

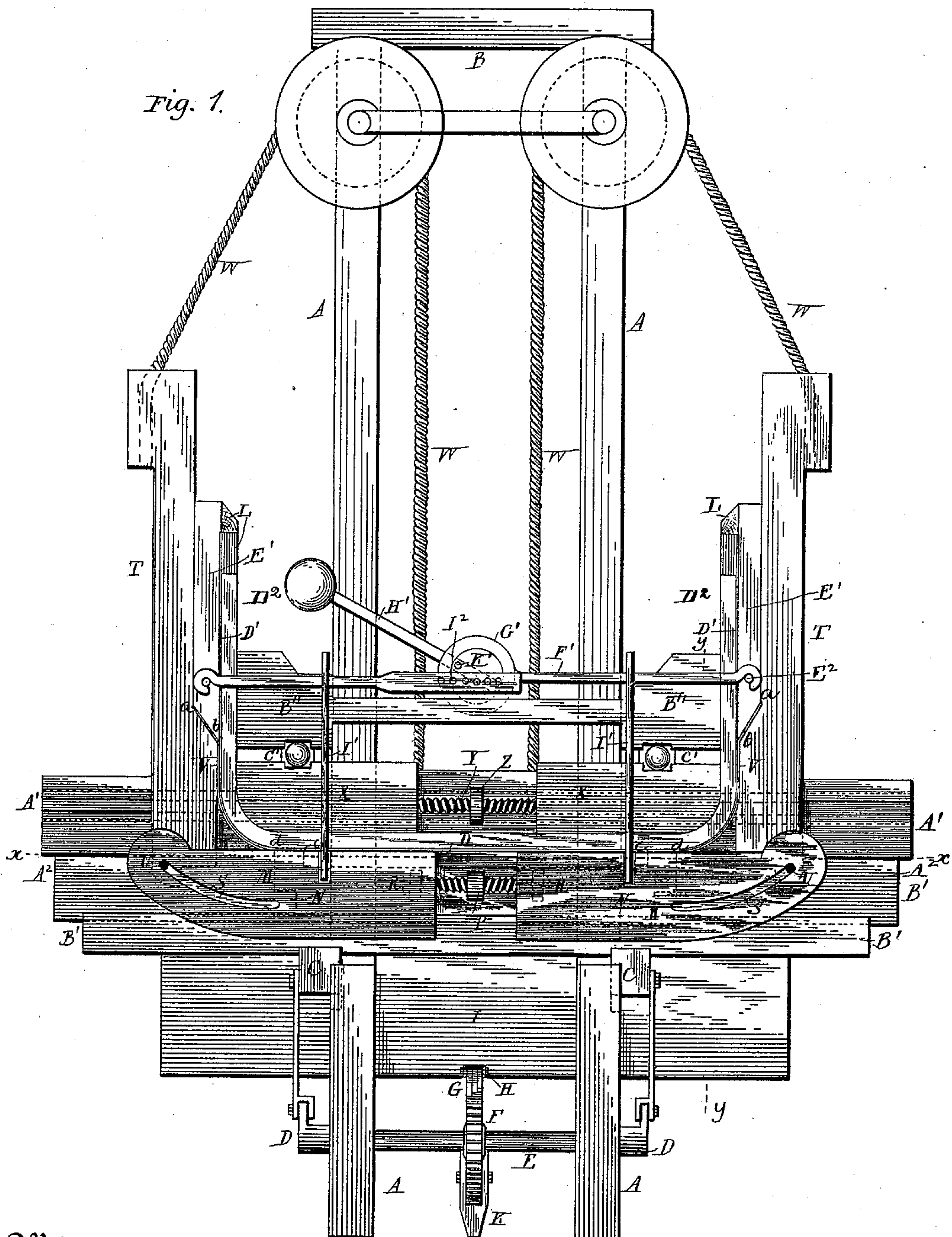
(No Model.)

3 Sheets—Sheet 1.

W. RANKE & W. YERGENS.
MACHINE FOR BENDING TIMBER.

No. 447,202.

Patented Feb. 24, 1891.



Witnesses
Jonas B. Kelley—
E. D. Smith

Inventors
William Ranke
William Yergens
By Their Attorney
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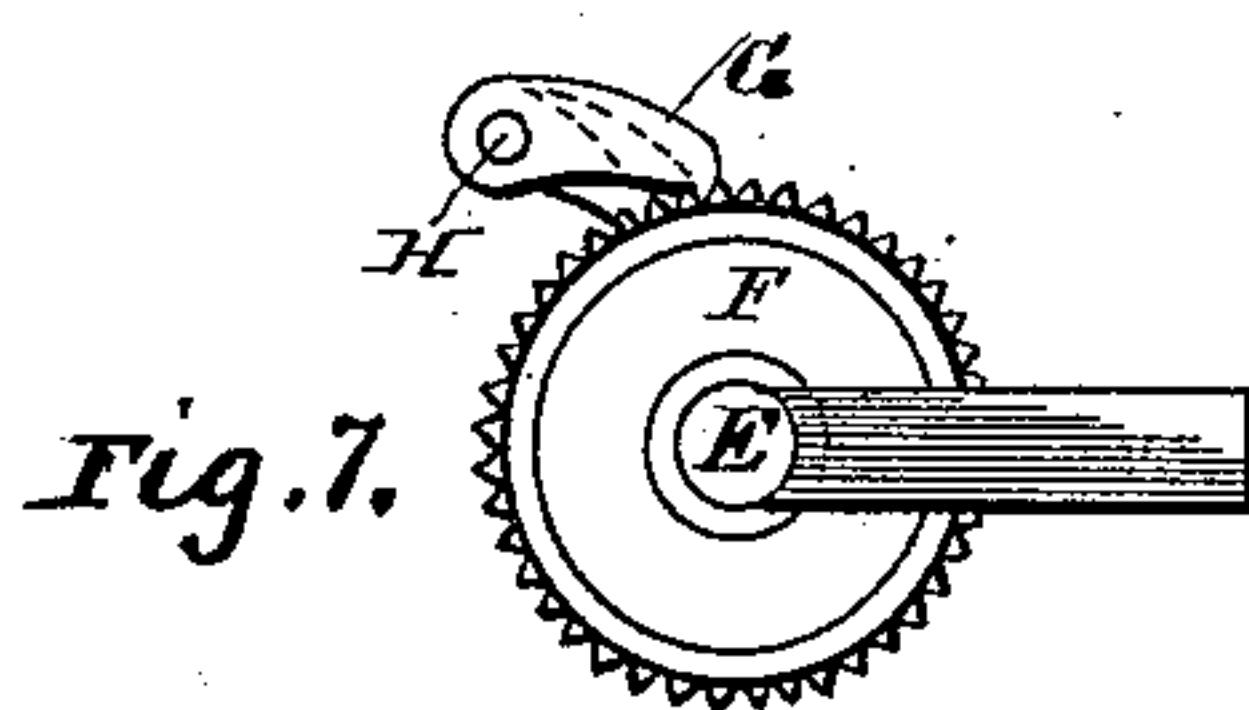
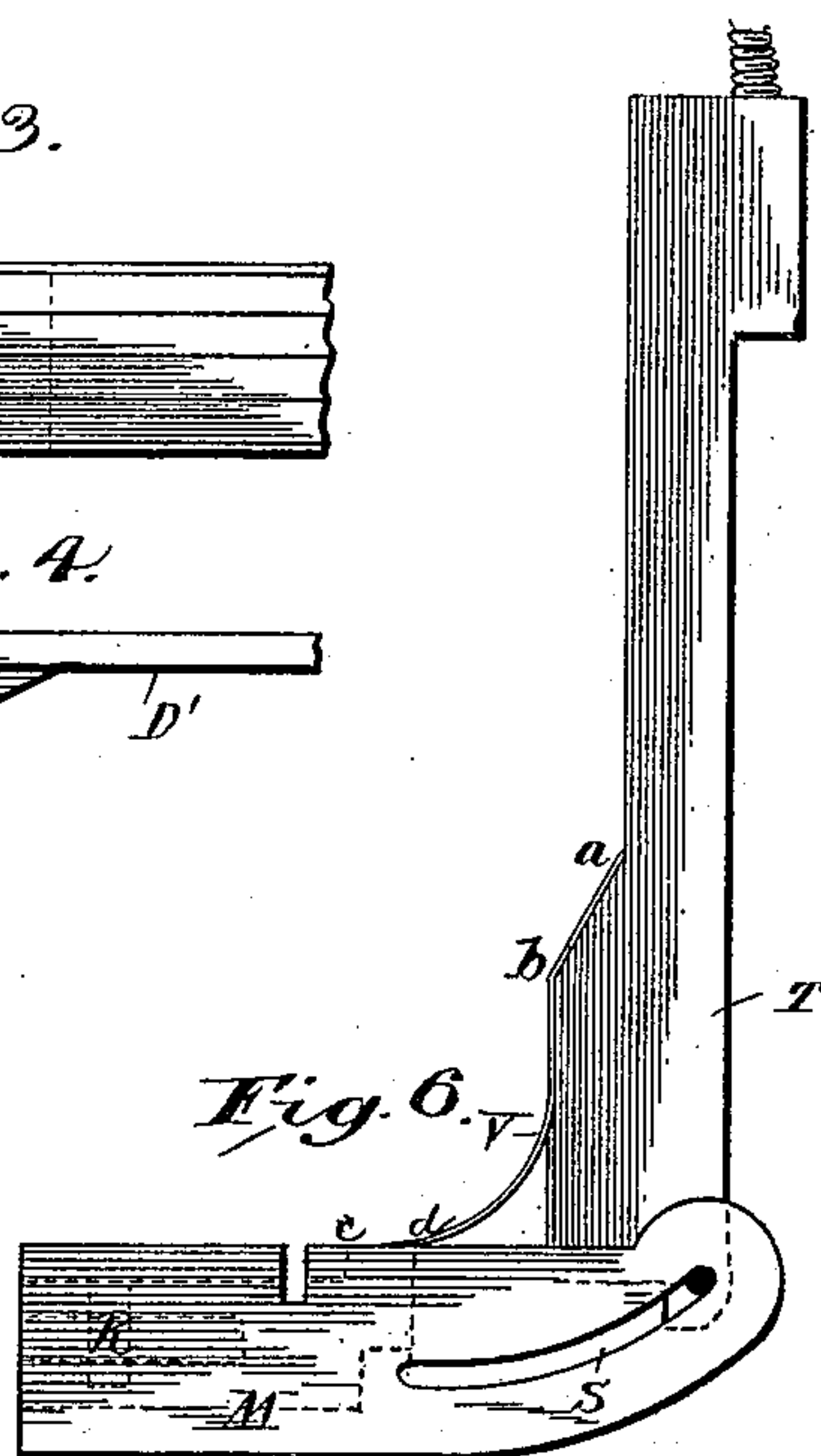
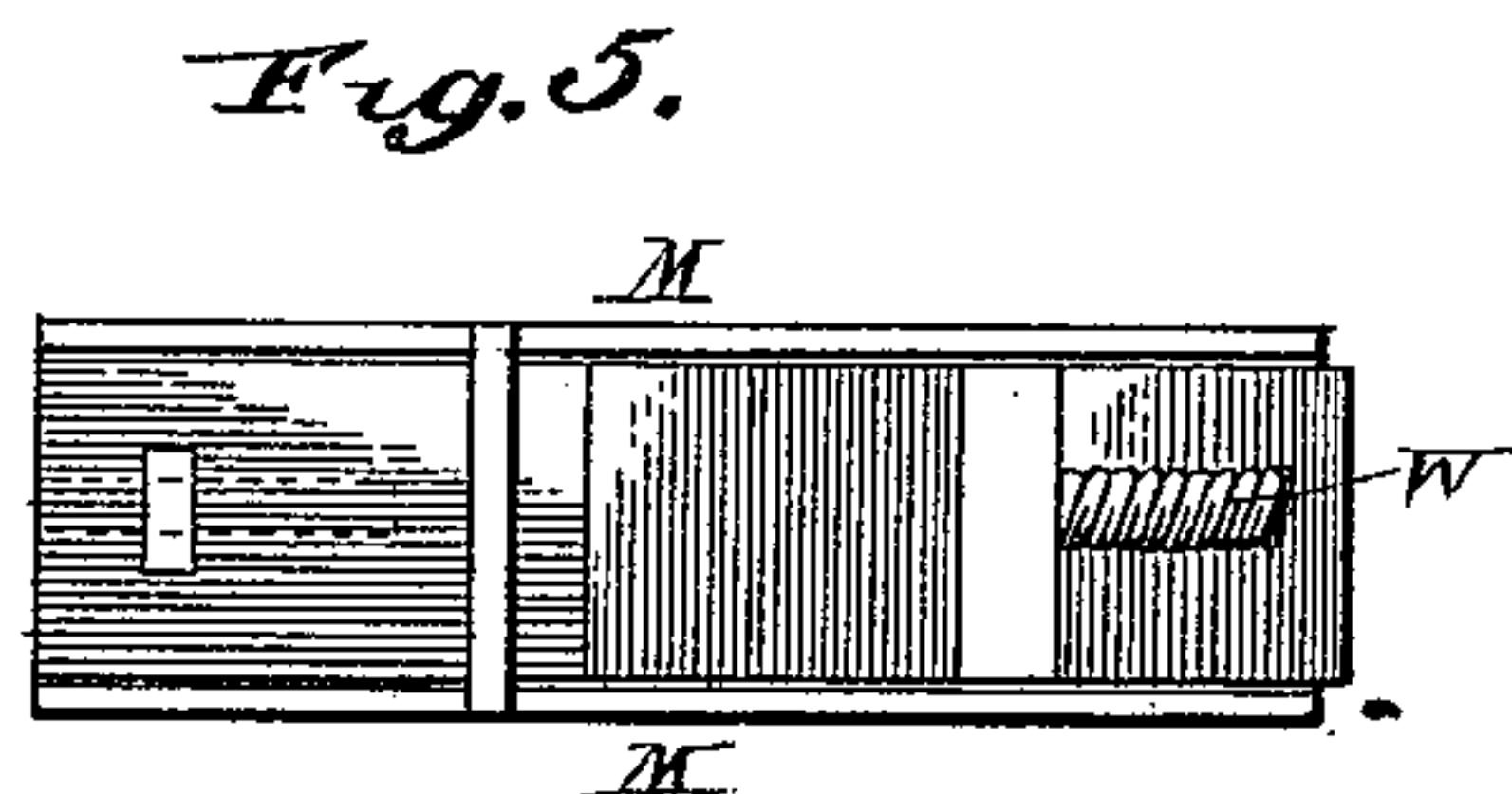
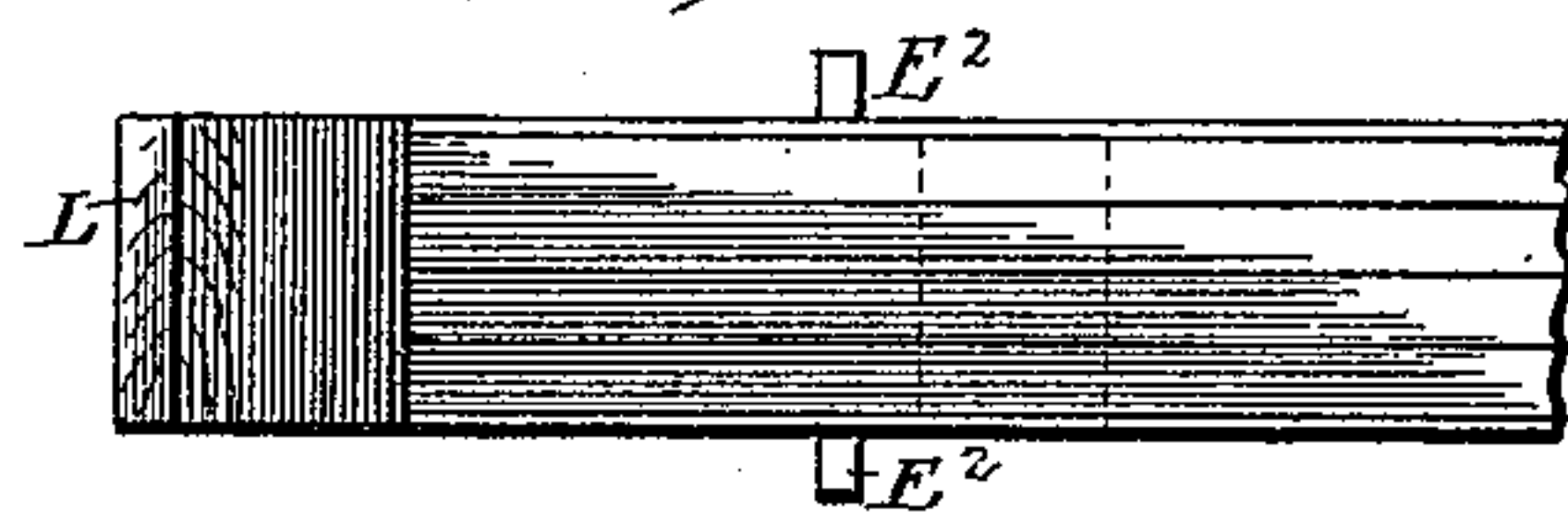
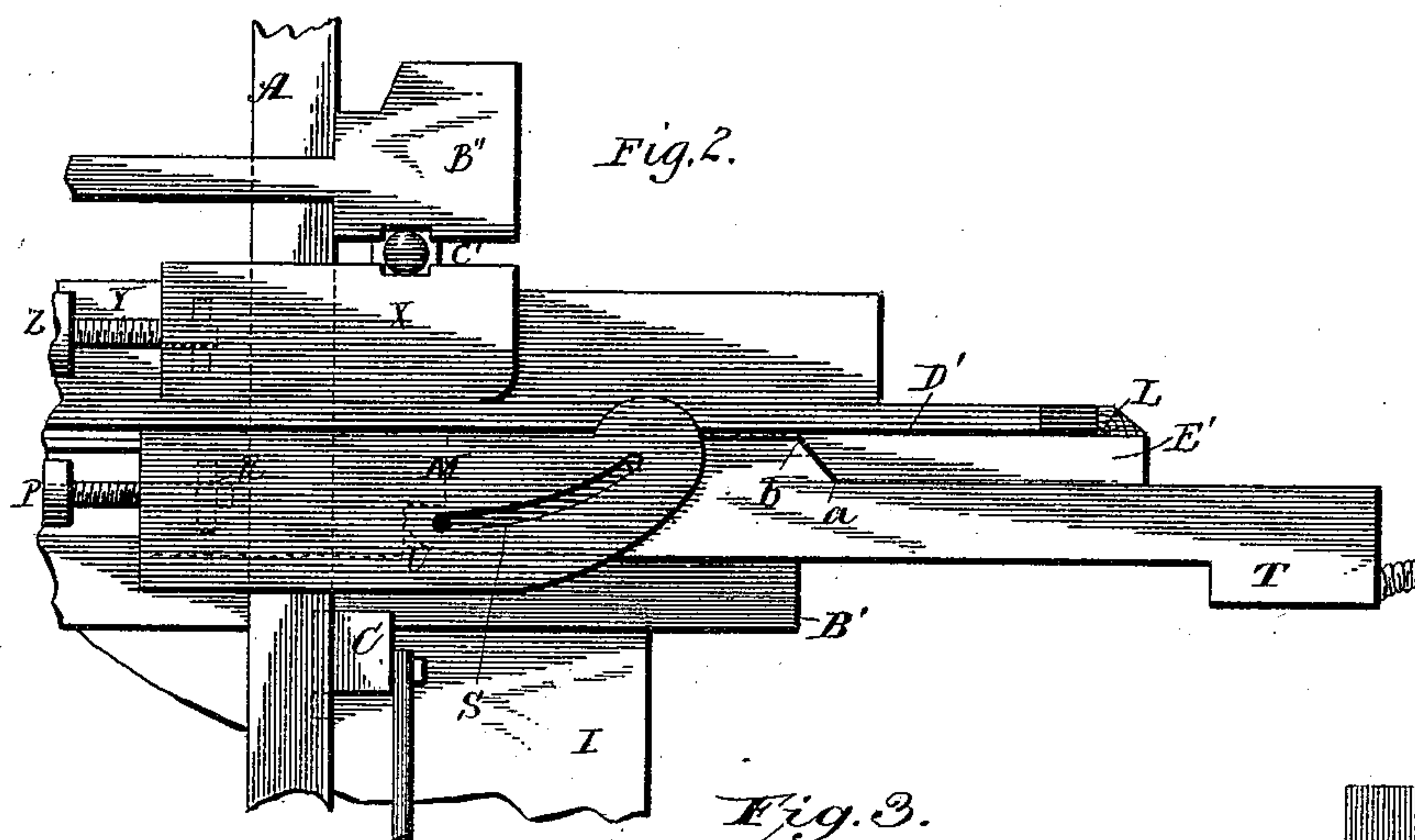
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WITNESSES:

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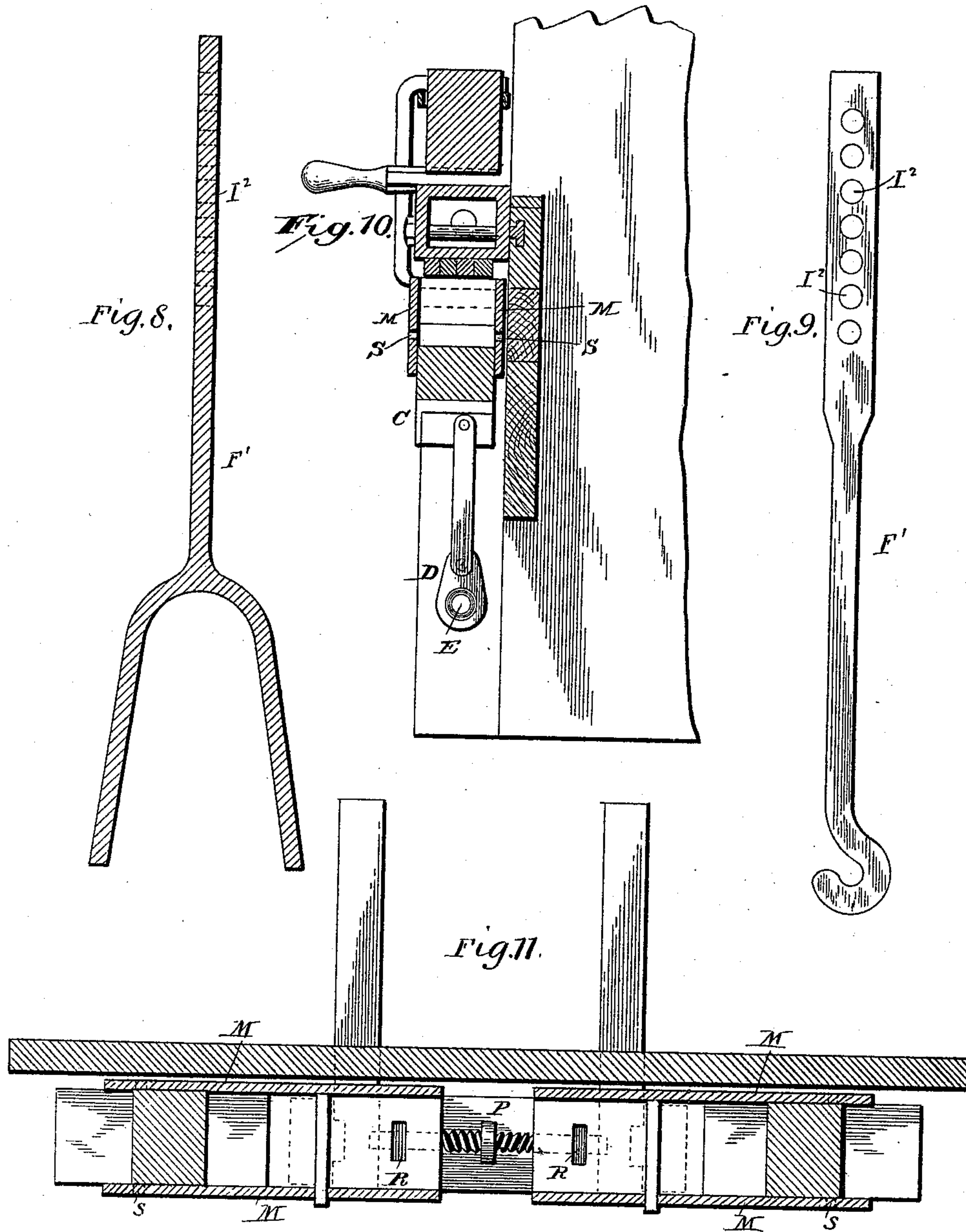
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UNITED STATES PATENT OFFICE.

WILLIAM RANKE AND WILLIAM YERGENS, OF FORT WAYNE, INDIANA.

MACHINE FOR BENDING TIMBER.

SPECIFICATION forming part of Letters Patent No. 447,202, dated February 24, 1891.

Application filed July 24, 1890. Serial No. 359,750. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM RANKE and WILLIAM YERGENS, citizens of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Machines for Bending Timber; and we 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.

This invention relates to certain improvements in machines for bending timber of that class in which the timber is bent when softened by steam against a mold-block and clamped until in proper condition to preserve its shape.

The invention has for its objects to bend the timber with a more even and rapid pressure than heretofore, to prevent the breakage of the timber during the operation of bending, and to leave the timber smoother and more elastic when bent.

Our invention is applicable to the bending of timber of various descriptions; but in the present instance it is represented as applied to the bending of carriage or buggy bows.

Referring to the drawings, making part of this specification, Figure 1 represents an elevation of the machine, showing the timber bent and the parts clamped in position to give the timber its intended form. Fig. 2 represents an elevation of a portion of the machine, showing the timber in position to begin bending. Fig. 3 represents a plan view showing a portion of a bending-strap and attached head-block. Fig. 4 represents a side elevation of the same. Fig. 5 represents a plan view showing the metallic plates and lower portion of the bending mechanism. Fig. 6 represents a side elevation of one of said metallic plates and bending-lever. Fig. 7 represents a detached view of a portion of the elevating and holding devices. Fig. 8 indicates a longitudinal sectional view of a clamp employed to secure the bending-levers when the timber is bent. Fig. 9 represents a side elevation of said lever. Fig. 10 represents a vertical sectional view of a portion of the machine, taken on the line *y y* of Fig. 1; and Fig. 11 represents a horizontal sectional view taken on the line *x x* of Fig. 1.

The letter A indicates the frame of the machine, consisting of four substantial legs, the rear ones being extended above the table of the machine and connected by a cross-beam B at the top, and the front ones terminating at a suitable height to support the table when down.

The table (indicated by the letter B') rests upon blocks C, which move vertically in grooves in the legs of the frame, and are operated by eccentrics D on a horizontal shaft E, which carries a ratchet-wheel F, with which is adapted to engage a pawl G, pivoted to a stud H at the lower edge of the board I, secured to the rear of the frame. The ratchet has fastened to it a lever K, by means of which it may be turned to elevate the table, the table being held when elevated by the pawl and ratchet.

The letter M indicates four metallic plates, two located at each side of the table and embracing the sides thereof. The said plates are connected to blocks N, which rest and are adapted to move upon the table, and are connected by means of a right-and-left screw P, working in nuts R, set in recesses in the blocks in such manner that the plates may be adjusted to and from each other to adapt the machine to bending bows of different sizes. The plates at their outer ends are provided with curved slots S. Between each pair of plates is located a pressure lever or arm T, having fulcrum-pins U bearing in the said slots S. These levers on their inner sides are beveled from a point *a* to *b*, and from thence the sides are extended forward to their extremities in a plane parallel to their outer sides.

To the beveled or inclined parts of each of the uprights is secured the bent end of a curved flexible metallic strap V, the other end of which is secured to the top of the blocks N N at the points *c d*. The upper ends of the levers have connected to them the ropes W, passing over pulleys journaled between the uprights of the frame and down over a drum, as usual, to which power is applied to effect the pressure upon the ends of the timber to be bent, said drum not being shown in the drawings, as it forms no part of the invention.

The letter X indicates the mold-block, which

is made of brass, in two parts, connected by means of a right-and-left screw Y, having a central nut Z, by which it may be turned to adjust the parts of the block, so as to bend
5 bows of different sizes.

The parts of the mold-block are provided with dovetailed splines at one side, which set in a dovetailed groove in a plate A', secured to a transverse beam A², located at one side
10 of the frame, so that they may be moved to and from each other for the purpose of adjustment. The outward ends of the parts of the mold-block are curved to correspond to the curve to be given to the bow when bent
15 and clamped against it.

The letter I' indicates two gage or clamp rods extending through openings in the molds into recesses in the plates M, to hold the same in their proper relative positions when
20 clamped up.

The letter B² indicates two connected head-blocks having recesses on their lower sides, which rest upon cross-beams C', setting in similar recesses in the mold-blocks.

25 The above-mentioned parts, with the exception of the slotted plates and the flexible metallic straps V, are common to this class of machines, and need not be further mentioned in detail.

30 The letter D' indicates a metallic strap, before alluded to, which is bent with the timber from which the bow is formed during its formation. The said strap consists of a flat strip of metal having secured at its ends head-
35 blocks E', beveled to correspond with the beveled and flat portions of the inner sides of the pressure-levers before mentioned. The said head-blocks are provided with lugs E² on each side, which may be engaged by the
40 hooked ends of a clamp F' to clamp the timber when fully bent.

The clamp is constructed in two parts, one having a bearing for a disk G', to which is attached a lever H', and the other a series of
45 openings I², one of which may be engaged by a pin K' on the disk to tighten the clamp, the series rendering the clamp adjustable.

The head-blocks E' are provided with confining-blocks L, which bind the ends of the
50 bow to be bent and prevent its displacement.

The operation of our improved machine is as follows: The parts being in position, as shown in Fig. 2, with the pressure levers or arms resting horizontally upon the table and
55 the table depressed, the strap D' is placed with the beveled portions of its head-blocks against and resting upon the beveled portions of pressing-levers, and the flat sides of the head-blocks and inner flat sides of the levers
60 in contact. In this position the fulcrum-pins of the pressure-levers will be at the inner ends of the slots of the plates. The timber to be bent, properly steamed, is then placed upon the strap, with its ends between and
65 abutting against the head-blocks E'. The

table is then elevated by turning the shaft E by the lever operating the eccentrics D and raising the blocks C, and with them the table, the table when raised being held by the
70 pawl-and-ratchet disk, clamping the strap D' and timber between the mold and bed-block. Draft is then brought upon the ropes W, elevating the pressing-levers until they assume a vertical position, bending the strap D' and
75 the timber (indicated by the letter D²) around the curved portions of the mold-block and against the ends of the head-blocks. The clamp F' is then applied to the lugs on the head-blocks E' of the strap D' and tightened
80 up, and the parts of the machine are maintained in this position until the timber is in condition to return to shape.

It will be seen that the parts of the machine which directly effect the bending are always in contact with the timber, following it up as
85 the operation of bending continues, thus bending evenly and absolutely preventing breakage, as the flexible straps connecting the pressing-levers and bed-block and the detachable flexible strap always support the timber
90 during the bending operation.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a machine for bending timber, the
95 combination, with the table thereof, of the slotted plates embracing its sides and the blocks to which said plates are secured, the right-and-left screw connecting said blocks, and the pressure-levers having their fulcrum-
100 pins bearing in the slots in said plates, whereby the levers are caused to follow the timber as they are elevated, substantially as described.

2. In a machine for bending timber, the
105 combination, with the table thereof, of the slotted plates embracing its sides, the block to which said plates are secured, the right-and-left screw connecting said blocks, the pressure-levers having their fulcrum-pins bearing in
110 the slots in said plates, the flexible straps connecting the levers and the blocks to which the plates are attached, and the flexible strap having head-blocks adapted to engage the levers and lugs to engage the ends of the timber and hold it in place, all constructed, ar-
115 ranged, and operating substantially as shown and described.

3. In a machine for bending timber, the
120 combination, with the table thereof, of the slotted plates embracing its sides, the blocks to which said plates are secured, the right-and-left screw connecting said blocks, the pressure-levers having their fulcrum-pins bearing in
125 the slots in said plates, the flexible straps connecting the levers and the blocks to which the plates are attached, and the flexible strap having head-blocks adapted to engage the levers, and lugs to engage the ends of the timber and hold it in place, and the adjustable mold-
130 blocks, and clamping devices for holding the

mold-blocks and levers in position, all constructed, arranged, and operating substantially as shown and described.

4. In a machine for bending timber, the
5 combination, with the table thereof, of the plates embracing its sides and the blocks to which said plates are secured, the right-and-left screw connecting said blocks, the curved slots in said plates, and the pressure-levers
10 having their fulcrum-pins mounted and sliding in said curved slots, all constructed and arranged substantially as shown and de-

scribed, whereby the movement of the pressure-levers is controlled by the curved slots, so as to produce an even pressure upon the timber being bent.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM RANKE.
WILLIAM YERGENS.

Witnesses:

J. CHARLES KRAUHS,
HENRY WIEBKE.