

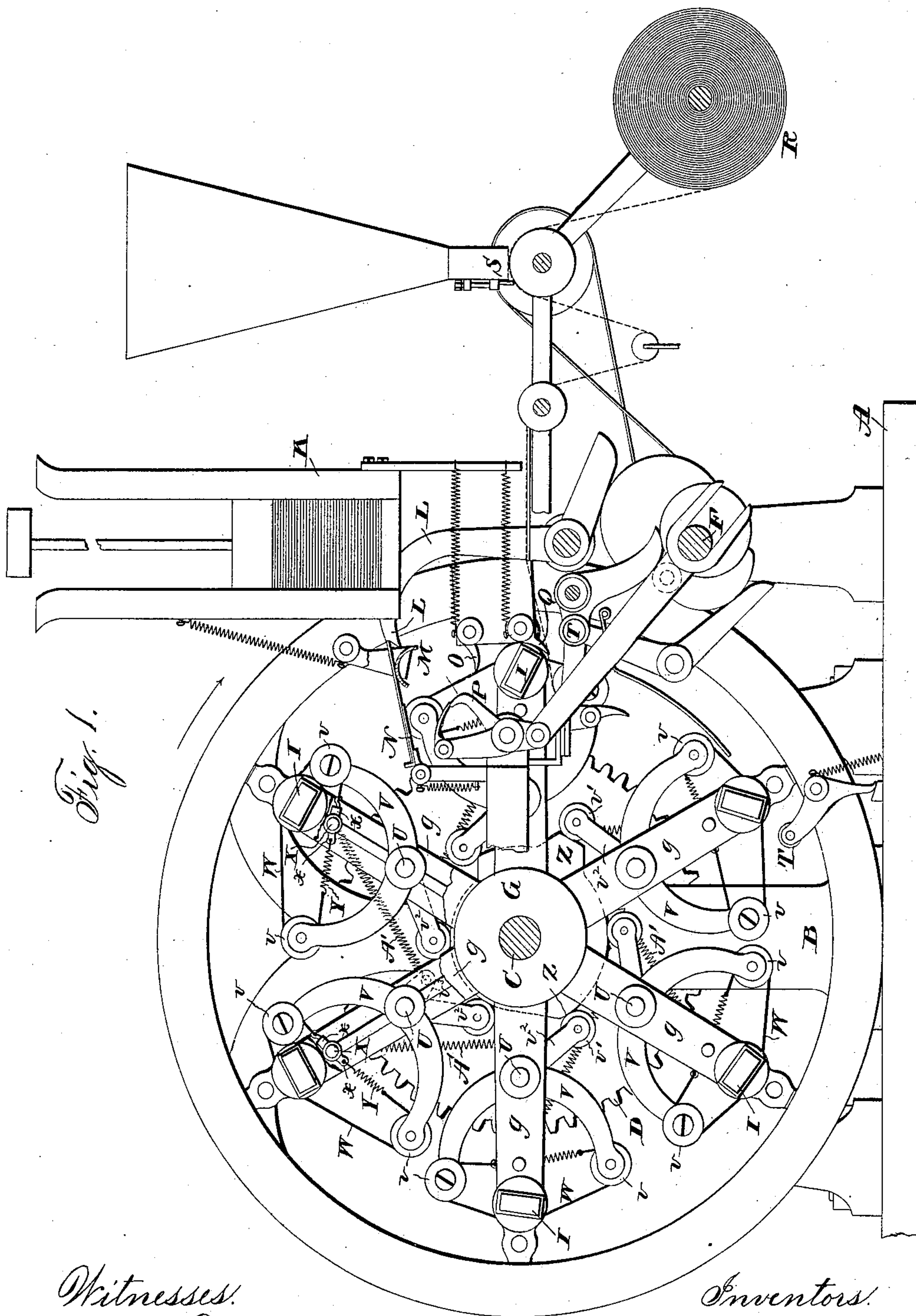
(No Model.)

2 Sheets—Sheet 1.

C. LOYENS & A. PAULSON.
MACHINE FOR MAKING BOX COVERS.

No. 557,516.

Patented Mar. 31, 1896.



Witnesses:
Frank P. Prindle.
Henry C. Hazard.

Inventors:
Charles Loring and Anders Paulson,
by Prindle and Russell, their Attys

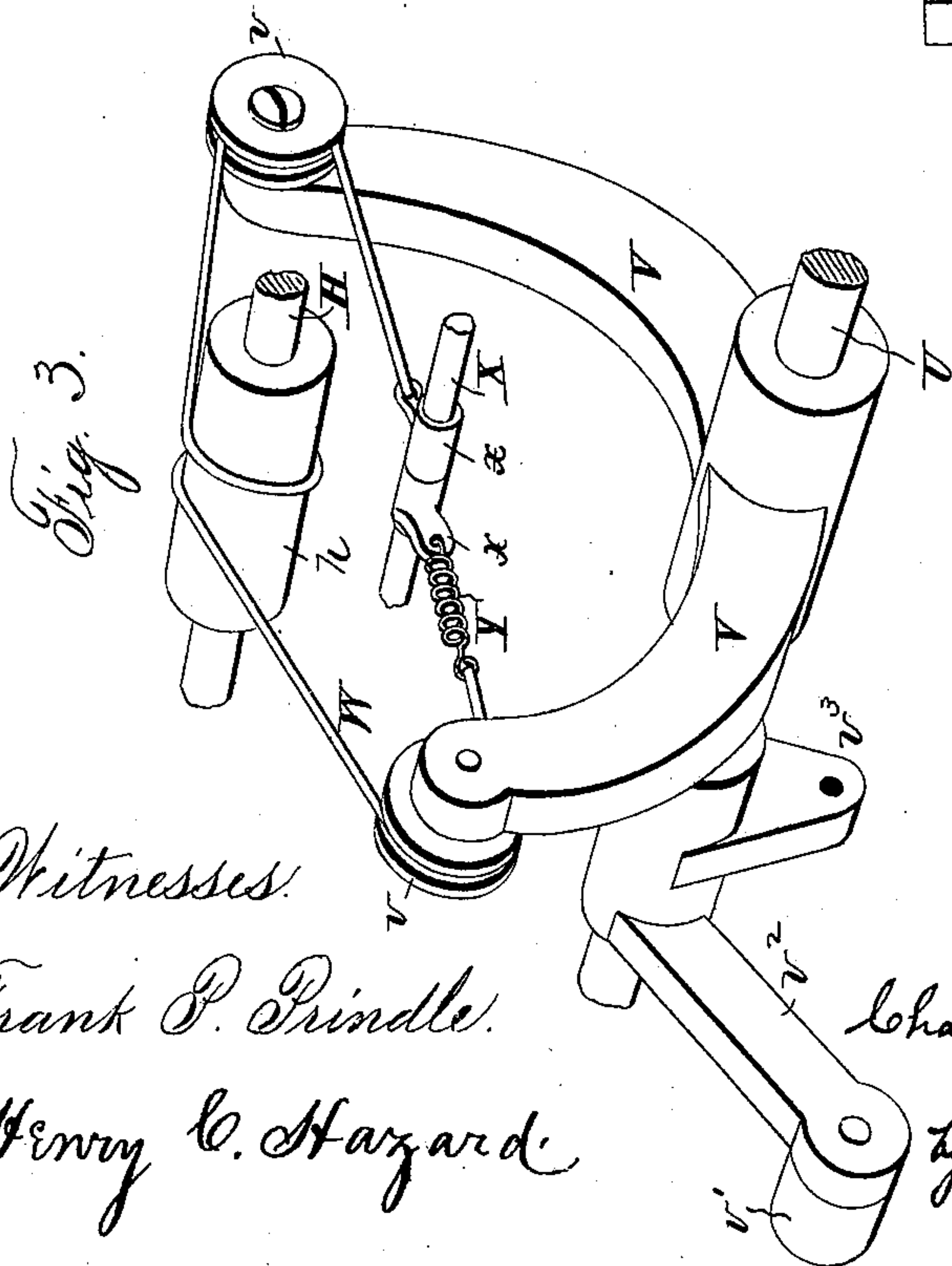
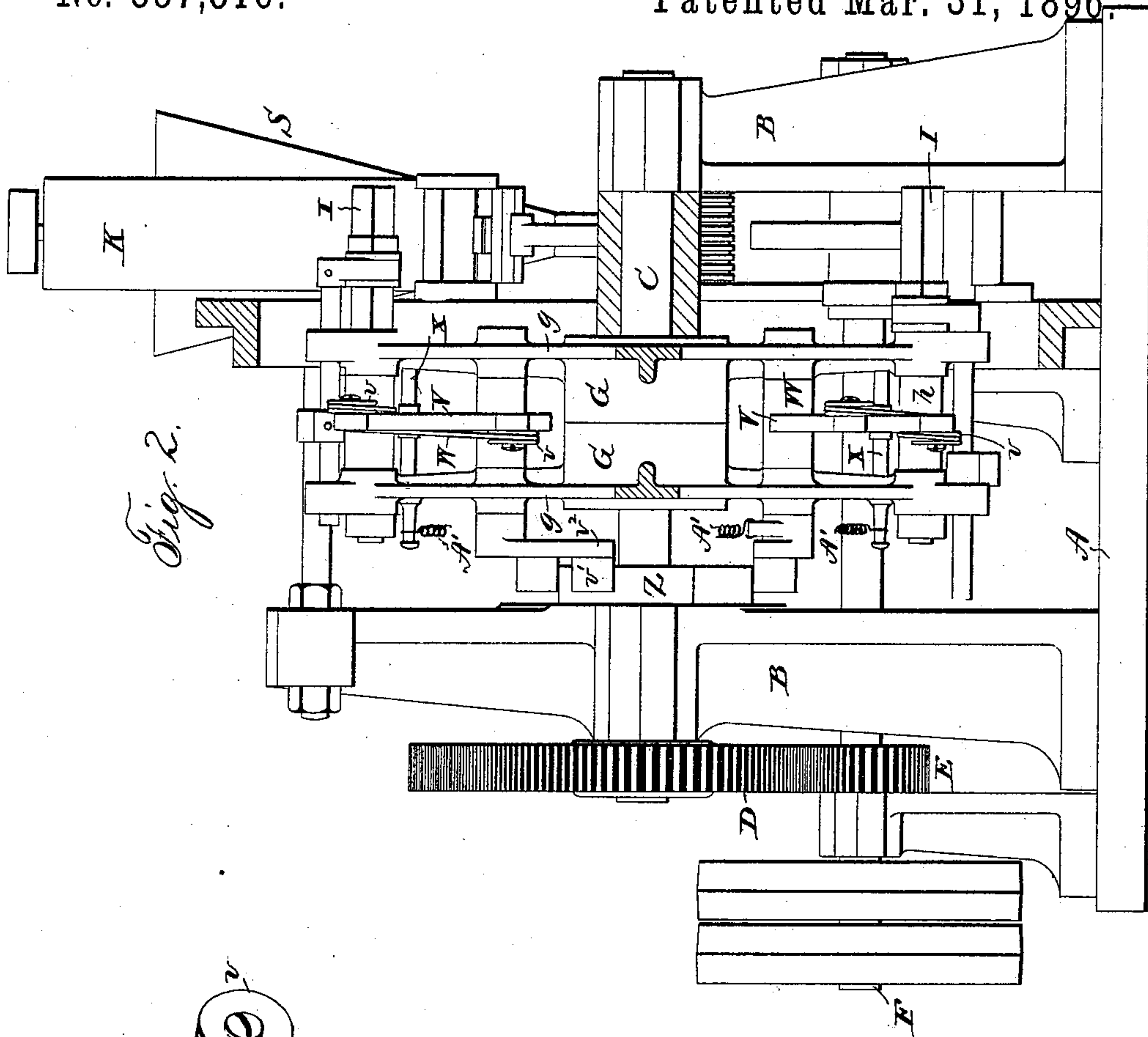
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UNITED STATES PATENT OFFICE.

CHARLES LOYENS AND ANDERS PAULSON, OF BREDA, NETHERLANDS, ASSIGNORS TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS.

MACHINE FOR MAKING BOX-COVERS.

SPECIFICATION forming part of Letters Patent No. 557,516, dated March 31, 1896.

Application filed September 9, 1893. Serial No. 485,199. (No model.)

To all whom it may concern:

Be it known that we, CHARLES LOYENS and ANDERS PAULSON, residing at Breda, in the Netherlands, have invented certain new and useful Improvements in Machines for Making Box-Covers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—
Figure 1 is a view, partly in side elevation and partly in section, of a machine embodying our invention. Fig. 2 is a view of the same in end elevation with parts in section, and Fig. 3 is a detail view in perspective of one of the mandrel-rotating devices.

Letters of like name and kind refer to like parts in each of the figures.

The object of our invention is to provide a machine for the rapid and cheap manufacture of boxes for matches, &c.; and to this end said invention consists in the mechanism and in the construction and combination of the parts thereof substantially as hereinafter specified.

The machine shown in the drawings is designed for the manufacture of the cover or casing parts of match-boxes of the telescoping type, which parts are in the form of flat-sided tubes with unclosed ends and made of a veneer of wood covered externally and held in shape by paper. Said machine is of a similar general construction to those shown in our two applications for patent, serially numbered, respectively, 559,146 and 559,147, filed August 13, 1895, and more particularly resembles the one shown in the former application—that is to say, it has a rotatable series of rotatable mandrels, upon each of which a blank fed from a suitable hopper is adapted to be folded and covered by paper by a series of devices to which the mandrel is successively presented by the revolution of the series, the mandrel being rocked or rotated to enable the proper and efficient operation of the folding devices.

As the invention covered herein relates only to devices or means for rocking or rotating each mandrel, it will not be necessary to give other than a general description of the other parts of the machine, as a full and detailed description and illustration thereof

are to be found in our applications hereinbefore referred to.

In the drawings, A designates a suitably-supported base or bed plate, to the upper side of which are bolted two standards B and B, that at their upper ends have bearings for a horizontal shaft C, which, through a gear-wheel D and pinion E, receives motion from a drive-shaft F, journaled in bearings secured to the base A.

Keyed or otherwise fastened to the shaft C at a point between the two standards B and B is a frame composed of two spiders that consist each of a hub G and six radial arms *g* and *g*, said spiders being arranged so that the arms of one extend in line with and parallel to those of the other. Journaled in openings near the outer ends of each pair of parallel spider-arms *g* and *g* is a horizontal shaft H that at one end has attached an oblong flat-sided block I, which constitutes a mandrel or former on which the box-cover is shaped.

The blank from which the box-cover is made consists of a strip of veneer having a width corresponding to the length of the box and a length sufficient to form the two sides and ends of the cover, and before being placed in a hopper K, from which it is fed for being operated on, it is scored at points corresponding in position to the four corners of the cover to facilitate its being bent or folded around the mandrel.

From the hopper K the blank is fed by a pivoted cam-actuated arm L to a position over and upon two pivoted plates M and N, with its middle portion in the path traveled by the mandrel in its revolution with the shaft C, said plates being suitably supported at opposite sides of such path with their free ends held yieldingly therein by springs. The passage of the mandrel between said plates causes the partial folding or bending of the blank on the mandrel, and the complete folding is effected by the successive action of a series of fingers O, P, and Q, to and by which the mandrel moves.

The covering-paper is supplied from a roll R, from which it passes first to a glue or paste applying mechanism S to receive the necessary adhesive, and thence is carried into the path of the mandrel, being applied to the

folded blank thereon by a series of successively-acting fingers or nippers T and T arranged at suitable points along the path traveled by the mandrel. Suitable cutting mechanism at the proper time cuts the requisite amount of paper from the strip for a box-cover.

For the proper presentation of the blank to the blank-folding and paper-applying fingers it is necessary that the mandrel should be revolved on its shaft H sometimes in one direction, sometimes in the opposite, and sometimes held immovable on its own axis, and to this end we employ the following-described mechanism: Journaled in each pair of mandrel-carrying arms *g* and *g*, parallel with the mandrel-shaft H thereof and at a point substantially midway between the latter and the shaft C, is a rock-shaft U, upon which, between the spiders, is mounted a U-shaped lever V, whose arms extend outward upon opposite sides of the mandrel-shaft and carry at their respective ends one of two wheels or pulleys *v* and *v*. Passing several times around the mandrel-shaft or a drum *h* thereon and thence in opposite directions to and over the wheels *v* and *v* is a rope or cord W, whose ends are secured to arms *x* and *x* pivoted upon a pin or rod X, that is secured to the pair of arms *g* and *g* between the mandrel-shaft and the rock-shaft U. It will thus be seen that by rocking the lever V the mandrel-shaft will be rotated, and in a direction corresponding with the direction of movement of said lever, and that when the latter is not rocked the mandrel will be held from rotating on its own axis.

To place the rope or cord under sufficient tension to insure the described effects upon the mandrel, we provide a coiled spring Y, one end of which is attached to one of the arms *x* and the other end connected to an end of said rope or cord. Crowding and consequent wear of the latter where it passes around the mandrel-shaft or drum are avoided by placing the two wheels *v* and *v* on opposite sides of the lever V, they being thereby situated sufficiently out of line to cause the separation of the portions of the rope that pass around the mandrel-shaft.

The position and movements of the lever V are controlled through its rock-shaft U by means of a cam-plate Z, non-rotatively supported around the shaft C by being rigidly secured to one of the standards B and B, the periphery of which is engaged by a friction-roller *v'* upon the end of an inwardly-projecting arm *v*² on the rock-shaft. A coiled spring A', secured at one end to a short arm *v*³ of the latter and at its other end to an extension of the pivot-rod X of the spider-arms *g* and *g* of the next adjacent mandrel, operates to yieldingly hold the roller *v'* in contact with the cam and move the lever V in the direction opposite that caused by the cam.

Certain portions of the cam are arcs of a circle concentric with the shaft C, and hence

in the passage of the rollers *v'* over them by the revolution of the mandrel-carrying frame no rocking of the levers V will be caused, and other portions of said cam are so shaped as to cause or permit said levers to be moved by the rocking of the shaft U in one direction or the other.

Although we have described and shown our invention in connection with a machine for making box-covers, we wish it to be understood that it is entirely applicable to machines for making the receptacle part of the box, and we also wish it understood that we do not limit the use of our invention in machines for making any particular form or shape of box or of any particular material or materials.

Having thus described our invention, what we claim is—

1. In a box-making machine, the combination of a rotatable mandrel, a two-armed lever, means for controlling the movement of the latter, and connections between the two arms of the lever, and the mandrel, substantially as and for the purpose specified.

2. In a box-making machine, the combination of a rotatable mandrel, a lever, means for controlling the movement of the latter, a rope, or other flexible device, passed around the mandrel-shaft, and extended to and engaged by separated points on the lever, substantially as and for the purpose shown.

3. In a box-making machine, the combination of a rotatable mandrel, its shaft, a traveling carrier journaling the shaft, a lever pivoted to the carrier, a rope or other flexible device fastened at one point to the carrier, and thence carried to and over separated points on the lever, and to and over the mandrel-shaft, and means to control the movements of the lever, substantially as and for the purpose set forth.

4. In a box-making machine, the combination of a rotatable mandrel, its shaft, a traveling carrier journaling the shaft, a two-armed lever pivoted to the carrier having a wheel on each arm, a rope or other flexible device fastened at one point to the carrier and carried thence over said wheels and around the mandrel-shaft, a tension device connected with the rope, and means to control the movements of the lever, substantially as and for the purpose described.

5. In a box-making machine, the combination of a revolving carrier, a mandrel, a shaft for the latter journaled by the carrier, a lever pivoted to the carrier, a rope or other flexible device passed around the mandrel-shaft and extended to and engaged by separated points on the lever, a stationary cam, and an arm to cooperate therewith, connected with said lever, substantially as and for the purpose specified.

6. In a box-making machine, the combination of a revolving carrier, a mandrel, a shaft for the latter journaled by said carrier, a rock-shaft journaled by the carrier, the two-

armed lever on the rock-shaft, a wheel carried by each arm of the lever, a cord connected at one point to the carrier and carried thence over each wheel and around the mandrel-shaft, an arm connected to the rock-shaft, a stationary cam engaged by said arm, and a spring to yieldingly hold the arm in

contact with the cam, substantially as and for the purpose shown.

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ANDERS PAULSON.

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