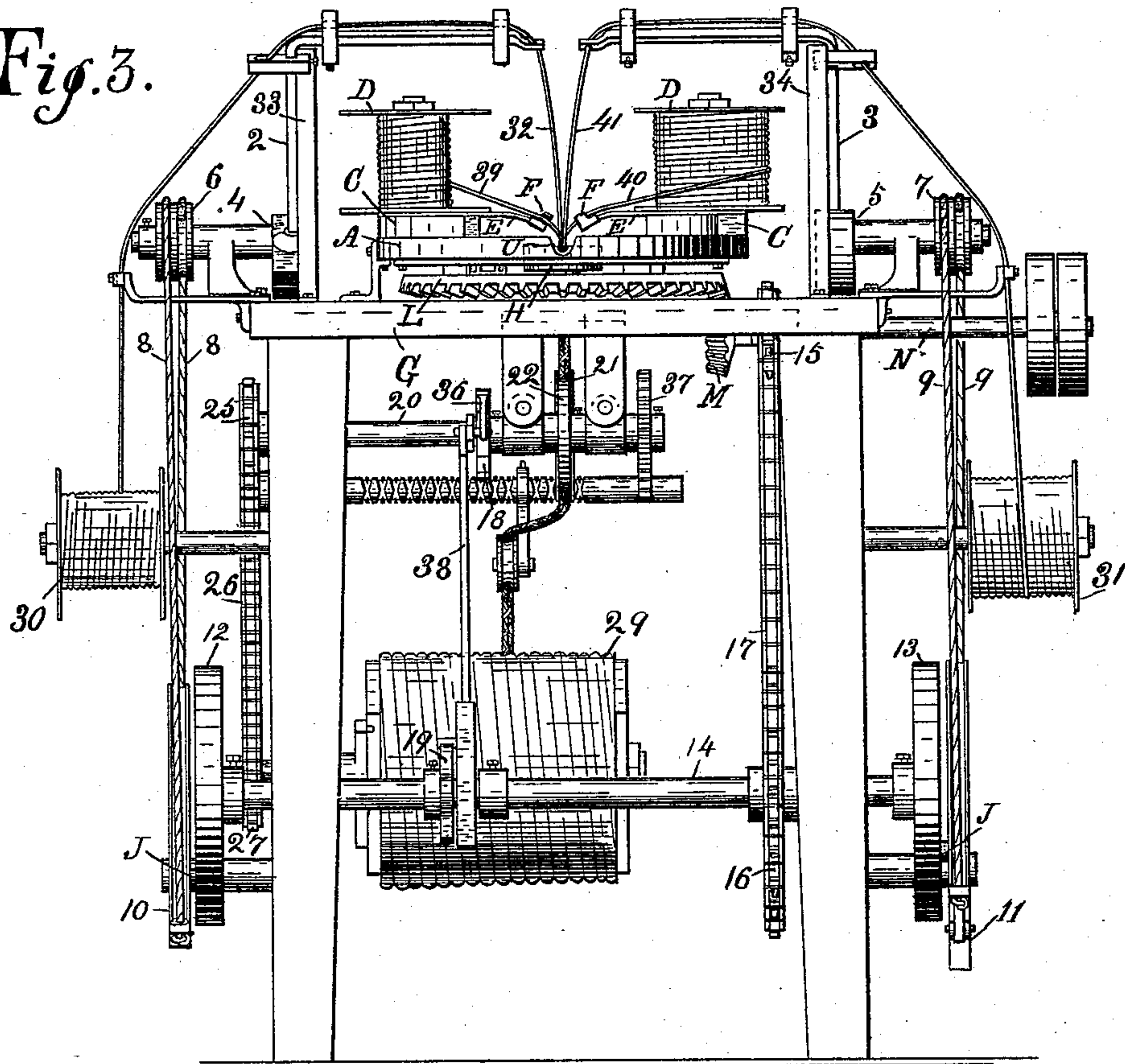


Fig. 7

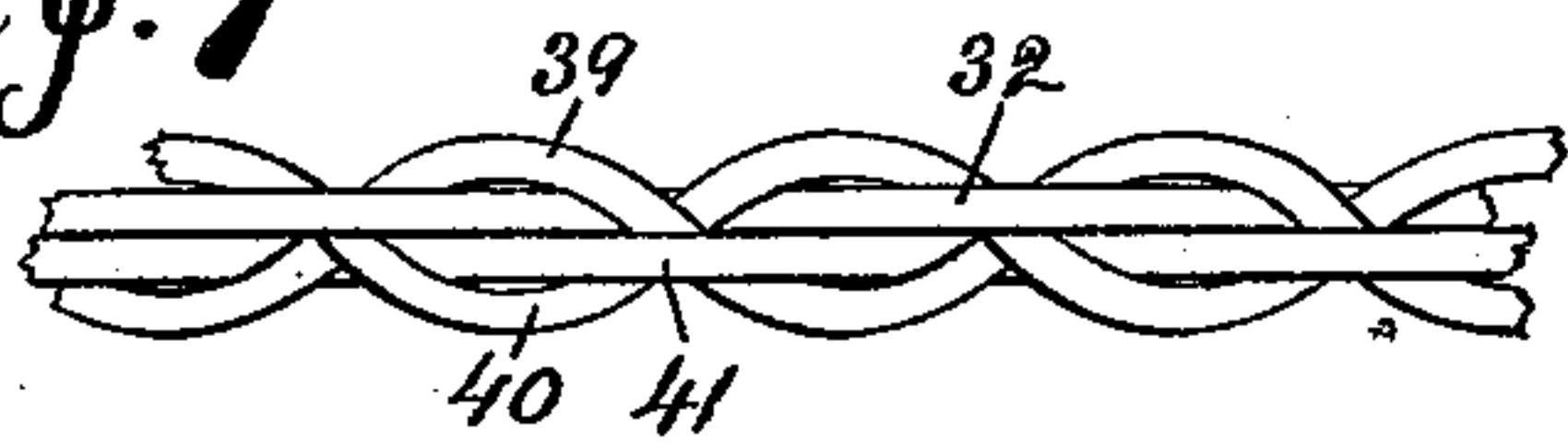
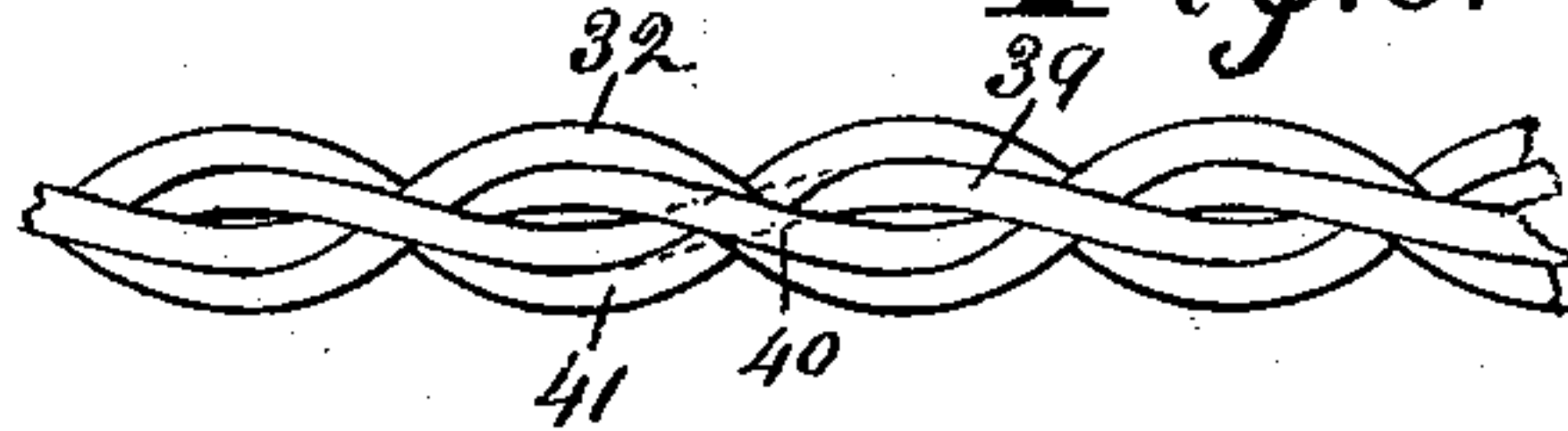


Fig. 8.



WITNESSES:
A. M. Hood.
T. M. Hood.

INVENTOR
John B. Cleveland.
BY
H. P. Hood.
ATTORNEY.

J. B. CLEVELAND.
WIRE BRAIDING MACHINE.

No. 486,823.

Patented Nov. 22, 1892.

Fig. 4.

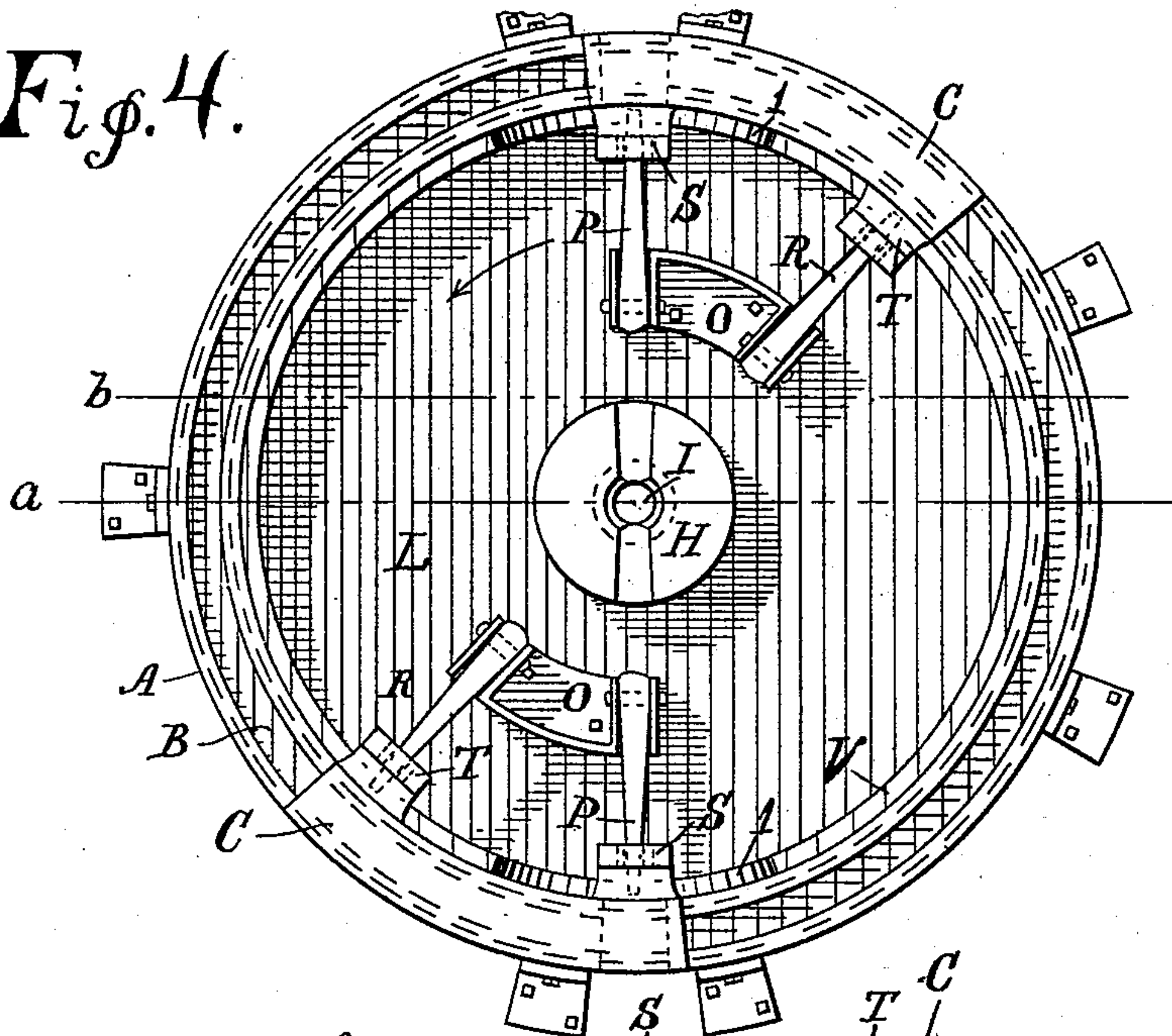


Fig 5

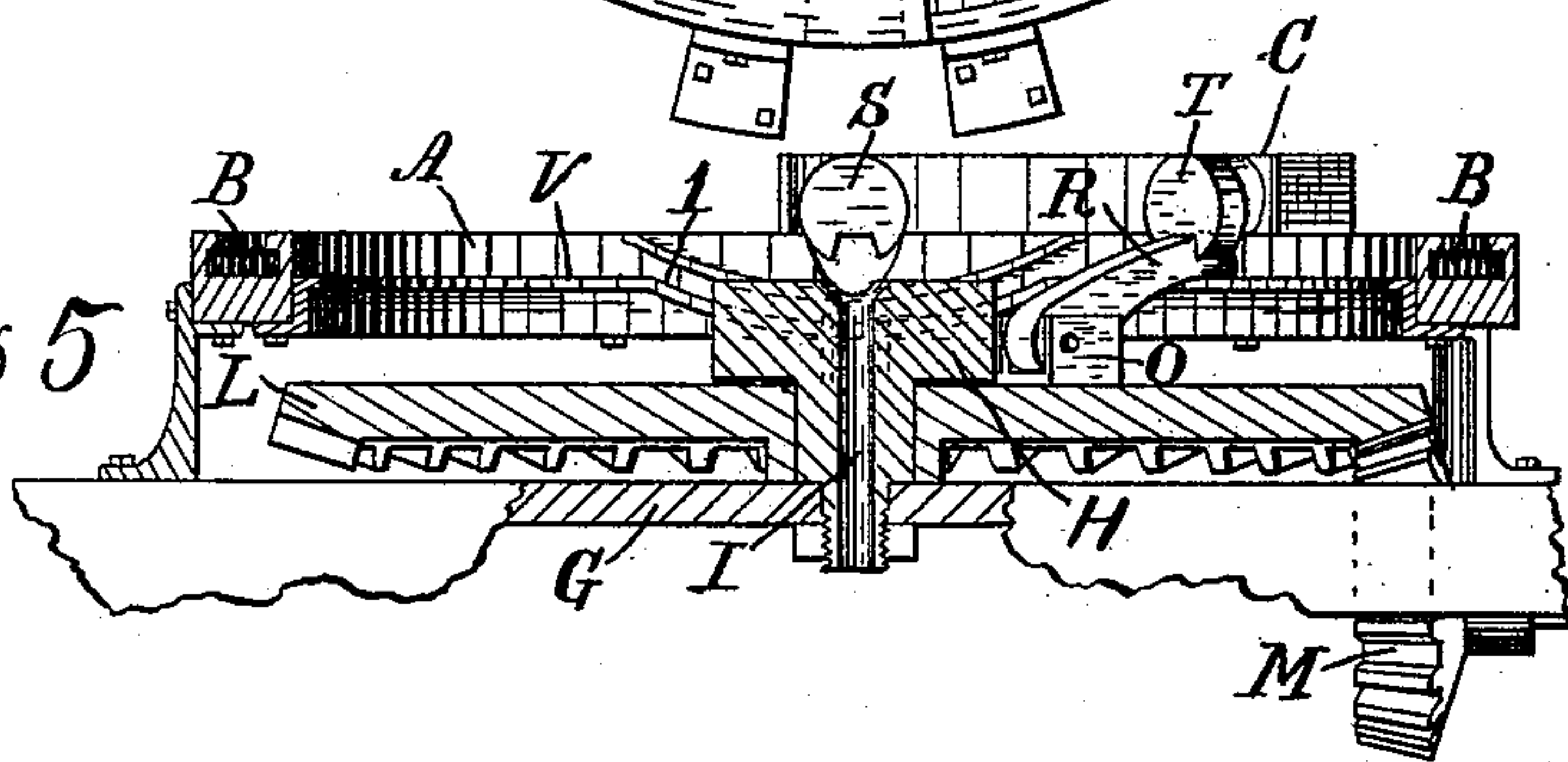
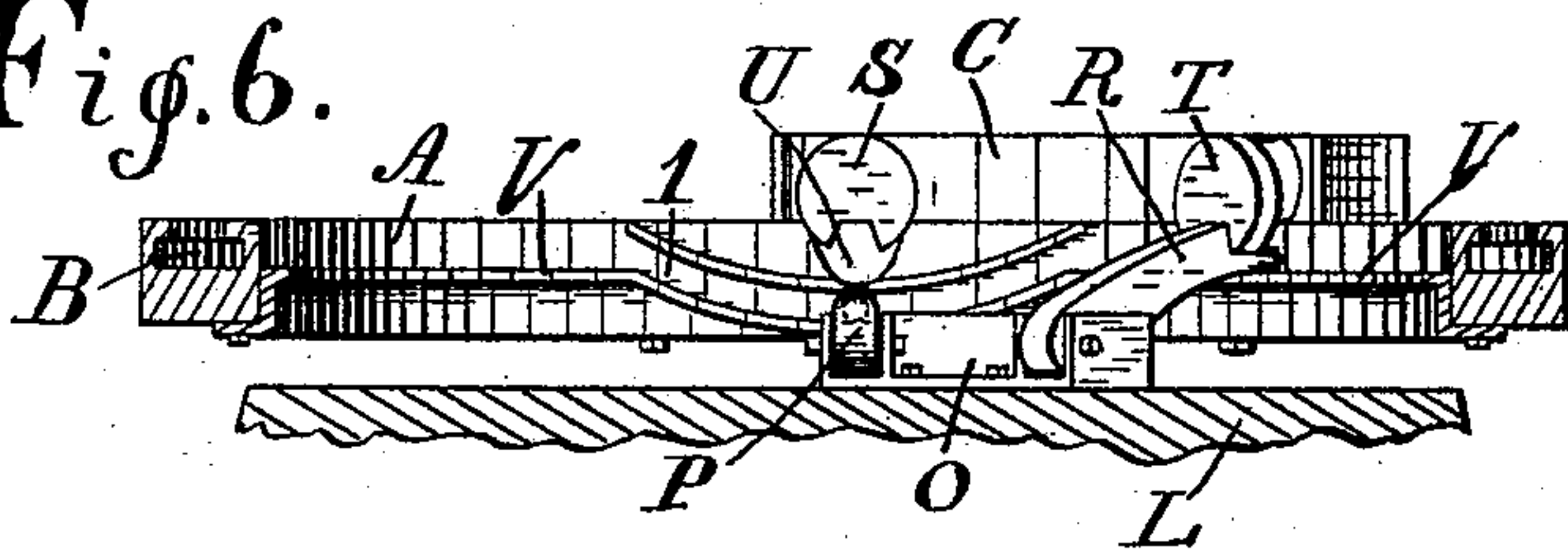


Fig. 6.



WITNESSES:

Q. M. Hood.

V. M. Hood

INVENTOR

John B. Cleveland.

BY

H. P. Hood.

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN B. CLEAVELAND, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO MARY E. CLEAVELAND, OF SAME PLACE.

WIRE-BRAIDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 486,823, dated November 22, 1892.

Application filed August 9, 1892. Serial No. 442,581. (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 an improvement in wire-braiding machines.

10 The object of my improvement is to provide a machine by means of which may be automatically produced a braided-wire fence-strand consisting of four wires, in which two of said wires shall be crossed at intervals to form loops, but remaining constantly in the same parallel planes, the other two wires being twisted one upon the other and interwoven with the parallel wires in a plane at right angles thereto.

20 The accompanying drawings illustrate my invention.

Figure 1 represents a plan of my machine, showing the oscillating wire-carriers at rest. Fig. 2 represents a side elevation, the wire-carriers being shown in transit. Fig. 3 represents an end elevation with the parts in the same position as in Fig. 2. Fig. 4 represents a plan, on an enlarged scale, of the driving mechanism of the rotating-wire-carriers. Fig. 5 represents a vertical section of the same at a, Fig. 4. Fig. 6 represents a vertical section at b, Fig. 4. Figs. 7 and 8 represent two elevations of the product of the machine.

35 In the drawings, A indicates a circular ring rigidly secured to the table G and having a circular way B, in which are mounted the rotating wire-carriers C C. Between the rotating wire-carriers and the bobbins D D, carrying the wire and mounted thereon, are secured plates E E, having on their free ends guides F F, through which the wires from bobbins D D are passed. A fixed hub H is mounted upon the table G, concentric with way B, which hub is provided with a central vertical opening I, through which the finished product of the machine passes.

45 L is a bevel gear-wheel mounted so as to revolve about hub H and intermeshing with the bevel-pinion M, which is mounted upon and secured to the driving-shaft N.

Upon the upper surface of bevel gear-wheel

L are secured a pair of brackets O O, in each of which are pivoted, so as to swing in a vertical plane thereon, a pair of dogs P and R. Formed integral with the carriers C are a pair of catches S and T, adapted to receive the free ends of the dogs P and R.

55 A pair of diametrically-opposed radial grooves U U are cut in the surface of the ring A, so as to extend below the way B a sufficient distance to admit one of the wires below the path of the rotary wire-carriers moving in said way.

60 Mounted upon the inner surface of ring A is a cam-shaped guide V, adapted to engage the outer ends of the dogs P and R and arranged to control their vertical movement. The guide V is provided with depressed portions 1 1, which are placed opposite and beneath the openings U in ring A. Said depressions are of a length equal to the distance horizontally between the outer ends of dogs P and R and are of a depth at the center sufficient to carry said dogs below the bottoms of the grooves U.

75 A pair of oscillating wire-carrying arms 2 and 3 are rigidly connected radially to rock-shafts 4 and 5, mounted in bearings in the main frame. Arms 2 and 3 are arranged to oscillate in a vertical plane and are guided and supported in their movement by light semicircular guides 33 and 34.

80 Rock-shafts 4 and 5 are provided with grooved pulleys 6 and 7, to which are attached wire cords 8 8 and 9 9, which are wrapped about the pulleys in opposite directions and extend to rocking levers 10 and 11, which are pivoted to the lower part of the main frame on opposite sides thereof, so as to swing in a vertical plane. An intermittent rocking movement is communicated to levers 10 and 11 by means of cams 12 and 13, which are mounted upon opposite ends of a shaft 14 and which engage pins J J, projecting from the inner sides of the respective arms. Shaft 14 is connected with and rotated by driving-shaft N by means of sprocket-wheels 15 and 16, secured to the respective shafts and connected by chain belt 17, the arrangement being such that shaft 14 and bevel gear-wheel L will revolve in the same time. Cams 12 and 13 are alike, but are arranged oppositely to

each other upon shaft 14, so that arms 2 and 3 are simultaneously tilted in opposite directions. Mounted in bearings suspended from the under side of table G are a pair of horizontal shafts 20 and 23. Said shafts are connected so as to rotate in unison by a pair of intermeshing gear-wheels, one of which is seen at 37, which are secured to the respective shafts. Mounted upon said shafts and having their opposed edges arranged beneath the opening I in hub H are a pair of feed-wheels 21 and 22, between which the finished strand is grasped and drawn downward after leaving hub H. An intermittent movement is given to said feed-wheels and shafts by means of a ratchet-wheel 18, secured to shaft 20, and a pawl mechanism 36, which engages the ratchet-wheel and is operated by means of a connecting-rod 38 and a cam 19, which is secured to shaft 14, so as to rotate therewith.

Mounted upon shaft 20 is a sprocket-wheel 25, which is connected by a chain belt 26 with a sprocket-wheel 27, secured to the reel-shaft 28, carrying the reel 29, upon which the finished strand is wound.

Mounted upon pins projecting from opposite sides of the main frame are a pair of bobbins 30 and 31, carrying wires 32 and 41.

In operation, the wires from bobbins 30 and 31 having been carried, respectively, along the arms 2 and 3 through the opening in hub H to the feed-wheels 21 and 22, and the wires 39 and 40 from bobbins D D having also been conducted through guides F F and the opening in hub H to the feed-wheels, and the machine being in the position shown in Fig. 1, the wires 32 and 41 lie at the bottom of grooves U U. Motion being now given to the machine bevel gear-wheel L revolves in the direction indicated by the arrow, carrying with it the wire-carriers C C and bobbins D D, the dogs P and R being held in engagement with the catches on the carriers by means of guide V. When dog P reaches the depression 1 in guide V, it follows said depression and is thereby carried under wire 32, the carrier being advanced in the meantime by means of dog R. When dog R reaches the beginning of the depression in the guide, dog P has reached the other end of the depression and is again in engagement with the catch S. In this way a continuous motion in one direction is given to the carriers C C, and the wires carried thereon are twisted together and about the wires 32 and 41. When the carriers C C have passed grooves U U, arms 2 and 3 are caused to move in opposite directions in parallel vertical planes by means of the cords 8 and 9, levers 10 and 11, and cams 12 and 13. Wires 32 and 41 are thus crossed over the other two wires without being twisted together and remain at rest until

the rotary bobbin-carriers have again passed the grooves U. By this arrangement at each half-revolution of gear-wheel L the wires from the bobbins D D are crossed and twisted a half-revolution, while wires 32 and 41 are simply crossed, the loops thus formed in each pair of wires being interwoven in planes at right angles to each other and forming the strand illustrated in Figs. 7 and 8.

I claim as my invention—

1. In a wire-braiding machine, the combination of the following instrumentalities, namely: a table, a pair of wire-carriers mounted on said table and arranged to rotate thereon in a horizontal plane, a pair of wire-carriers also mounted on said table and arranged to oscillate thereon in vertical planes which intersect the plane of rotation of the horizontal wire-carriers, means for imparting a continuous rotary motion to said rotating wire-carriers, and means for imparting an intermittent oscillating movement to said oscillating wire-carriers, all substantially as and for the purpose set forth.

2. In a wire-braiding machine, the combination of the table, the circular way mounted thereon and having in its upper surface a pair of diametrically-opposed radial grooves, the centrally-perforated hub secured to said table concentric with said way, the pair of wire-carriers arranged to traverse said way, the wheel mounted upon said hub and arranged to rotate beneath said way, the dogs pivoted to said wheel and arranged to engage said wire-carriers, and the guide arranged to disengage said dogs from said carriers while the carriers are passing the radial grooves in the way, substantially as and for the purpose set forth.

3. In a wire-braiding machine, the combination of the table, the pair of wire-carriers arranged to rotate in a horizontal plane thereon, the pair of rock-shafts mounted on said table at opposite sides of the plane of rotation of said wire-carriers, the plane of rotation of said rock-shafts being at right angles to the plane of rotation of the wire-carriers, the pair of wire-carrying arms secured to the rock-shafts, the pair of rocking-levers pivoted to the table so as to swing in a vertical plane thereon, the cords connecting the ends of said levers and said shafts, and means, substantially as shown and described, for imparting an intermittent oscillating movement to said rocking-levers, whereby said wire-carrying arms are simultaneously oscillated in opposite directions, substantially as set forth.

JOHN B. CLEAVELAND.

Witnesses:

H. P. HOOD,
A. M. HOOD.