(No Model.)

J. VERMEULEN.

WIRE BOX STRAP MACHINE.

No. 481,444. Patented Aug. 23, 1892.

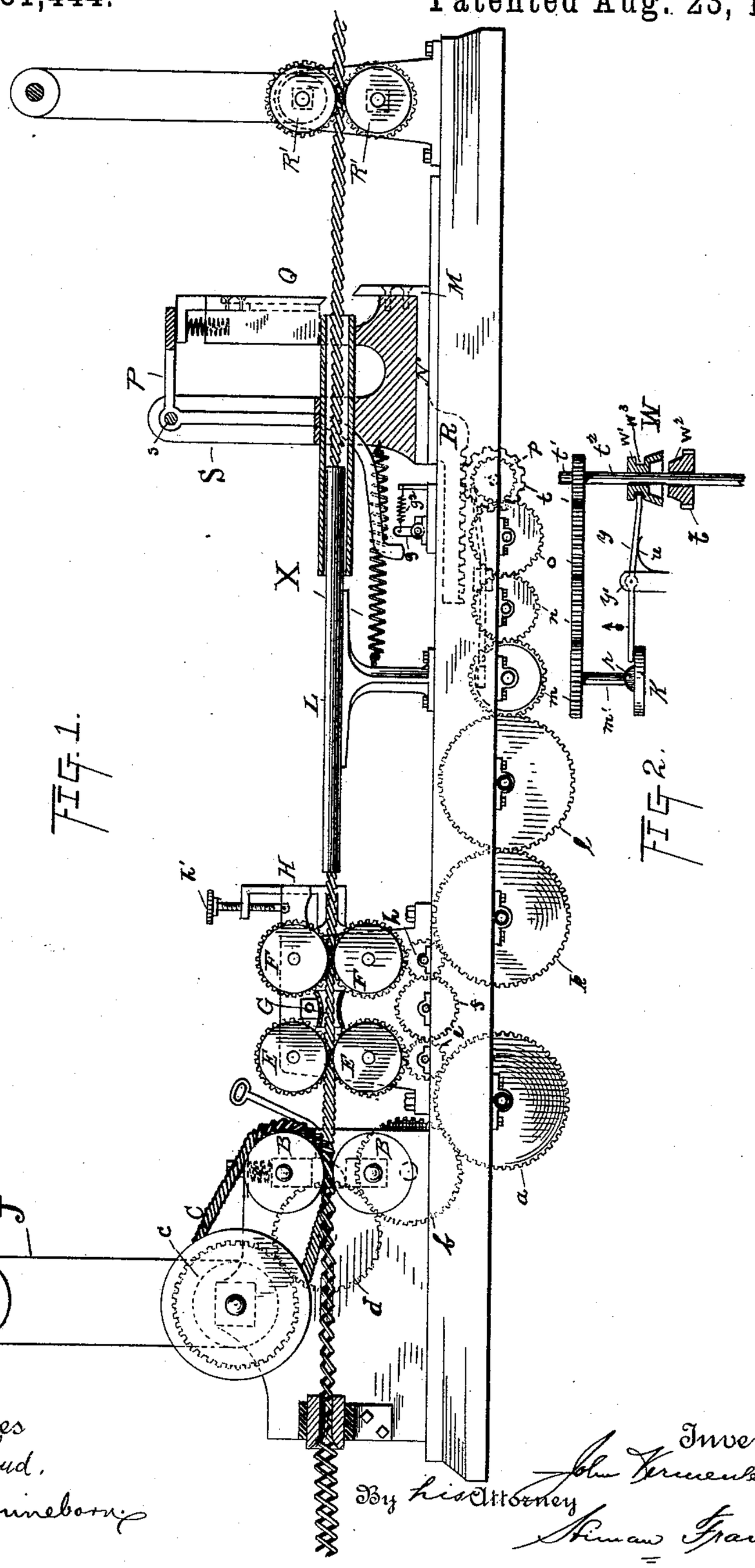

FIG. 1.

FIG 2.

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UNITED STATES PATENT OFFICE.

JOHN VERMEULEN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE OLIVER & ROBERTS WIRE COMPANY, LIMITED, OF PITTSBURG, PENNSYLVANIA.

WIRE-BOX-STRAP MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,444, dated August 23, 1892.

Application filed March 31, 1890. Serial No. 345,997. (No model.)

To all whom it may concern:

Be it known that I, JOHN VERMEULEN, a citizen of Belgium, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Wire-Box-Strap Machines; 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.

The object of my invention is to produce a machine for forming flat open-twist wires for binding boxes and similar purposes in a more rapid and effectual manner than has heretofore been known.

In the accompanying drawings, forming a part hereof, Figure 1 represents a side view in elevation of a machine embodying my invention, and Fig. 2 is a detailed view of the device for throwing into operation the cut-off mechanism.

With the use of my machine two strands of wires are first spirally coiled together side by side, and the ends are run through the die A and between the metal disks B B, are then run around the drum C several turns, and in returning pass the disks B B between the measuring-rolls E E, through the guide G, between the rolls F F, through the adjustable straightening device H into and through the tube L, between the cutting-knives Q M, and thereafter, if desired, between the painting-rolls R′ R′. The object of the forming-die A is to reduce the diameter of the wires and also for the purpose of stretching them. The disks B B flatten the two interlocking spirals as they pass between them, and the drum C exerts the necessary tension. The straightening device H is adjustable by means of the screw h' and takes the curve out of the wires that has been produced therein by being wound around the drum C. Motion is applied to all these parts, primarily, through the pulley and belt I J, and, as shown in the drawings, the drum C is provided with a gear-wheel c, which meshes with a gear-wheel d, which meshes with a gear-wheel b, which meshes with a gear-wheel a, and that in turn meshes with a pinion e to revolve the rolls E E. The pinion e also meshes with an intermediate gear-wheel f, which meshes with another pinion h, so as to revolve the rolls F F. The pinion h also meshes with a gear-wheel k, which meshes with a similar gear-wheel l, which meshes with a gear-wheel m, which in turn meshes with a gear-wheel n and that with a gear-wheel o, and the wheel o meshes with a pinion p, which is rigidly attached to the shaft t'. Thus, as will be seen, the motive power which drives the drum C also, by means of the gear-wheels, drives the other parts of the machine.

The cutting-off device for the purpose of cutting the wires in different lengths consists of the bent lever P, which is pivoted at s in the upright S, and moves along on the bed N (which bed has a V slide) at intervals, according to the desired length of the wire to be cut off. The upper arm of lever P bears on the cutting-off knife Q, which is supported on another part of the upright S, and at the other end of the upright or standard S is secured a cutting-off knife M.

On the gear-wheel m is a short shaft m', on the end of which is a circular plate K, which carries a projection or lug r, and the gear-wheel t also has a short shaft t', which carries a chuck W, divided into two parts w' w^2, the part w' being connected with the shaft t^2, and revolving with it by means of a key which travels in a keyway, permitting it to move backward and forward on the shaft t^2, and the other part w^2 is loosely sleeved on the shaft t', w^2 consisting of the gear-wheel t and a cone, as shown in Fig. 2. When the part w' is thrown onto or over the part w^2, they both move together, and the part w' is kept away from the part w^2 by means of the lever y, which is pivoted at y', one end of which lever is adapted to come in contact with the lug r and the other end to fit into a groove w^3 in the part w' of the chuck W. To the support upon which the lever y is pivoted is attached a spring u, the tension of which is against that arm of the lever which is connected with the part w' of the chuck W for the purpose of holding this part from off the part w^2, so as not to operate the cutting-off mechanism. As will be seen by the drawings, there is a rack R, forming part of the upright S, which meshes with the gear-wheel t, and is moved along thereby whenever the gear-wheel

t is thrown into operation, and when the lever P travels over to the right its lower arm strikes against and rides over the trip g, thereby raising that end of the lever and depressing the other arm of the lever against the knife Q, which is thereby caused to descend onto the wires which are between the knife Q and the knife M, cutting them off while traveling forward, and this without in the least impeding the traveling of the wires, since the cutting-off mechanism travels at the same rate of speed as the wires. As will be readily understood, the plate K travels with the gear-wheel m, and at each revolution of the plate K the lug r will come in contact with the lever y, pushing it away in the direction shown by the arrow in Fig. 2, thereby causing the part w' to clutch the part w^2, which now operates with it, causing the gear-wheel to revolve and thereby operate the cutting-off mechanism, and as soon as the lug r has passed the lever the spring u restores the lever to its original position, removing the part w' from off the part w^2, stopping the gear-wheel t. After the wires have been cut the cutting-off mechanism must be returned to its original position, and this is accomplished by means of the spring X, which has been expanded by the traveling of the standard, thereby storing up power to return it and as soon as the part w' has been removed from the part w^2, stopping the gear-wheel t, (the tension of the spring X being against the movement of this gear-wheel t,) and the parts are returned to their original position, the lower end of the lever P in its backward travel riding over the trip g, which is free to move in one direction to be returned by a small spring g^2 and rest against a fixed stop, in order to raise the lower arm of the lever P as it travels over it, as before explained. Thus, as will be seen, the spirally-coiled wires are stretched, flattened, straightened, measured, and cut off and afterward painted, if desired, in one continuous operation, and the machine is adjustable by means of suitable gearing, so as to cut off the wires in any desired uniform lengths.

What I claim as my invention is—

1. In a wire-working machine, the combination, with the tension-drum, flattening-disks, measuring-rolls, and means for operating the same, of a cutting-off mechanism for cutting the wires in any desired length, all arranged for successive action, substantially as described.

2. In a wire-working machine, the combination, with the forming-die, tension-drum, flattening-disks, measuring-rolls, and means for operating the same, of a cutting-off mechanism for cutting the wires in any desired lengths, all arranged for successive action, substantially as described.

3. In a wire-working machine, the combination, with the forming-die, tension-drum, flattening-disks, measuring-rolls, adjustable straightening device, and means for operating the same, of a cutting-off mechanism for cutting the wires in any desired lengths, all arranged for successive action, substantially as described.

4. In a wire-working machine, the combination, with the forming-die, tension-drum, adjustable flattening-disks, measuring-rolls, guide, rolls, adjustable straightening device, and means for operating the same, of a cutting-off mechanism, which consists of a lever, rack, and knives, adapted to be thrown into operation by a traveling part of the machine, so as to cut off the wires in uniform lengths, all arranged for successive action, substantially as described.

5. In a wire-working machine, the combination, with the forming-die, tension-drum, adjustable flattening-disks, measuring-rolls, guide, rolls, adjustable straightening device, and means for operating the same, of a cutting-off mechanism, which consists of the lever, rack, and knives, adapted to be thrown into operation by a traveling part of the machine actuated by means of the disk and the lug thereon, divided chuck, and the lever, all constructed and arranged for successive action, substantially as described.

6. In a wire-working machine, the combination, with the forming-die A, tension-drum C, adjustable flattening-disks B B, measuring-rolls E E, guide G, rolls F F, adjustable straightening device H, tube L, and means for operating the same, of a cutting-off mechanism that is adapted to be thrown into operation by a traveling part of the machine, which consists of the lever P, standard S, knives Q M, rack R, spring X, trip g, disk K and lug r thereon, lever y, spring u, and divided chuck W, all constructed and arranged for successive action, substantially as and for the purpose set forth.

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

JOHN VERMEULEN.

Witnesses:

H. A. VIEU,

HENRY RENBERT.