

No. 656,936.

Patented Aug. 28, 1900.

J. BUCKLEY.

MACHINE FOR BENDING BRIDLE IRONS.

(Application filed Jan. 25, 1900.)

(No Model.)

6 Sheets—Sheet 1.

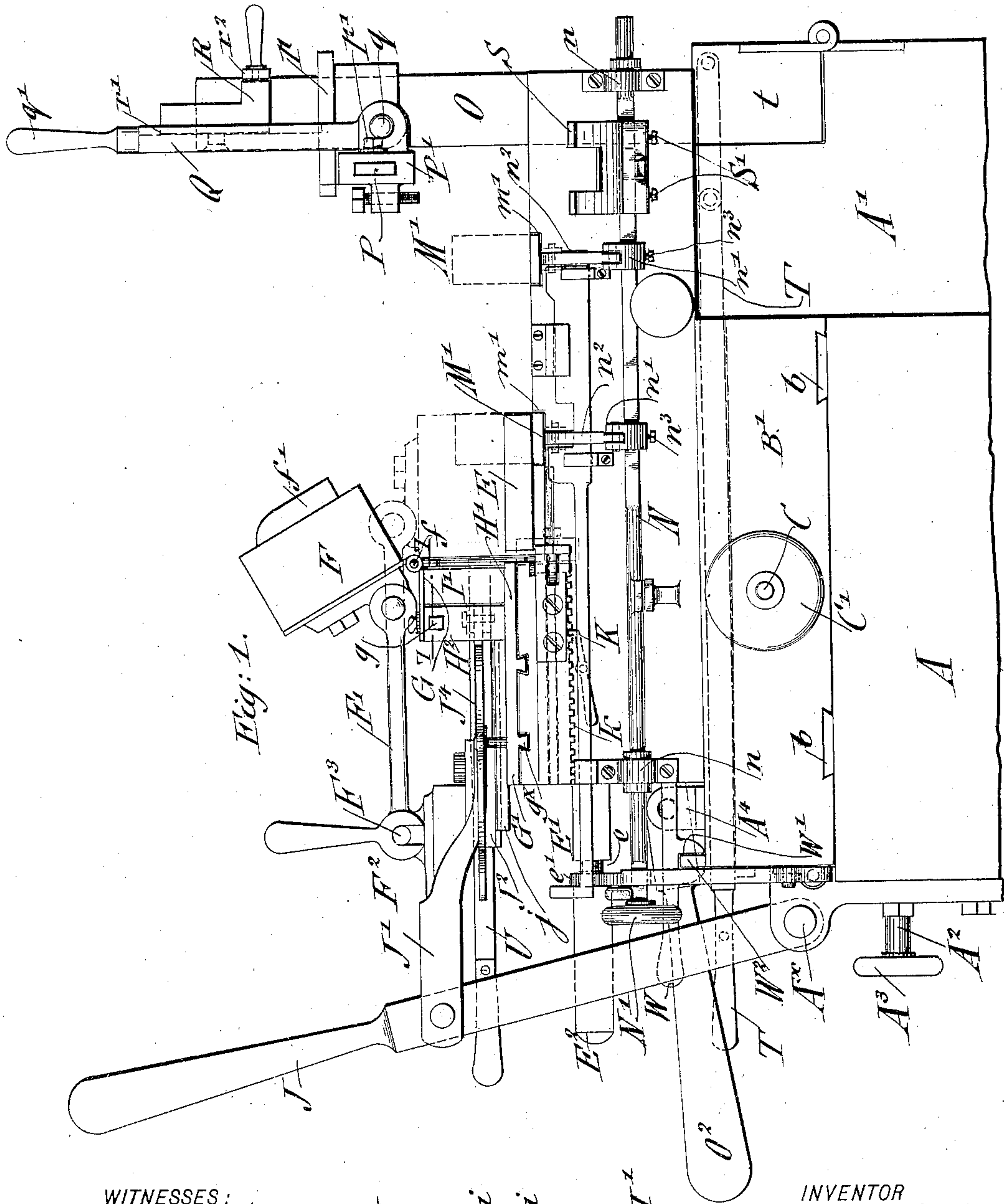
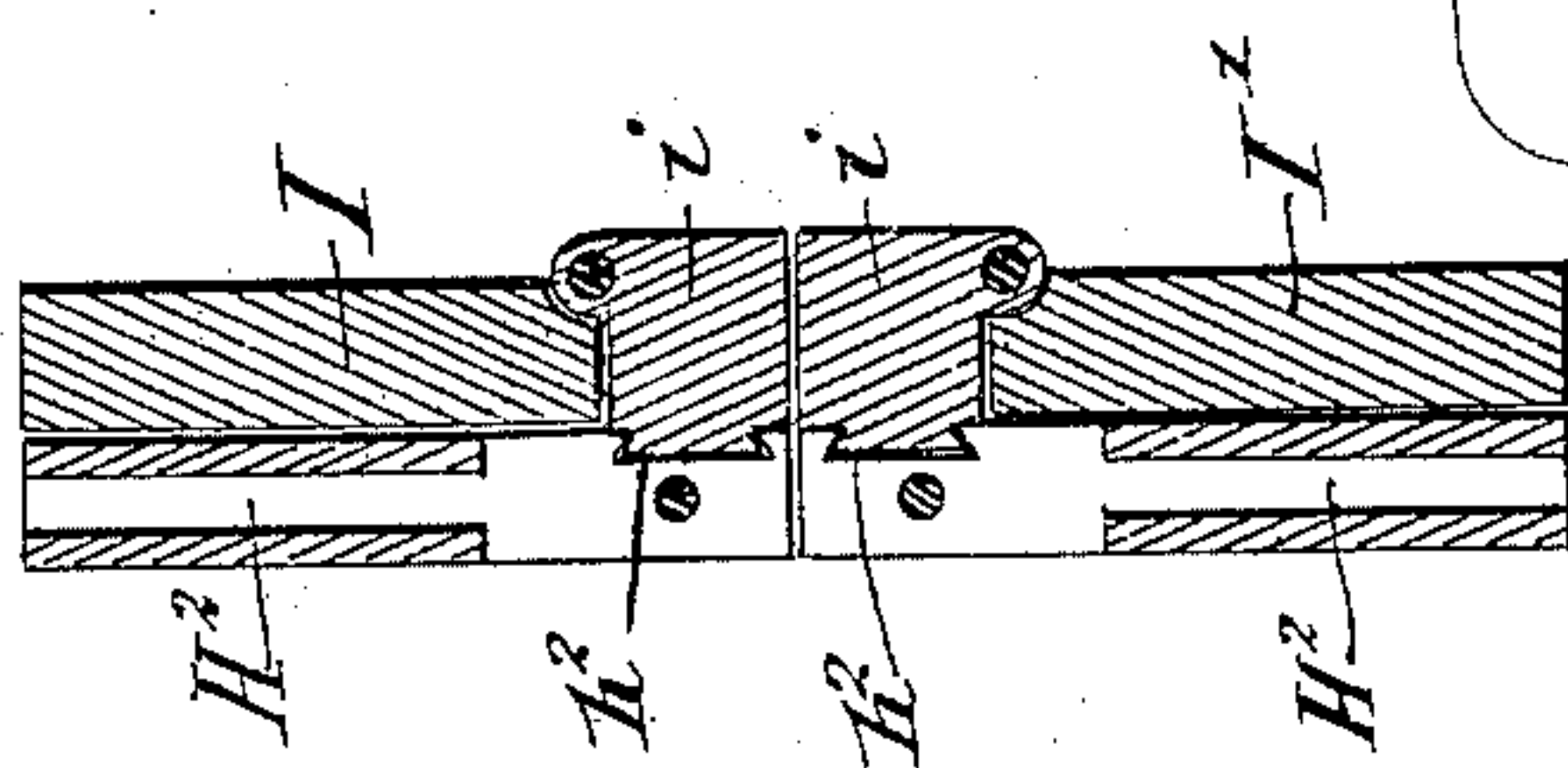


Fig. 1.

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Fig. 1.



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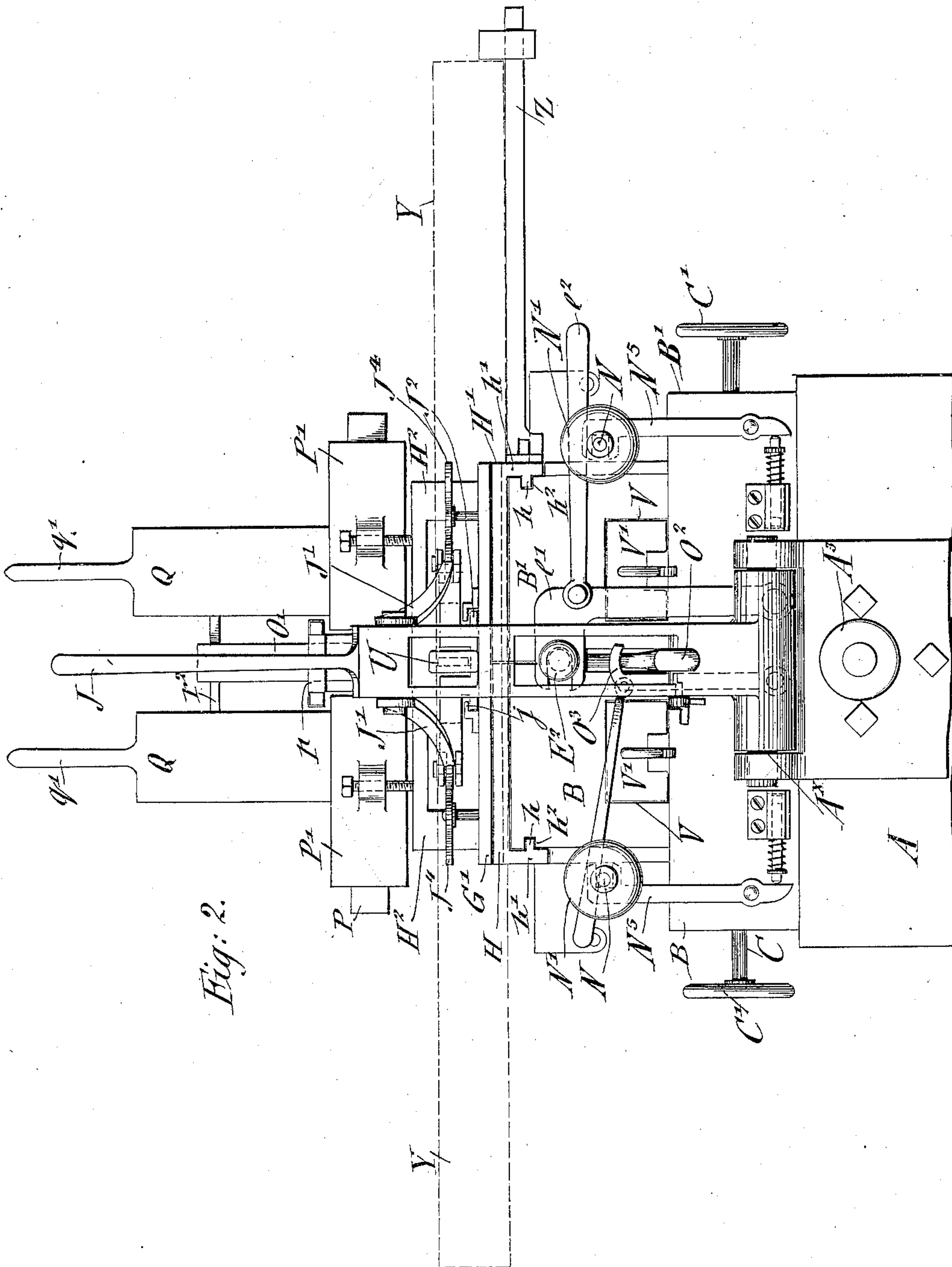


Fig. 2.

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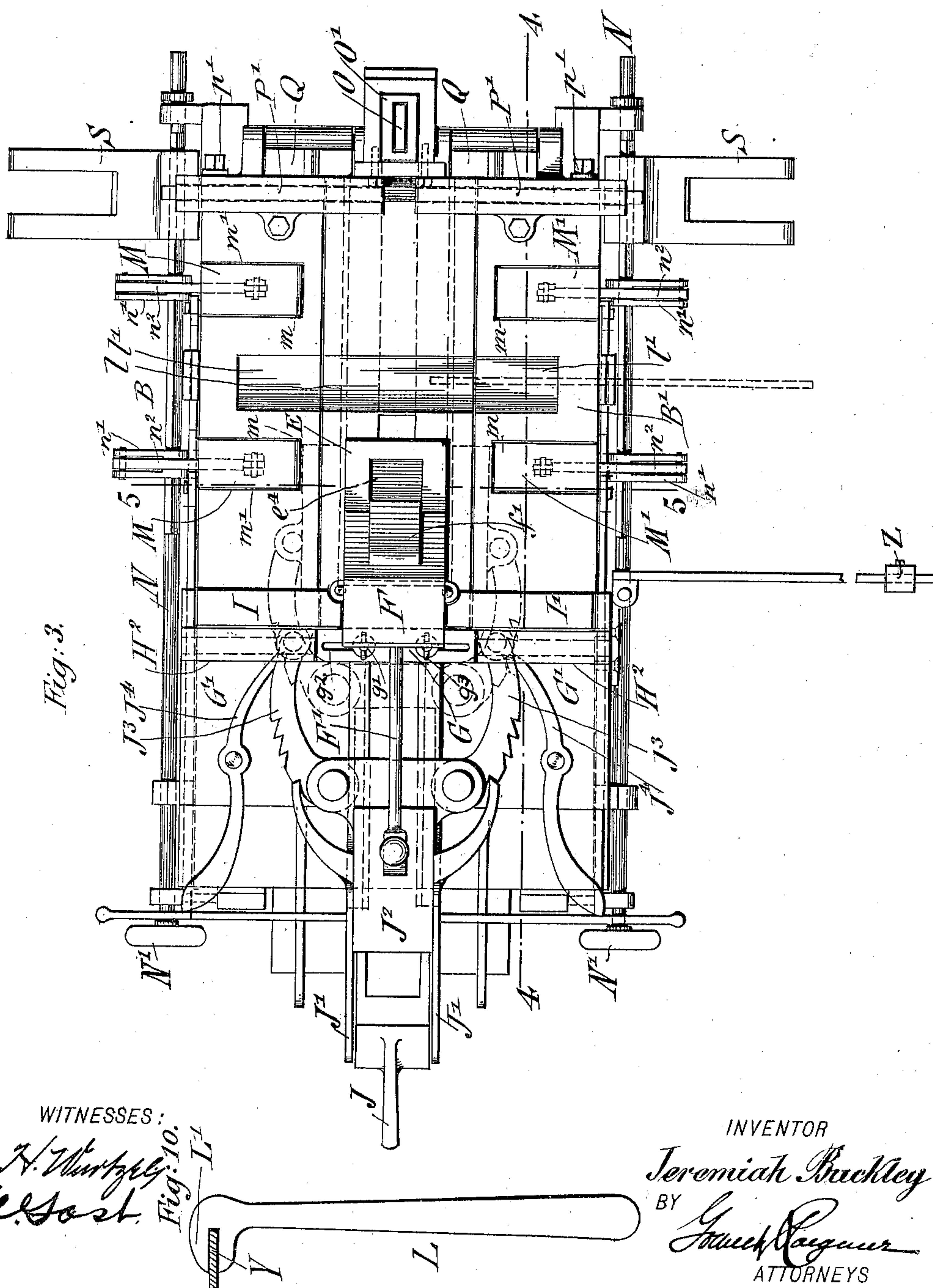
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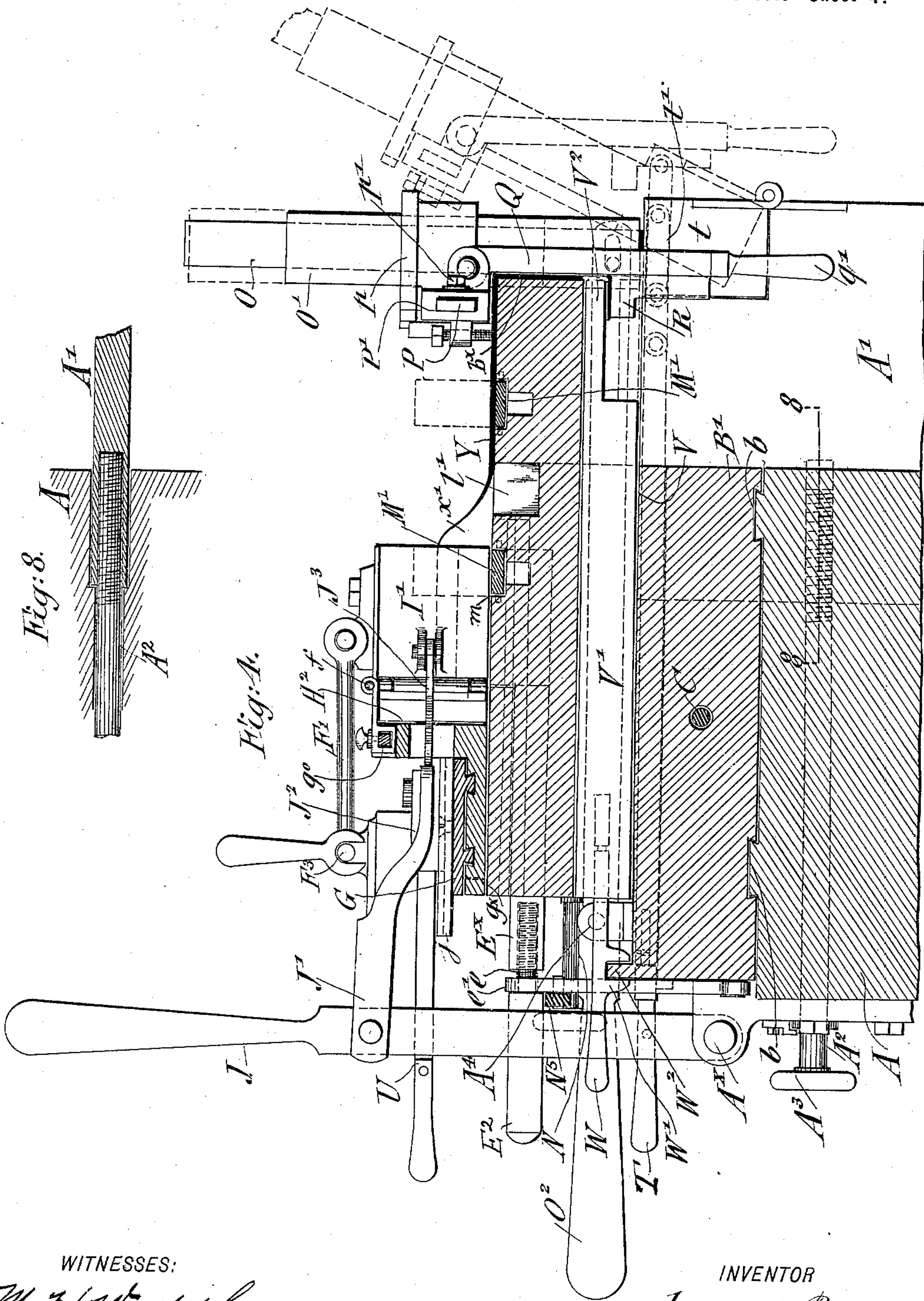
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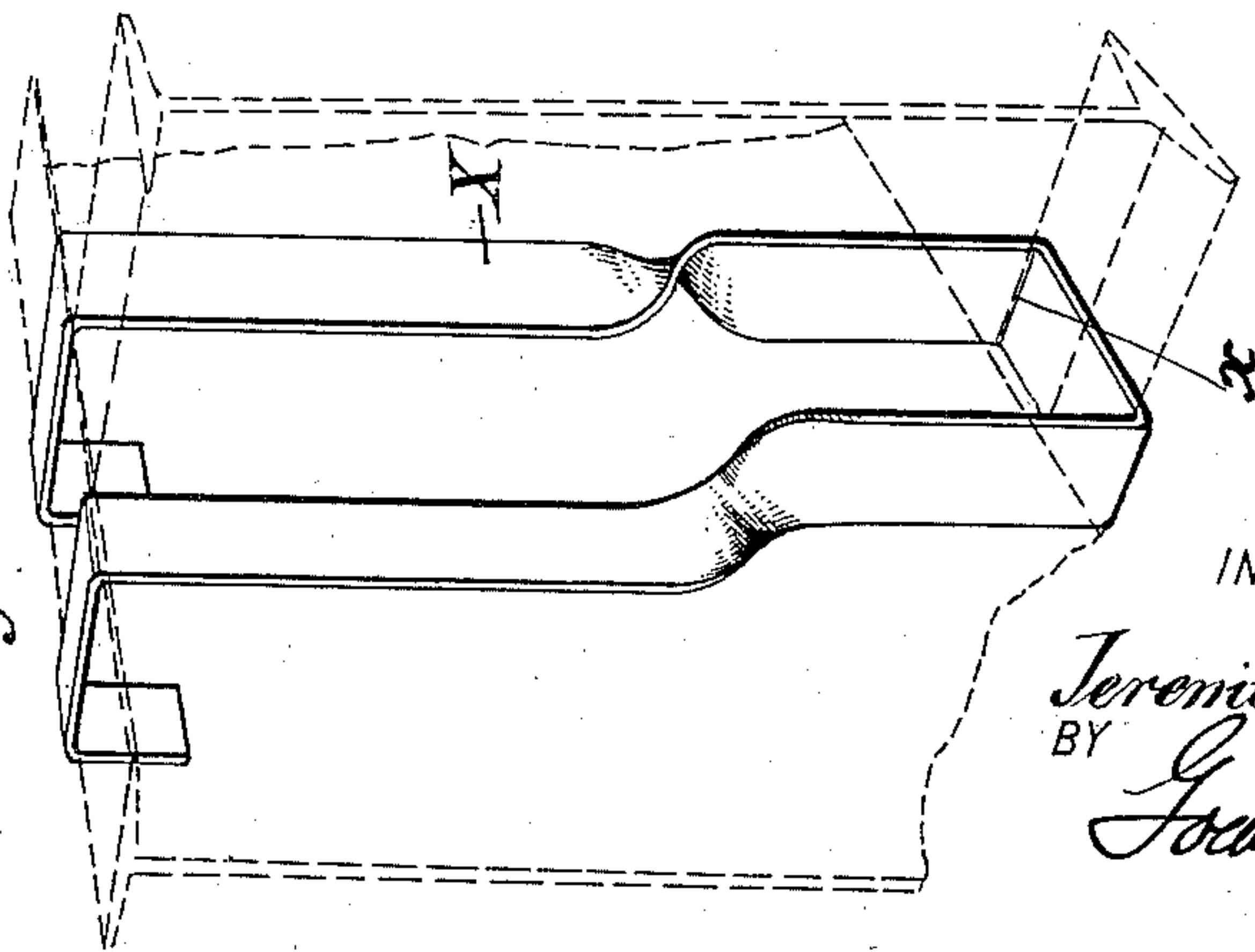
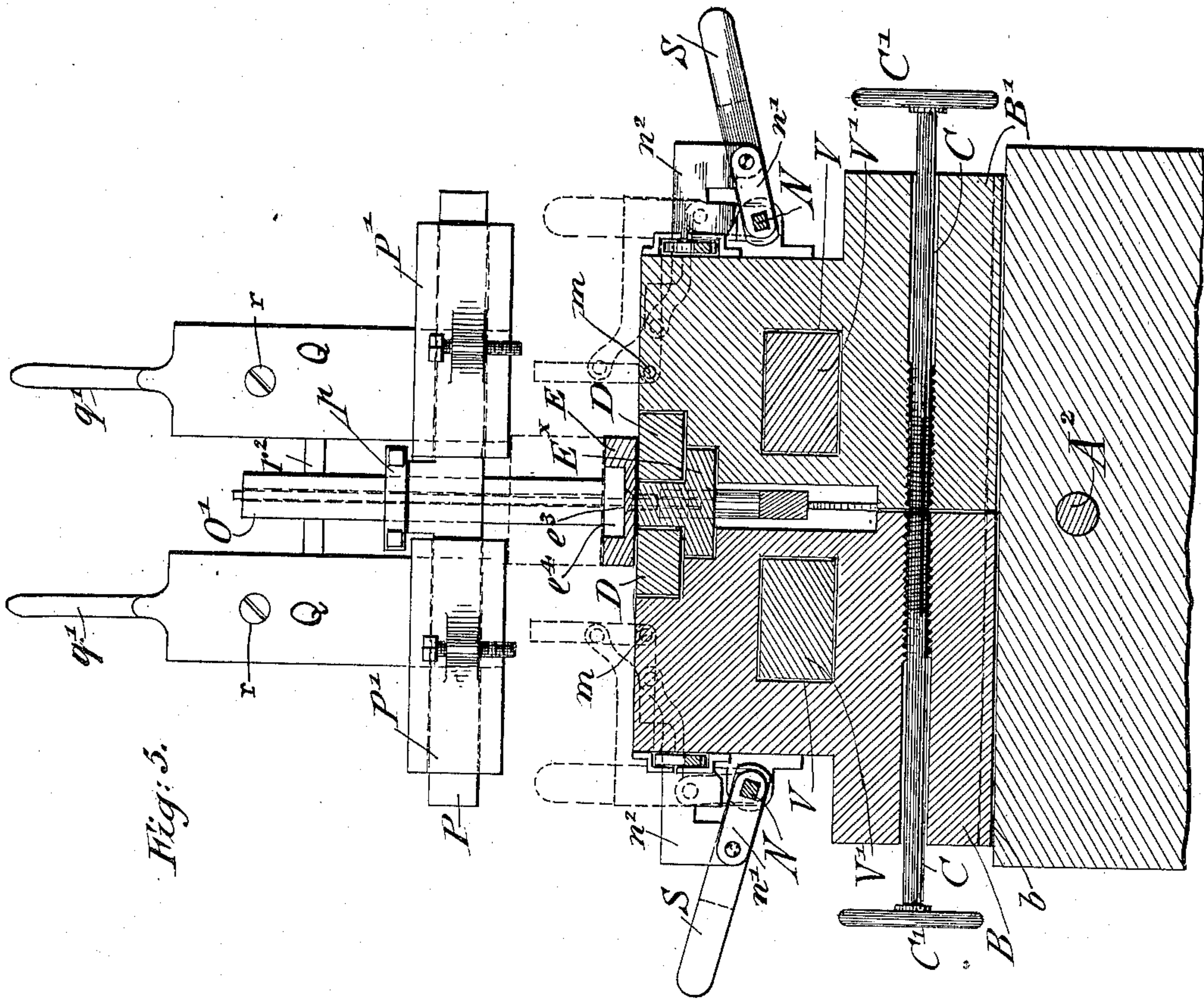
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(No Model.)

(Application filed Jan. 25, 1900.)

6 Sheets—Sheet 5.



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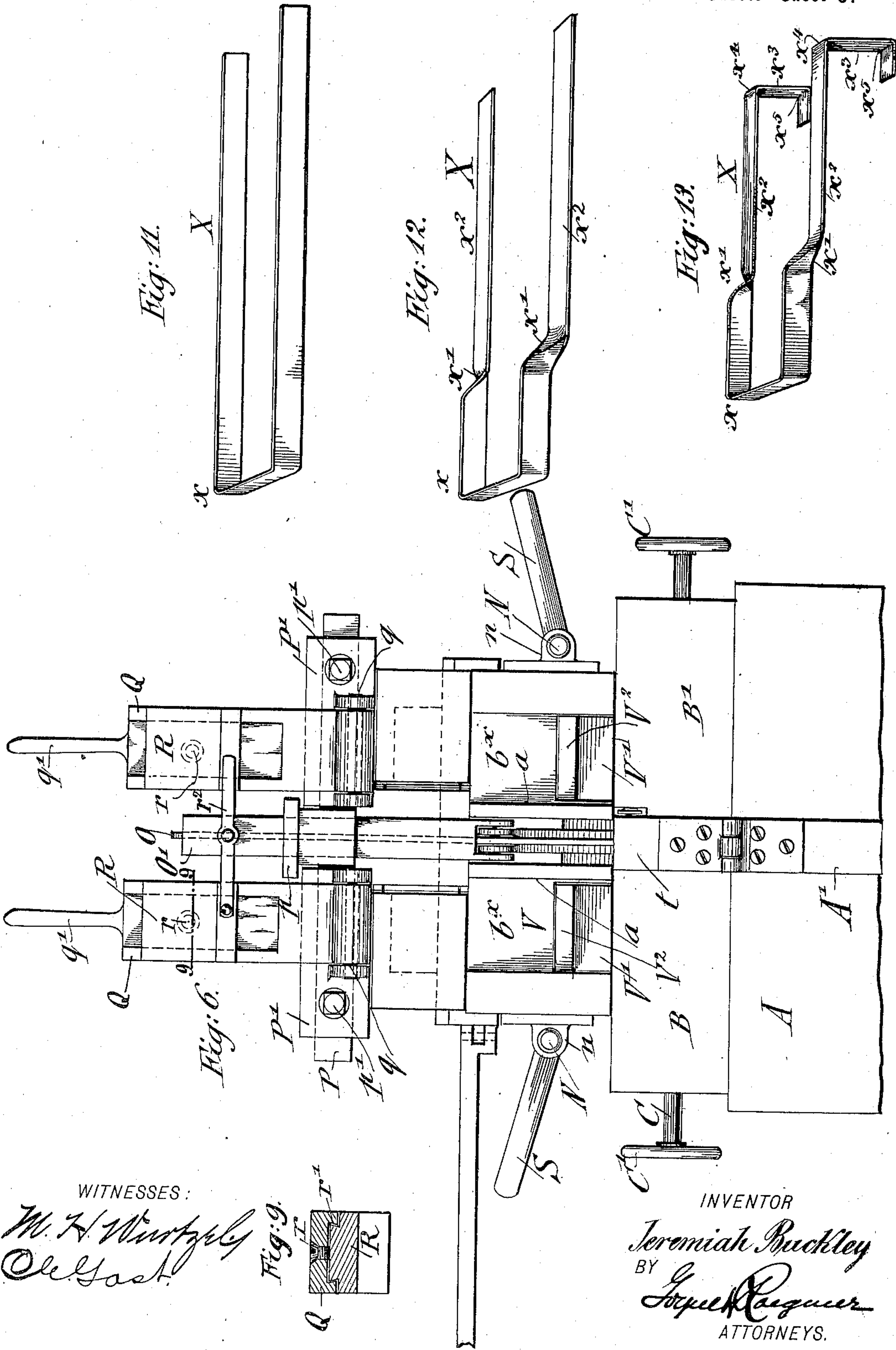
J. BUCKLEY.

MACHINE FOR BENDING BRIDLE IRONS.

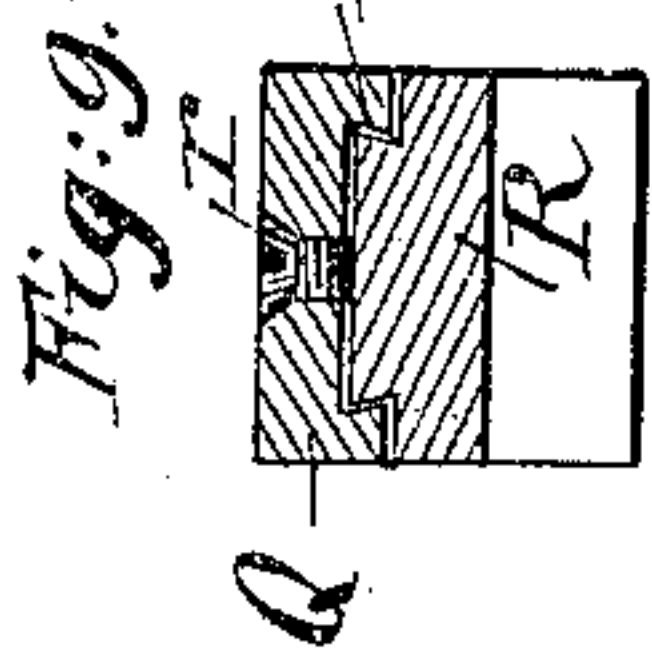
(No Model.)

(Application filed Jan. 25, 1900.)

6 Sheets—Sheet 6.



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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR BENDING BRIDLE-IRONS.

SPECIFICATION forming part of Letters Patent No. 656,936, dated August 28, 1900.

Application filed January 25, 1900. Serial No. 2,718. (No model.)

*To all whom it may concern:*

Be it known that I, JEREMIAH BUCKLEY, a citizen of the United States, residing at New York, borough of Manhattan, and State of New York, have invented certain new and useful Improvements in Machines for Bending Bridle-Irons, of which the following is a specification.

This invention relates to machines for making 10  
bridle or stirrup irons such as are used for supporting beams, joists, or timbers in the construction of buildings.

The object of the invention is to provide a machine of the described class which is effective and which can be used to turn out the 15  
articles quickly and in various sizes.

The invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed.

20 In the accompanying drawings, Figure 1 is a side elevation of a machine for bending bridle-irons embodying my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is a plan. Fig. 4 is a longitudinal section of the same on line 4 4, Fig. 3, parts being in 25  
different positions. Fig. 5 is a transverse section on line 5 5, Fig. 3. Fig. 6 is a rear elevation. Fig. 7 is a detail transverse section on line 7 7, Fig. 1, through the folding-jaws and supports therefor. Fig. 8 is a detail transverse section on line 8 8, Fig. 4. Fig. 9 is a 30  
transverse section through one of the jaws for bending up the hooks of the bridle-iron on line 9 9, Fig. 6. Fig. 10 is a side elevation of the twisting-tool, showing how it is applied 35  
to the strip to be twisted. Figs. 11, 12, and 13 are perspective views showing the step of forming the loop, the twists, and the hooks; and Fig. 14 is a perspective view showing 40  
how the iron is used.

Similar letters of reference indicate corresponding parts throughout the drawings.

Referring to the drawings, A indicates the bed of the machine, on which the parts are 45  
mounted, and B B' indicate movable blocks which by means of dovetail tongue-and-grooved connection at b are guided upon the said bed or base piece, C being a screw-spindle having handles C' C' and provided with 50  
right and left threads meshing in corresponding threads in the said blocks, as clearly

shown in Figs. 4 and 5. One end of the bed or base A is provided with a longitudinal extension A', which projects upwardly above the same, as shown in Fig. 4, and supports 55  
by means of brackets a a horizontal longitudinally-slotted guide-rail D, which extends forwardly and is arranged between the upper portions of the movable blocks B B'. A longitudinally-movable anvil or former E is 60  
mounted on a slide E<sup>x</sup>, guided in the slot of the said guide-rail D, as shown in Figs. 3 and 5, and is adjustable by means of a forwardly-extending slide-rod E', shown partly in dotted lines and partly in full lines in Fig. 4, and 65  
having an adjustable handle E<sup>2</sup>, which is provided with a screw e, entering the end of said rod, so that when the handle is rotated it is moved to or from the said rod. The position of the handle E<sup>2</sup> regulates the distance of the 70  
anvil E from the rear of the machine, while a pivoted bifurcated stop e', controlled by handle e<sup>2</sup> at the front end of the machine, takes over the said screw e and prevents the handle, and hence said anvil, from moving 75  
farther to the rear than the position set. The anvil E is removable from the slide E<sup>x</sup>, being attached thereto by a countersunk screw e<sup>3</sup>, so that anvils of different sizes can be placed in position. (See dotted lines in Fig. 5.) The 80  
anvil E is provided with a separable section F, which is shown as swinging on a hinge or pivot f and which is provided with a tenon or projection f', that enters a socket e<sup>4</sup> in the anvil E, and is thereby adapted to assist in 85  
fixing the anvil in set position and to compose with the same a former over which the metallic strap for the bridle-iron is to be bent. Said anvil-section F is pivoted at f to a suitable hinge-plate G, which receives a squared 90  
transverse rod g, that is guided loosely at both ends in flanges H<sup>2</sup> of two laterally and longitudinally movable slide-plates H H', on which a top plate G' is mounted. The slide-plates H H' are provided with tongues h on 95  
their side flanges h', which tongues fit in grooves h<sup>2</sup> in the sides of the blocks B B', so that said slide-plates H H' can move longitudinally of the machine, in doing which they carry with them the top plate G' and its supported parts. The top plate has a tongue- 100  
and-grooved connection at g<sup>x</sup> with the slide-



plates, so that the latter can move transversely of the machine with the slide-blocks, said top plate remaining in position. To secure the top plate to said slide-plates, the latter are provided with upwardly-projecting screw-threaded studs or pins  $g'$ , which pass through slots  $g^2$  in said top plate, nuts  $g^3$  being screwed onto said studs, which when loose permit the blocks B B' and the slide-plates H H' to be spread apart or come together, and then, when the desired adjustment is produced, the nuts are turned down against the top plate, so as to prevent relative movement of the parts. The before-referred-to guide-rail D is, as shown in dotted lines in Fig. 4, supported in central fixed position by extending the same rearwardly from the under side of the top plate G'.

The side flanges  $h'$  of the slide-plates H H' are provided with teeth  $k$ , which are engaged by weighted and hand-operated pawls K, pivoted to the sides of the blocks B B', so as to hold the top plate G' and slide-plates in adjusted forward or backward position. As shown in detail in Fig. 7, the adjacent ends of the upwardly-extending flanges H<sup>2</sup> of the slide-plates H H' are provided with dovetailed recesses  $h^2$ , in which dovetailed bearers  $i$  are guided, said bearers supporting, by means of screws  $i$ , the hinge-plate G and also supporting a pair of pivoted jaws I I', one at each side of the anvil and arranged to move in a plane at right angles to the plane of movement of the upper anvil-section F. The said pivoted jaws operate at each side of the anvil E and are moved by means of an upwardly-extending hand-lever J, which is pivoted to the bed A at A<sup>x</sup> and which is also pivoted by means of links J' to a slide J<sup>2</sup>, guided in ways  $j$  of the top plate G' and connected in turn by means of links J<sup>3</sup> to the jaws I I', said links J<sup>3</sup> passing through suitable guide-holes in the flanges H<sup>2</sup>. The links J<sup>3</sup> are provided with ratchet-teeth, (see Fig. 3,) which are engaged by hand-operated pawls J<sup>4</sup>, pivoted to the top plate G', so that said pawls will hold the jaws I I' in parallel closed position at each side of the anvil. A handle F' is pivoted to the upper anvil-section F and is provided with a slotted lug F<sup>2</sup>, which is adapted to engage a pin F<sup>3</sup> on aforesaid slide J<sup>2</sup> to hold the said anvil-section in raised position, while when said locking parts are disengaged the anvil-section F may be moved down upon the anvil E.

The described anvil and the folding jaws are for the purpose of forming the loop or socket of the bridle-iron, as hereinafter described. The central rail D and the upper surfaces of the blocks B B' are recessed at  $l'$  to receive the notched jaw L' of the twisting-tool shown in Fig. 10, which imparts the twist to the bridle-iron and lays the shanks of the same down flat upon the blocks B B'. M M' are retainers which are arranged on opposite sides of the anvil in pairs and are pivoted at  $m$  to the side blocks B B', they

being in normal position within the recesses  $m'$  in the said blocks, so that they will be flush with the upper surfaces of the said blocks and not interfere with the folding operation in forming the loop of the bridle-iron. Said pivoted retainers are operated by means of oscillatory shafts N, which are pivoted in suitable bearings  $n$  at the sides of the slide-blocks B B' and carry-arms  $n'$ , which are connected by pivoted links  $n^2$  to the said retainers, said arms being secured on the shaft by means of set-screws  $n^3$ . The shafts N are each provided with a hand-wheel N'.

The extension or wing A' has been referred to. It is mounted adjustably or so as to slide in the bed A, being operated by means of a screw-spindle A<sup>2</sup>, provided with a hand-wheel A<sup>3</sup> and its screw-thread meshing in a corresponding screw-thread of said extension, so that the extension is moved inwardly or outwardly by the corresponding movement of said spindle. Projecting from the extension A' is a guide-post O, on which is guided a sleeve O', pivotally connected with the rear end of a lever O<sup>2</sup>, (see dotted lines, Fig. 4,) that is pivoted to an upward extension A<sup>4</sup> at the front end of the base A, so that the said lever moves in the space between the blocks B B'. The lever O<sup>2</sup> when depressed raises the sleeve O' and parts mounted thereon, said lever being locked in depressed position by means of a hook O<sup>3</sup>, pivoted to the front end of the bed. Secured by collar  $p$  to the said sleeve O' or in any suitable way is a cross-bar P, on the arms of which slides P' are guided and are set in adjusted position by means of thumb-screws  $p'$ . These slides P' carry a pair of bending-jaws Q, which are pivoted thereto at  $q$  and are provided with handles  $q'$ . Lips R of L shape are mounted adjustably on the operative faces of said jaws by means of set-screws  $r$ , said lips having a tongue-and-grooved connection at  $r'$  with said jaws, so that the same are adjustable toward and away from the pivots  $q$ . The said bending-jaws O are held in raised inoperative position (shown in Figs. 1 and 5) by means of a pivoted button  $r^2$ , which is arranged on the sleeve O'.

S indicates a forked holder, one arranged on each oscillatory shaft N and held thereon by a set-screw S', which when swung up into vertical position receives the cross-bar P and slides P' when they are moved down into the position shown in Figs. 3 and 4. Spring-actuated catches N<sup>5</sup> engage at their forked ends over the squared shafts N and hold the forked holders S and retainers M M' in upright position.

The rear ends of the slide-blocks B B' are recessed at  $b^x$ , below and in the plane of movement of the bending-jaws Q, so that when the sleeve O' is lowered the said bending-jaws may enter the said recesses and form the hooks of the bridle-irons, the recessed ends of the blocks thus serving as anvils.

Guide-post O, before referred to, while it is



carried by the adjustable extension A', is mounted directly on a hinged portion *t* of said extension, so that the post and the parts carried thereby may be swung out away from the rear ends of the blocks B B'. This is done by means of a pusher T, which is guided in the bed A between the blocks B B' and is connected at its rear end by a link *t'* with said hinged portion *t*, said pusher also serving to bring the parts back to upright position.

Longitudinal openings V pass through the blocks B B', and in the same are placed a pair of bars V', which at their front ends receive the ends of handles W, swiveled therein, (see Fig. 4,) said handles each having a notch W' for engaging a projecting lug W<sup>2</sup> on each block, whereby said bars are locked in position. The rear ends of the bars V' are provided with a longitudinal anvil extension or toes V<sup>2</sup> thinner than the said bars and located to one side thereof.

The operation of the machine will now be described.

The operator first takes a strip of iron Y and places it transversely of the machine against the stop-gage Z, with its mid-length in between the anvil E and the opposing dove-tailed bearers *i*. He now releases the handle F' from pin F<sup>3</sup> and lowers the anvil-section F down onto the anvil E, whereupon the lever J is pushed in, so as to close the jaws I I' upon the metallic strip Y, and bends and folds the same against the sides of the parts E F, the cross-bars P being meanwhile raised into the position shown in Figs. 1 and 6, so that the ends of the strip Y may move under it, as shown by dotted lines, Fig. 1, whereby the loop *x* of the bridle-iron X, Fig. 13, is formed. The retainers M M' and the holders S are now raised upright into the position shown by dotted lines in Fig. 5 by turning the oscillatory shaft N in proper direction and securing it in position by means of the catches N<sup>5</sup>. Then the operator places the notched jaw L' of the twisting-tool L successively over the upper edges of the strip Y at a point opposite the transverse top recesses *l l'*, so that when a turn from horizontal position through an angle of ninety degrees is given to the tool the head of the same will enter said recesses, the twists at *x'* will be given the shanks *x*<sup>2</sup> of the bridle-iron, and the ends of the strip beyond the twists will be turned in a plane at right angles to the plane of the portions lying at each side of the anvil, so as to be laid down flat upon top of the blocks B B'. The twisted shanks are prevented from spreading and are held in line with the end recesses *b<sup>x</sup>* of the blocks B B' by means of the upright side retainers M M'. The operator now releases the lever O<sup>2</sup> from the hook O<sup>3</sup>, and the cross-bar P and slide P', carrying the parallel jaws Q, are lowered by their own weight down upon the blocks B B', the outer ends of the cross-bar and slides being guided into the forked portions of the holders S, whereby the said parts are firmly

held against twisting or other movement relatively to the machine. The button *r*<sup>2</sup> for retaining the jaws Q upright is now turned so as to release the same, the handles *q'* of the jaws being grasped and the jaws pressed forcibly down into position shown in Fig. 4, thus bending the projecting ends of the strip, so as to form the hooks *x*<sup>3</sup> of the bridle-iron. The ends of the strip are bent by said jaws Q around and upon the recessed ends of blocks B B' and the thin anvil extensions V<sup>2</sup> of the bars V', the blocks forming the corners or bends *x*<sup>4</sup> of the hooks and the anvil extensions the corners or bends *x*<sup>5</sup>. To remove the so bent-up bridle-iron, the parts described are returned to normal position and the pusher T is pushed in, so as to act on and swing the hinged portion *t* and the parts carried thereby away from the rear end of the machine, as shown in dotted lines in Fig. 4, thus releasing the jaws Q from the hooks of the bridle-iron. A clearing rod or slide U, guided on top plate G', is now pushed against the loop of the bridle-iron so as to push the anvil E rearwardly, and thereby release and clear the hooks of the bridle-iron from the recessed ends of the blocks B B', whereupon the bridle-iron is then readily raised from the anvil E and removed from the machine. The pusher T is then pulled so as to return the actuated parts to upright position, the machine being now ready to form another bridle-iron.

The different portions of the machine are adjustable in evident manner for turning out bridle-irons of various sizes.

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

1. The combination, in a machine for bending bridle-irons, of the bed, transversely-movable blocks, a supporting-rail between the blocks, an adjustable anvil mounted on said rail and projecting always above the said blocks, means for bending the head or loop of the bridle-iron around said anvil, and means for bending the hooks of the bridle-iron over the ends of said blocks, substantially as set forth.

2. The combination, in a machine for bending bridle-irons, of the bed, transversely-movable blocks, a supporting-rail between the blocks, an adjustable anvil on said rail, a separable top section cooperating with said anvil to increase its height, means for bending the head or loop of the bridle-iron around said anvil, and means for bending the hooks of the bridle-iron over the ends of the said blocks, substantially as set forth.

3. The combination, in a machine for bending bridle-irons, of the bed, transversely-movable blocks, a supporting-rail between the blocks, an adjustable anvil mounted on said rail, slide-plates movable longitudinally of said blocks, a top plate fixed against transverse movement and movable longitudinally, with said slide-plates, a pair of pivoted jaws cooperating with said anvil to bend the loop



of the bridle-iron upon the same, said jaws being mounted on said top plate, and means for bending the hooks of the bridle-iron over the ends of said blocks, substantially as set forth.

5 4. The combination, in a machine for bending bridle-irons, of the bed, transversely-movable blocks, an adjustable anvil, means for supporting the same, a top plate fixed against transverse movement and movable longitudi-  
10 nally of the machine, a separable anvil-section, a pair of jaws, said anvil-section and jaws being pivotally mounted on said top plate and cooperating with the anvil, and means for bending up the hooks of the bridle-  
15 iron, substantially as set forth.

5. The combination, in a machine for bending bridle-irons, of the bed, adjustable blocks mounted thereon, an anvil suitably fixed, means for bending up the loop of the bridle-  
20 iron around said anvil, pivoted retainers on said blocks and lying normally in recesses in the blocks, and means for bending the hooks of the bridle-iron over the ends of said blocks, substantially as set forth.

25 6. The combination, in a machine for bend-

ing bridle-irons, of the bed, adjustable blocks mounted thereon and provided with recessed ends, a suitably-fixed anvil, means for bending up the loop of the bridle-iron around said anvil, and a pair of parallel, pivoted jaws co-  
30 operating with the recessed ends of said blocks, for bending up the hooks of the bridle-iron, substantially as set forth.

7. The combination, in a machine for bending bridle-irons, of the bed, blocks mounted  
35 thereon and provided with recessed ends, a suitably-fixed anvil, means for bending up the loop of the bridle-iron around said anvil, a fixed guide-post, a pair of parallel jaws, and a support guided on said post and to which  
40 said jaws are pivoted so as to cooperate with the recesses of the blocks to form the hooks of the bridle-iron, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in pres-  
45 ence of two subscribing witnesses.

JEREMIAH BUCKLEY.

Witnesses:

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