

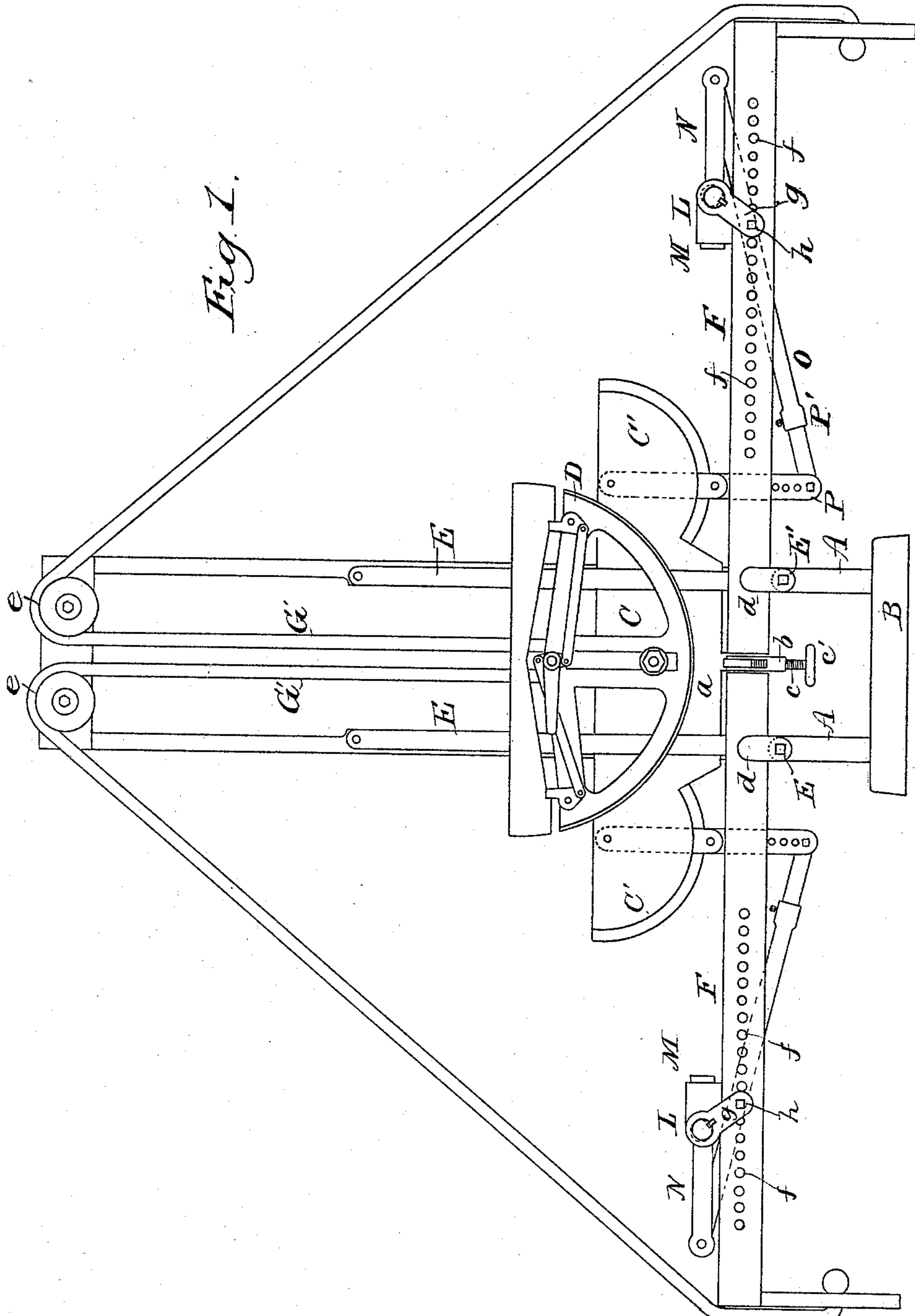
(No Model.)

3 Sheets—Sheet 1.

C. SEYMOUR.
BENDING MACHINE.

No. 497,060.

Patented May 9, 1893.



Witnesses:

Harry B. Ames
H. F. Downing

Inventor

Charles Seymour.
By *Seymour & Seymour*
Attys

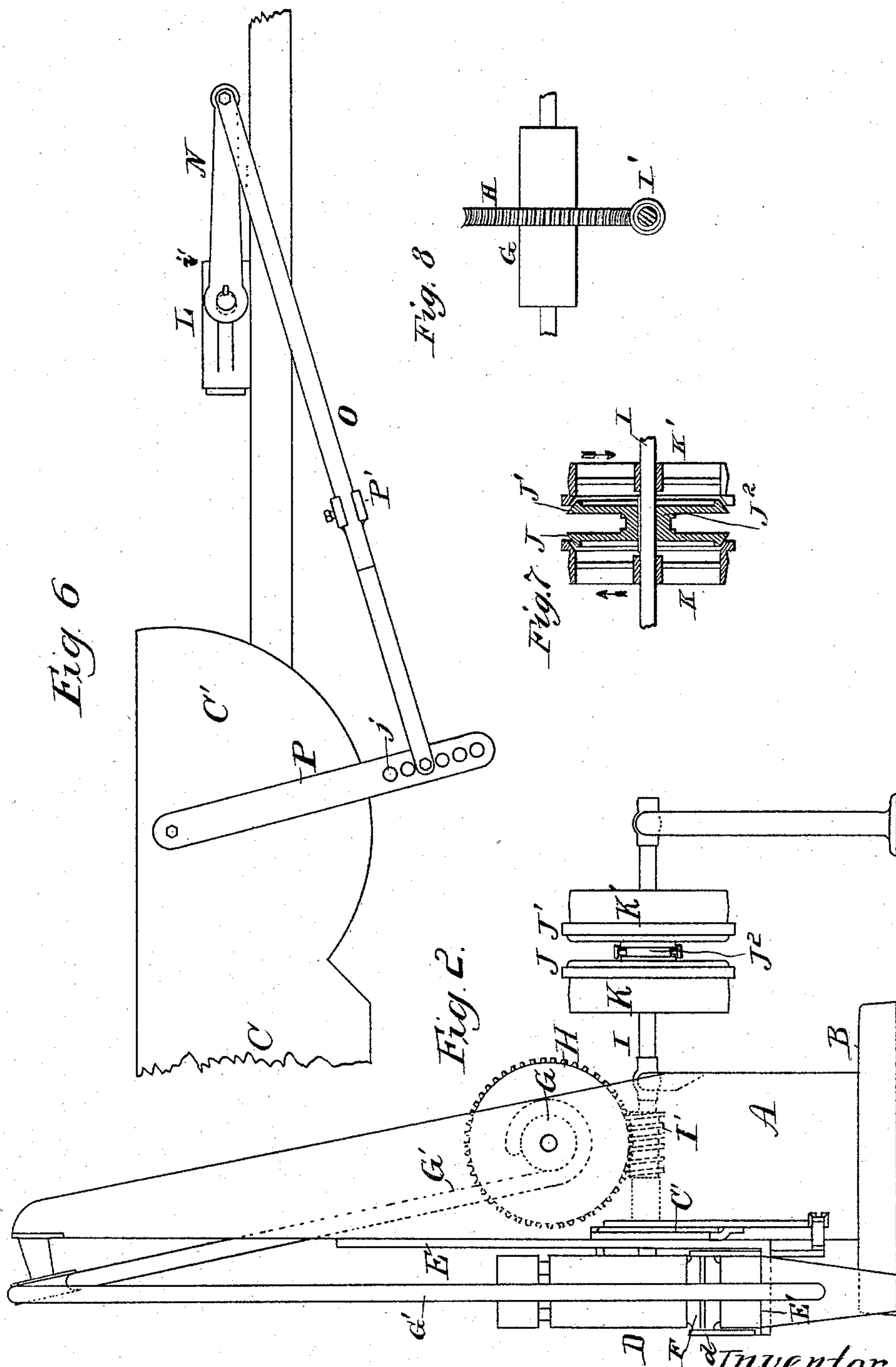
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L. P. Downing

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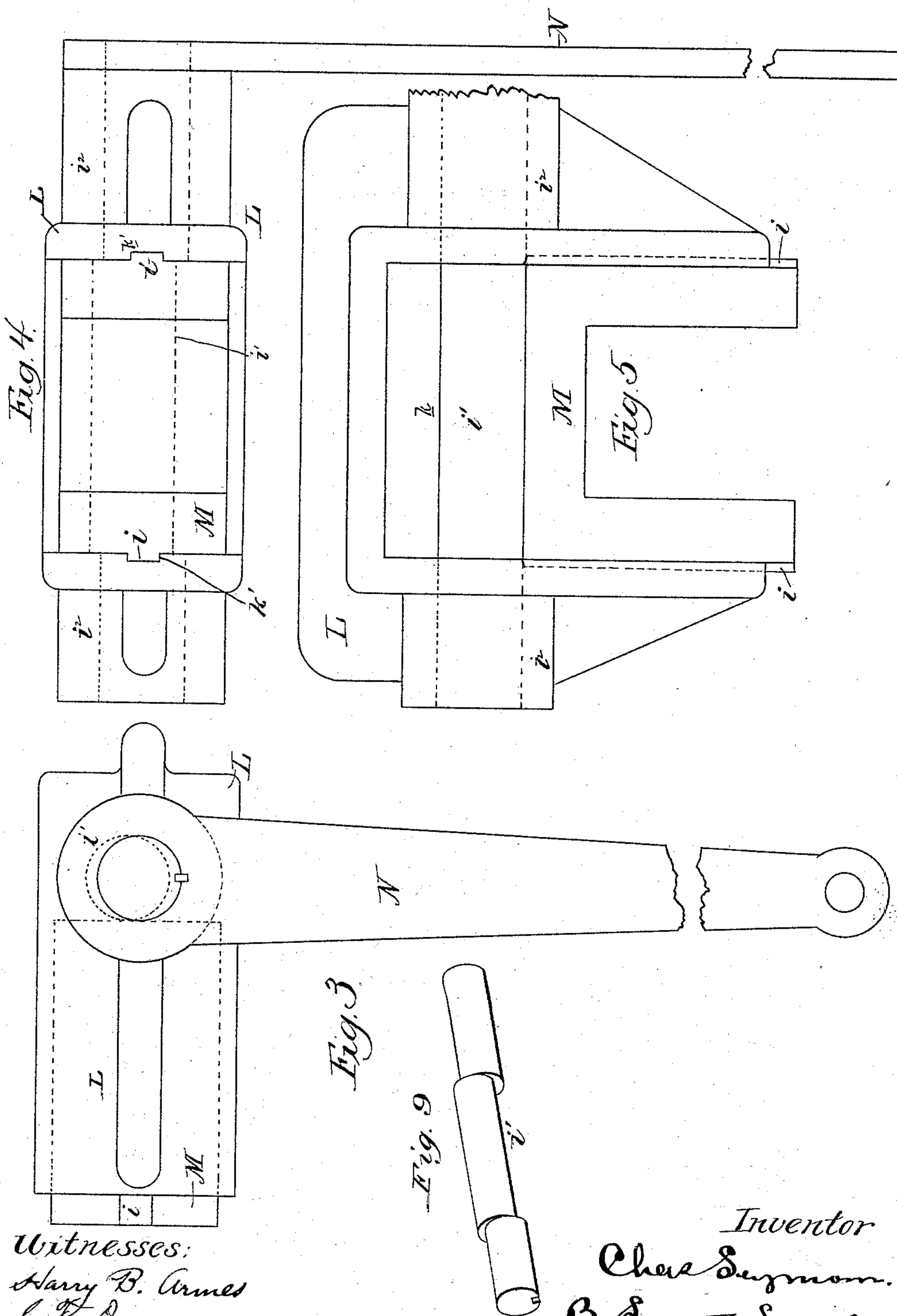
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Inventor
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UNITED STATES PATENT OFFICE.

CHARLES SEYMOUR, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE
MACHINE WORKS, OF SAME PLACE.

BENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,060, dated May 9, 1893.

Application filed March 14, 1892. Serial No. 424,930. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR, residing at Defiance, in the county of Defiance and State of Ohio, have invented certain new and useful Improvements in Bending-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.

My invention relates to an improvement in bending machines, and more particularly to such as are adapted for bending wagon and carriage fellys, wagon hounds, sleigh runners, chair stock, &c. Heretofore with this class of machines, in the bending of a stick of timber, that portion which forms the inside of the segment is subjected to a violent "upsetting" effect. Much of this is unavoidable, for, if the part of the timber forming the outer portion be subjected to too great tensile strain, fracture ensues,—but when the "upsetting" is excessive, a buckling on the inner face of the timber segment occurs and the timber is thus ruined.

It is the object of my present invention to overcome, to a great extent, this difficulty and to provide devices for automatically overcoming at least the greater portion of the "upsetting" effect as the stick or timber is in the process of bending.

A further object is to provide simple and efficient means for manipulating the operating parts of the machine, so that they may be advanced in the act of bending the material and returned to their normal positions easily and quickly.

A further object is to construct the machine so that it will be simple, and effective in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a front elevation of the machine. Fig. 2 is a side view. Fig. 3 is a side view illustrating one of the head blocks L, jaw M and lever N. Fig. 4 is an end view of said parts. Fig. 5 is a plan view of one of the head blocks L and

jaws M. Fig. 6 is a side elevation of a portion of the machine showing one of the head blocks L, lever N, pitman O, arm P and plate C. Fig. 7 is a detail view of the clutch device. Fig. 8 is a detail view of the worm wheel and worm. Fig. 9 is a detail perspective view of the eccentric shaft *i*'.

A, A, represent the uprights of the machine, supported on a base B. A plate C having curved ends C', is secured across the uprights A, A, the curved ends C' extending some distance beyond the uprights. A former D is, preferably adjustably, secured to the plate C at its center. The plate C is provided at its center with a depending portion *a* from which an arm *b* projects under the former D, said arm being provided with a screwthreaded perforation for the reception of a screw *c* having a hand wheel *c*', thereon, by which means the material being bent may be retained, at its center, tightly against the bottom of the former.

Pivotally connected at their upper ends to the front edges of the uprights A, A, preferably at points somewhat above the center of the latter, are two depending links or levers E, provided at their lower ends with horizontal portions or pins E'.

F, F, represent heavy laterally extending arms, each of which is provided at its inner end with ears *d*, to which the horizontal portion or pins E' of the links or levers E are pivotally connected.

A drum G is mounted in the uprights A, A, to which one end of two ropes or chains G', are secured and about which said ropes or chains are adapted to be wound. From the drum G, the ropes or chains extend upwardly and parallel with each other to the top of the uprights A, A, where they pass over pulleys *e, e*. From the pulleys *e, e*, the ropes or chains extend in opposite directions and are secured at their outer ends to the ends of the heavy arms F, F, respectively. The drum G carries a worm wheel H, and beneath said drum a shaft I is located and carries a worm I' adapted to transmit motion to the worm wheel H and drum G. Mounted on the shaft I and adapted to rotate therewith and have a sliding movement thereon, are two friction disks J, J', connected by a grooved collar J²,

with which the usual devices may be connected for shifting said friction disks. Loosely mounted on the shaft in proximity to the friction disks J, J', are pulleys K, K'. Motion
 5 will be imparted to the pulleys K, K' by means of straps actuated by any suitable engine. By causing one of the friction disks to have frictional contact with one of the pulleys the drum G will be rotated to wind the ropes
 10 or chains G' thereon to raise the arms F, F, in the operation of bending a piece of material, and by causing the other friction disk to engage the other pulley, the drum will be rotated to unwind said ropes or chains and
 15 thus lower said arms. The arms F, F, are provided in their edges with perforations *f*, whereby head blocks L can be adjustably secured to said arms, each head block L having arms *g*, *g*, secured thereto and the latter are
 20 connected to the arms F, F, by means of suitable pins *h*, adapted to enter the perforations *f* in the arms F, F. The construction and arrangement of the head blocks L and the parts connected thereto being identical in construction, a description of one of said head blocks and attached parts will suffice for both. Each
 25 head block L is made with an opening *k* having recesses *k'* in its parallel walls for the reception of flanges or ribs *i* projecting from the sides of a jaw M. By this arrangement, the jaw M will be guided in its movements in the head block L. An eccentric shaft *i'* is
 30 mounted in bearings *i''* on the head block L and in rear of the jaw M and the partial rotation of this shaft will cause a limited movement of the jaw M in the head block L. To the end of the eccentric shaft *i'* a lever N is keyed. A connecting rod or pitman O connects the lever N with an arm P attached to the curved
 40 end of the plate C, so that when the arm F is raised in the manner hereinbefore explained, the arm or lever N will be caused to fall and the jaw M recede by the turning of the eccentric shaft *i'*. The connecting rod or pitman O is
 45 made in two parts, one sliding into the other and secured at any desired adjustment by means of a binder P'. The arm P is provided with a series of perforations *j* for the attachment of the rod or pitman O, and said arm P
 50 can be set and bound fast at any desired point on the curved end C' of the plate C, and by the adjustment of the arm P on the curved end C' of plate C and the adjustment of the connecting rod or pitman O at the binder P' the amount of recision of the plunger M may
 55 be governed at will.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

60 1. In a bending machine, the combination with pivoted arms for forcing up the ma-

terial to be bent, said arms each having a series of perforations, of head blocks mounted on said arms, arms projecting from said head blocks, pins adapted to pass through the ends
 65 of the last mentioned arms and enter one of the perforations in each pivoted arm and movable jaws carried by said head blocks, substantially as set forth.

2. In a bending machine, the combination
 70 with pivoted arms for forcing up the ends of the material, of devices carried by said arms constructed and arranged to compensate for the "upsetting" effect on the material, during the operation of bending, substantially
 75 as set forth.

3. In a bending machine, the combination with pivoted arms for forcing up the ends of the material, of devices carried by said arms constructed and arranged to automatically
 80 compensate for the "upsetting" effect on the material being bent, substantially as set forth.

4. In a bending machine, the combination with pivoted arms for forcing up the ends of the material, of head blocks carried by said
 85 arms, eccentric shafts carried by said head blocks, sliding jaws in said head blocks bearing on said eccentric shafts a lever connected with each eccentric shaft, and a connection between said lever and the frame of the ma-
 90 chine, substantially as set forth.

5. In a bending machine, the combination with pivoted arms for forcing up the ends of the material, of head blocks carried by said
 95 arms, eccentric shafts carried by said head blocks, sliding jaws in said head blocks bearing against the eccentric shafts, a lever connected to each eccentric shaft, arms attached to stationary parts of the machine and connecting rods or pitmen connected at one end
 100 to said levers and at their other ends adjustably connected with said arms, substantially as set forth.

6. In a bending machine, the combination with pivoted arms for forcing up the ends of
 105 the material, of head blocks carried by said arms, eccentric shafts carried by the head blocks, sliding jaws in said head blocks bearing against the eccentric shafts, a lever connected to each eccentric shaft, arms attached
 110 to a stationary part of the machine, and extensible connecting rods or pitmen connecting said arms and levers, substantially as set forth.

In testimony whereof I have signed this
 115 specification in the presence of two subscribing witnesses.

CHARLES SEYMOUR.

Witnesses:

PETER KETTENRING,
 GEO. N. DEATRICH.