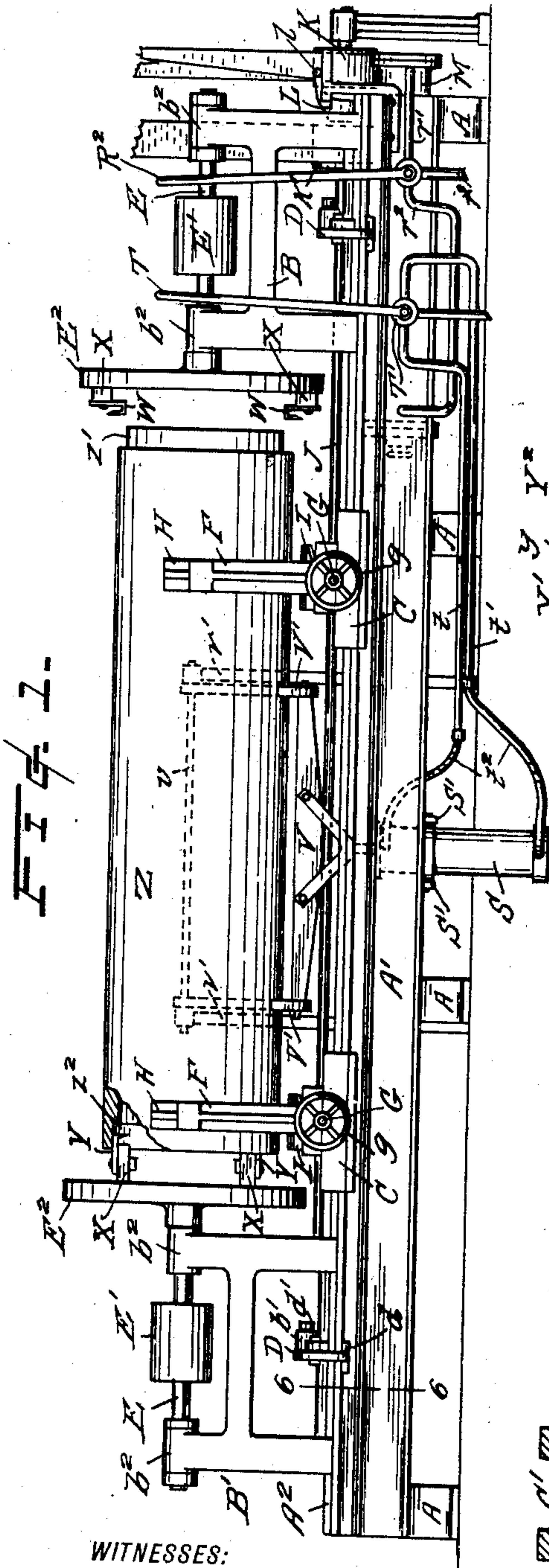


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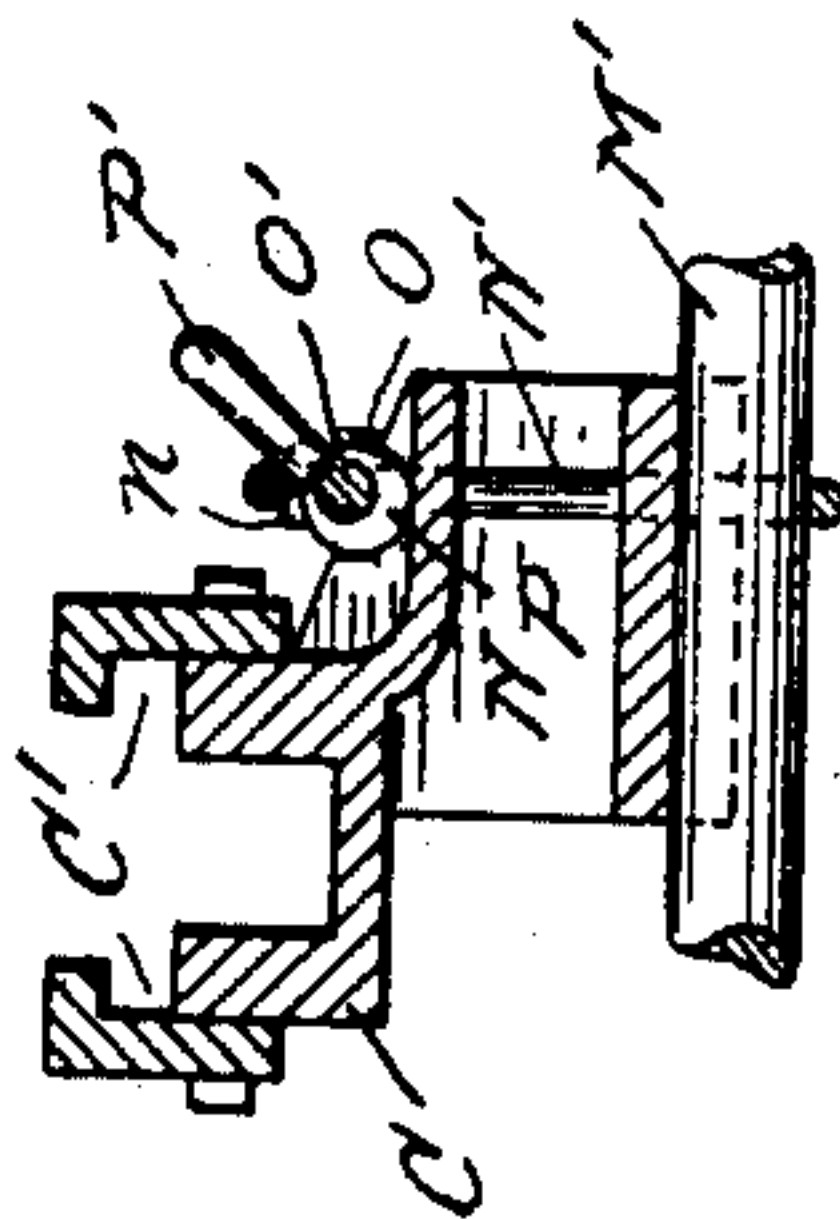
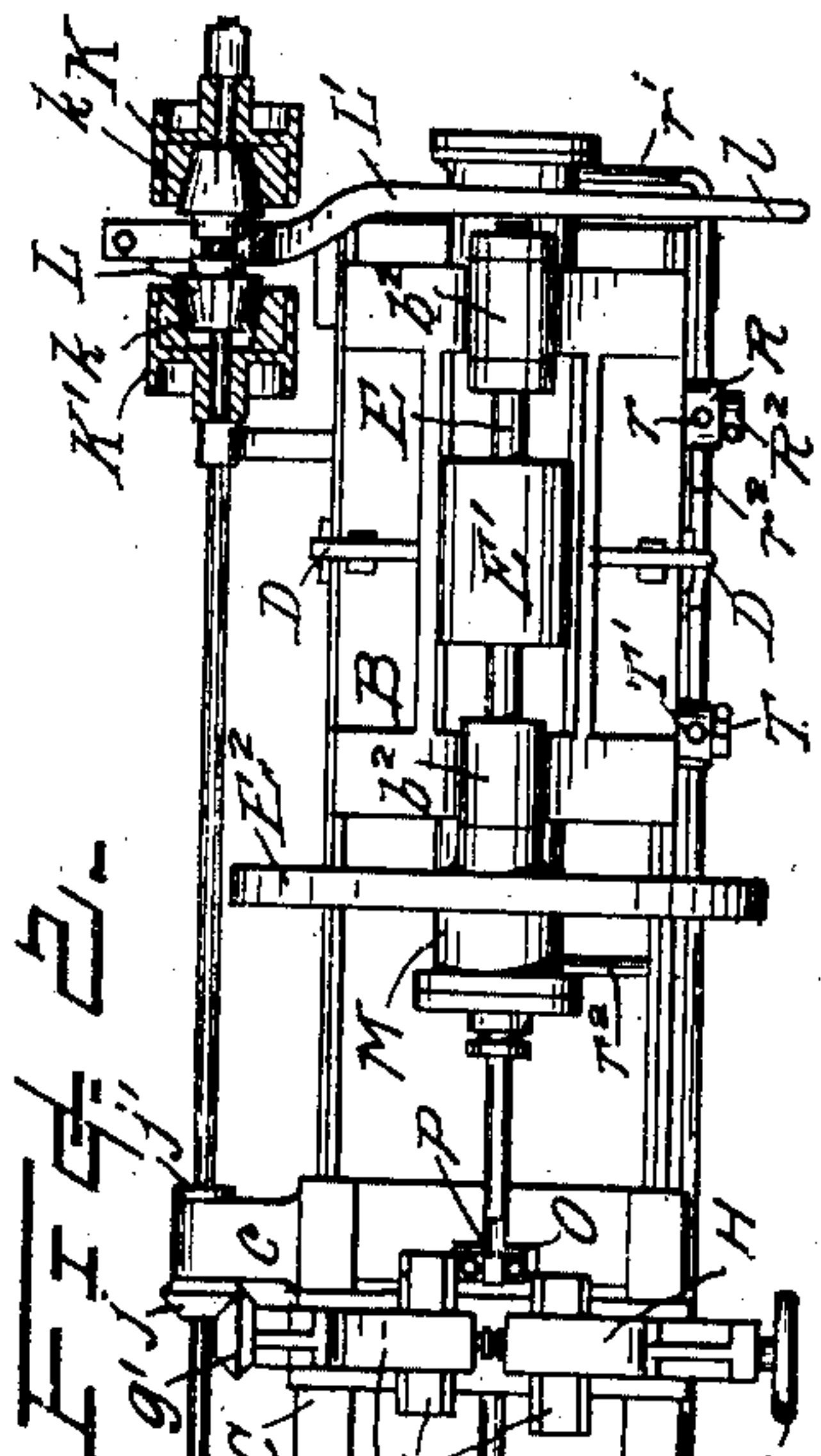
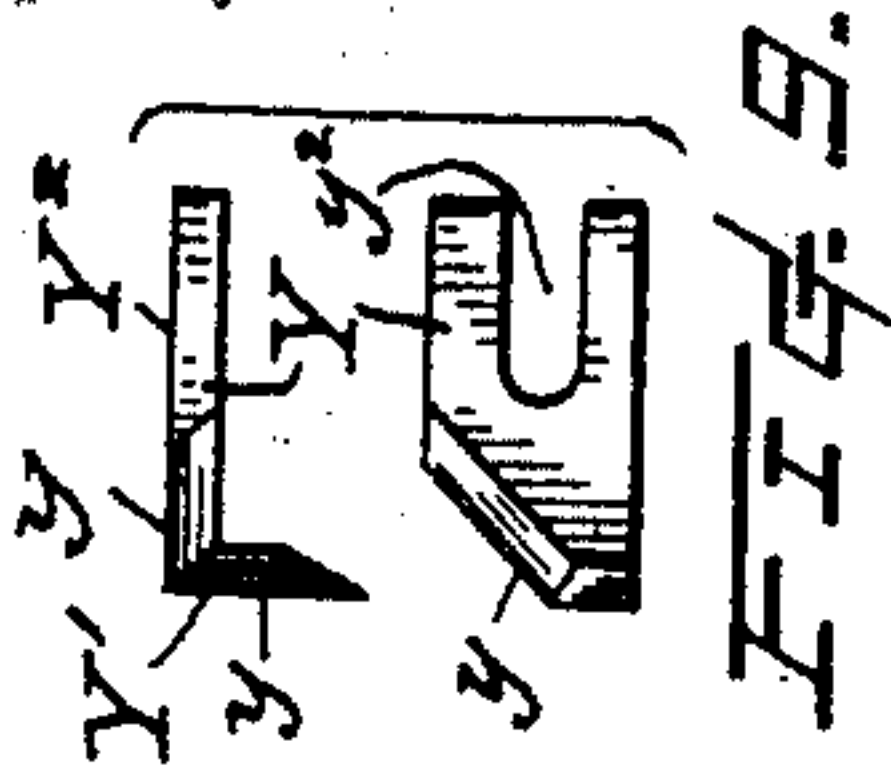
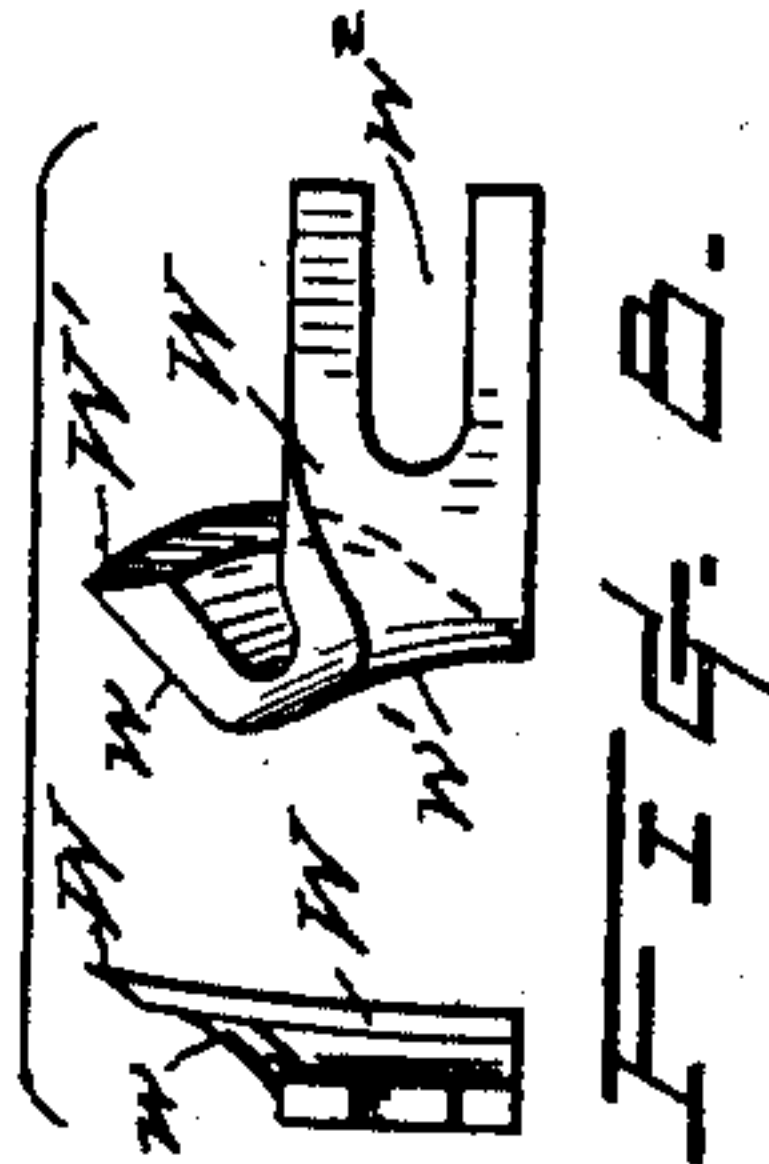
PATENTED JULY 24, 1906.

J. S. F. MARKS.
PIPE HEADING MACHINE.
APPLICATION FILED AUG. 31, 1905.

2 SHEETS—SHEET 1.



WITNESSES:
M. J. Crawford
J. H. Lohr



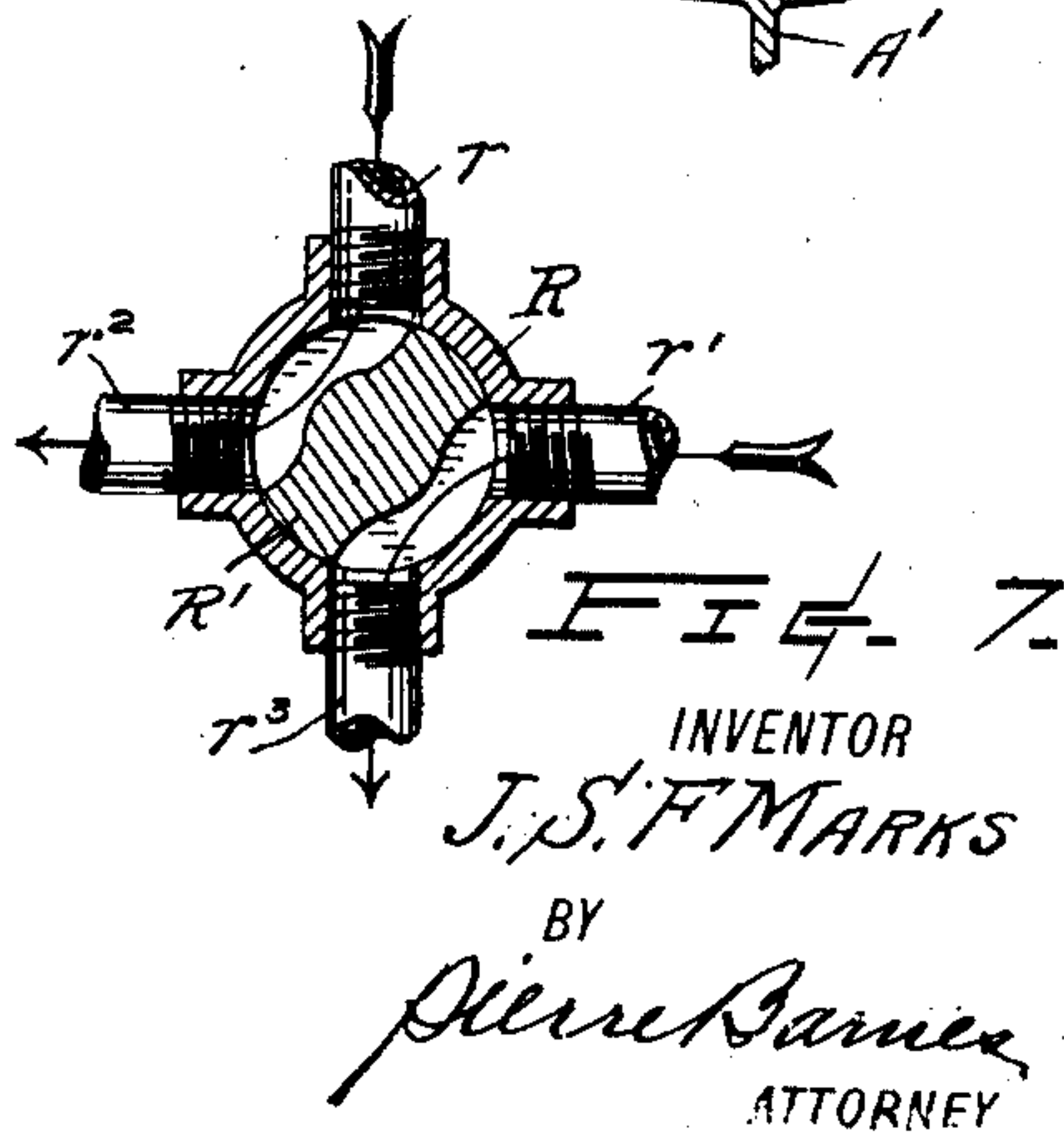
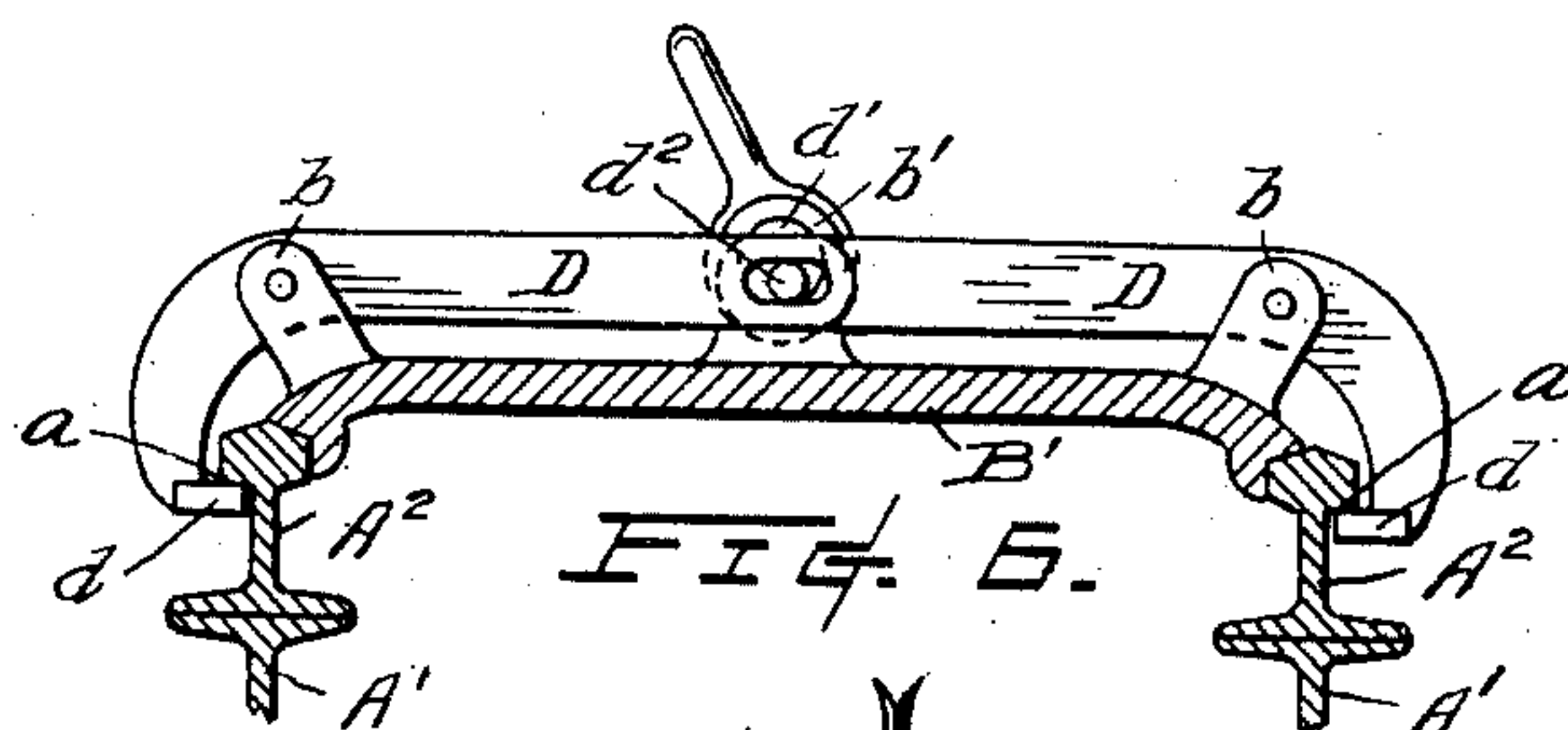
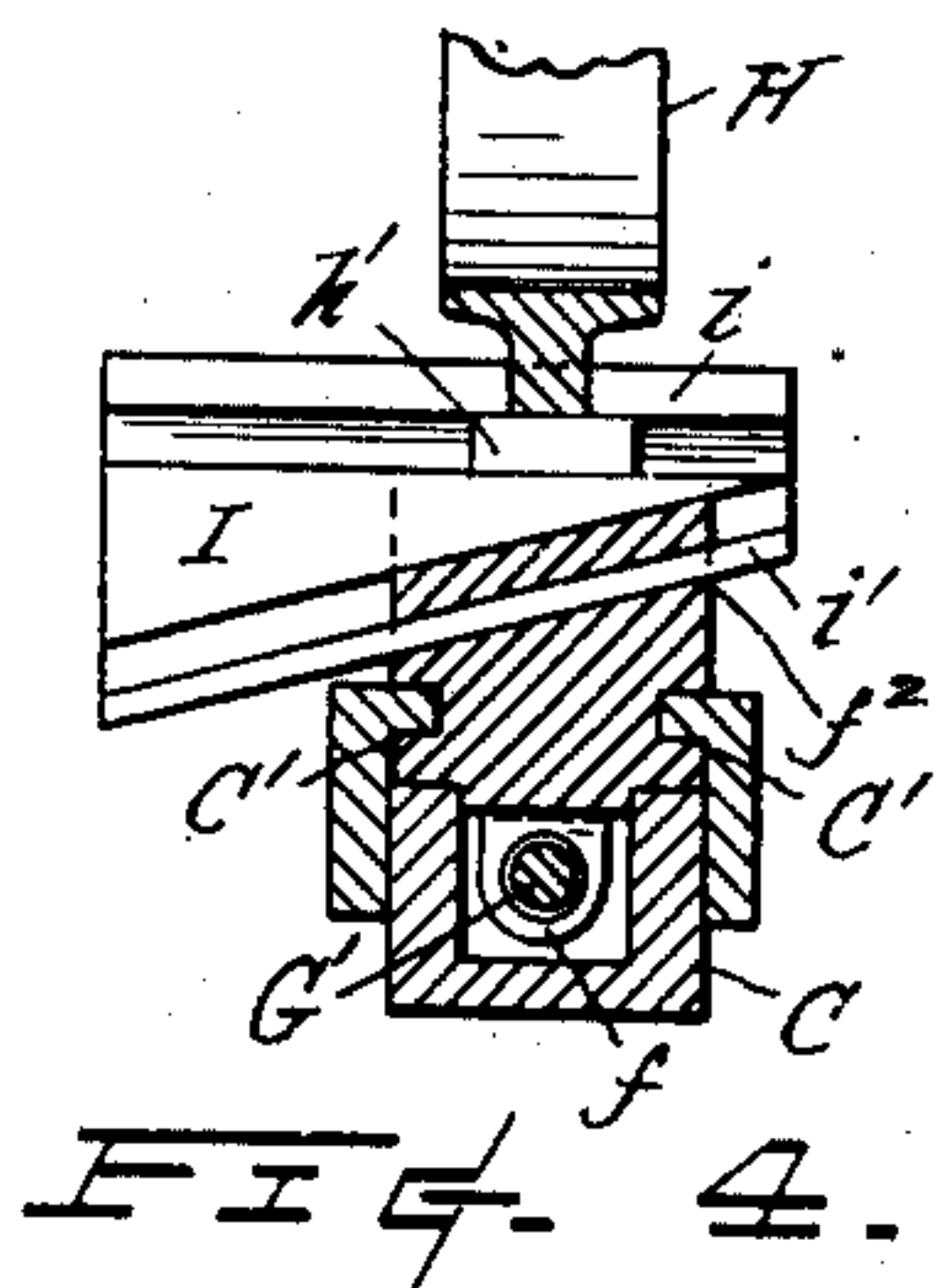
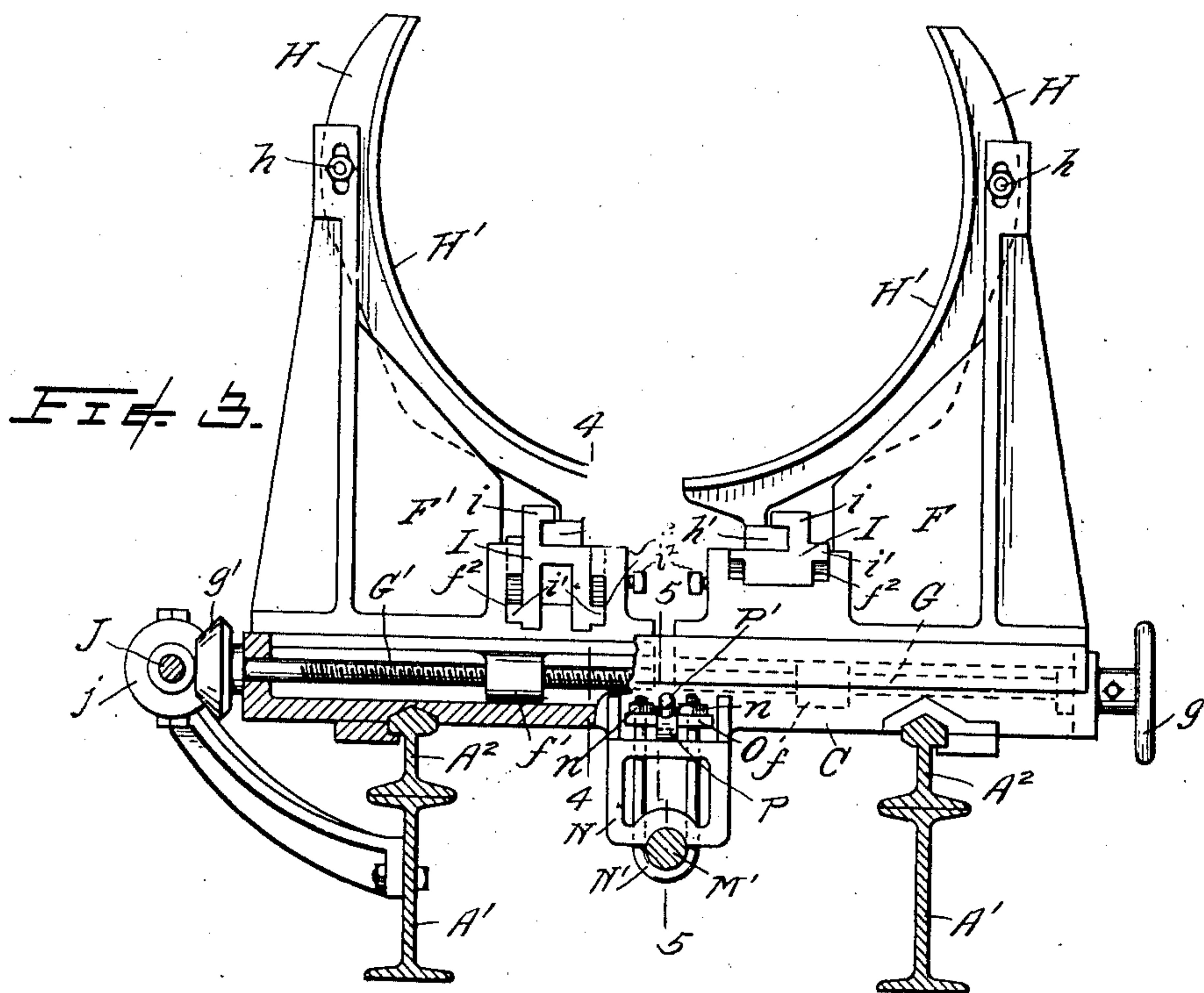
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J. S. F. MARKS
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No. 826,679.

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PIPE HEADING MACHINE.
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN S. F. MARKS, OF OLYMPIA, WASHINGTON, ASSIGNOR TO NATIONAL WOOD PIPE COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

PIPE-HEADING MACHINE.

No. 826,679.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed August 31, 1905. Serial No. 276,511.

To all whom it may concern:

Be it known that I, JOHN S. F. MARKS, a citizen of the United States, residing at Olympia, in the county of Thurston and State of Washington, have invented certain new and useful Improvements in Pipe-Heading Machines, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a front elevation of a pipe-heading machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a cross-sectional view on line 3 3 of Fig. 2. Figs. 4 and 5 are cross-sections on lines 4 4 and 5 5 of Fig. 3. Fig. 6 is a section on line 6 6 of Fig. 1. Fig. 7 is a detail sectional view of one of the fluid-controlling valves. Figs. 8 and 9 are detail views of the knives respectively used for external and internal cuts.

The object of this invention is the provision of improved means for shaping the ends of wood pipes to make interfitting joints.

To this end my improved apparatus consists in the novel construction, adaptation, and combination of parts, as will be hereinafter described, and more particularly pointed out in the claims.

In the illustrated embodiment I provide a bed-frame comprised of foot-supports A, which are rigidly connected to and sustain longitudinally-disposed parallel I-beams A', having secured thereto rails A², serving for the track or guideways of the movable head and tail stocks B B' and the carriages C. The stocks are slidable lengthwise of the track by manual power and are clamped thereto at any desired position (see Fig. 6) by means of levers D, which are fulcrumed to lugs b of the stock and provided with hooked ends d, adapted to be frictionally engaged with said rails by bearing against the shoulders a thereof by tilting upwardly the other ends of the levers by locking devices. Such locking devices are comprised of plugs d', rotatable in housings b' and having eccentrically-disposed pins d², which extend through elongated apertures in the opposite ends of the levers.

The stocks are each provided with a spindle E, journaled in standard-boxes b² and severally carry a belt-pulley E' and a face-

plate E², to which the revoluble cutter-knives *per se* are attached.

Each of the carriages is provided with knees F F', slidable in transversely-arranged guideways C' by means of set-screws G G', registering with internally-threaded lugs f f' of the knees. Detachably connected to the upper ends of said knees, as by bolts h, are pipe-jaws H, formed with inner faces H' to correspond to the arc or curvature of the peripheral surface of the pipe being operated upon.

The jaws are provided with pendent lugs having outwardly-protruding tongues h', which interfit with reversely-directed angular ribs i of blocks I, which are seated in recesses formed in the several knees and are provided with longitudinal-inclined feathers i', which fit into similarly-inclined grooves f² in the opposing walls of the recesses. By adjusting the horizontal positions of these blocks the vertical adjustment of the jaws is accomplished, and the blocks are retained in their set positions by screws i² or their equivalent. The horizontal adjustment of the knees is attained by means of the aforesaid set-screws, of which the front ones are individually actuated with hand-wheels g and the others, G', in unison by power devices. The latter consist of toothed bevel gear-wheels g' and j, respectively, upon these screws G' and a set-shaft J, which is preterminately driven by one or the other of the severally-driven belt-pulleys K K'. These pulleys are normally loose upon their shaft and are formed or provided with frictional clutch-surfaces k, adapted to be engaged by correspondingsurfaces of an interposed member L, which is splined to the shaft and operated by a forked shifting-lever L', as ordinary, and having its handle end l extending forwardly and within convenient reach of the operator. The gear-wheels j are likewise splined to their shaft, but are movable endwise thereof with the respective carriages by journaling their annular recessed hubs j' in bracket-boxes c of the latter.

Provided at the head end of the bed-frame and below the level of its track is a horizontal cylinder M, within which is a piston of ordinary or suitable construction, which is rigidly connected to a rod M', extending to within a

short distance of the other end of the frame. Means are provided on each carriage for detachably connecting the same to the piston-rod and may advantageously consist of a
 5 chambered saddle-piece N, (see Figs. 3 and 5,) extending downwardly and seated upon the rod, and a U-bolt N', passing around the lower side of the rod and thence upwardly
 10 O and are provided with nuts n thereabove. This plate is turned with a cylindrical intermediate portion O', which passes through an eccentrically-disposed hole of the circular end P of a cam-lever P', wherewith the piston-rod
 15 is capable of being engaged or released from the carriage, as may be required to accommodate the various positions in which the latter may be placed. The power medium for the aforesaid cylinder is desirably water-pressure,
 20 as furnishing reliable means to effect the movement of the piston and at the same time furnish a practically unvarying opposing pressure to maintain the controlled parts under complete command. The water is con-
 25 ducted from a pressure-supply through a pipe r (see Fig. 7) to a valve-casing R, in which is a rotatable valve R', connected by an external operating-handle R², whereby the valve may be actuated to direct the flow of the
 30 fluid through the pipes r' and r² to and from the cylinder ends, as indicated by the arrows, to cause the piston to recede, or when tilted oppositely a contrary flow and effect, and when the valve is moved intermediately of
 35 these positions to cover the inlet and egress passages to the pipes r and r² the flow of water will be intercepted and the piston maintained immovable. Another cylinder S is provided to actuate a kicking mechanism for expedi-
 40 tiously removing a completed pipe from the carriage and is desirably of the vertical oscillating type, having its trunnions seated in bridge-bars S', extending transversely between the frame-beams A'.
 45 The system of pipe connections is preferably similar to that already described for the hydraulic cylinder and includes an operating-handle T, valve-casing T', located within easy reach of the operator and connected by
 50 conduit-pipes t and t' with the cylinder and having flexible ends t². The piston-rod of this cylinder carries at its upper end a horizontal bar V, which is tiltably connected at its ends to kicking arms V', extending cross-
 55 wise of the frame and pivotally supported upon a fulcrum-bar v, held in standards v', positioned at some distance to the rear of the machine.

The knives before alluded to are most
 60 clearly shown in Figs. 8 and 9 and are respectively used for external and internal cutting operations. The former consists of a looped plate W, having its cutting edge w extending
 across the top of the front w' and continued to
 65 the extremity of the shorter arm W' and ar-

ranged obliquely to cause the knife to make a shearing cut as it revolves upon the work. The other knife for internal cuts is made of a plate Y, having a rectangular bend, and is
 70 formed with a cutting edge y extending diagonally across the top of the bent portion Y' and partly upon the main portion or arm Y². These knives are provided with slots w² y², through which bolts are passed for securing
 75 same to blocks X, carried by the face-plates, and the latter are provided with radial slots, (not shown in the drawings,) whereby the blocks can be moved to properly position the knives for the cuts to be made. I show in
 80 Fig. 1 of the drawings a pipe Z, operatively clamped by the aforescribed jaws and having a reduced extremity z' at the right-hand side and a socket z² at the left; but in practice
 85 it is usual to make both of the ends with protruding reduced extremities which interfit with other lengths, designated as "sleeves" or "couplings," in which socket half-couplings
 alone are formed.

The operation of the invention is as follows: Assuming that the front jaws H are
 90 properly adjusted for the size of pipe to be headed and that the two rear ones have been moved backwardly, a length of pipe is first rolled or otherwise moved into position
 95 between the jaws by manual or other means and is then clamped thereby in axial alignment with the stock-spindles through the medium of the power-gear mechanism moving the rear jaws forwardly by temporarily
 100 coupling the driving-pulley K with the set-shaft, as before explained. The pipe thus firmly held in the carriages, which in turn are clamped to the piston-rod of the hydraulic
 cylinder, is caused by manipulating the valve to act upon the piston to move toward one of
 105 the face-plates and when within the range of the revolving knives thereof will cut the end presented to the reduced diameter either internal or external, as the case may be, and to a length appropriate to the size of require-
 110 ments for the service to which the pipe is to be applied. One end being completed, the pipe is, by means of an inverted pressure being brought to bear upon the cylinder-piston through the reversal of the valve, moved to-
 115 ward the other face-plate to be acted upon by the revolving knives thereon, after which the carriages are caused to move by the devices just described into position, so that the pipe will be clear of or removed from both
 120 sets of revolving knives. The pulley K' is now coupled with the set-shaft to withdraw the rear clamping-jaws from engagement with the pipe, when the latter, being released,
 125 is elevated above and rolled from the machine by means of the steam-actuated appliances therefor.

The invention is extremely simple and effective in accomplishing the work for which
 130 intended and not only performs its several

functions accurately, but with great rapidity. The operation of the machine is under the control of a single man, who is capable of performing what has hitherto been thought to require the employment of two or more, and that, too, at an increased speed.

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

10 1. The combination with a bed-frame having a track, and the carriages movable longitudinally thereon, of knees slidably mounted upon said carriages, means to adjustably move said knees, a pipe-clamping jaw pivotally connected to each said knees, and
15 means comprising blocks having inclined longitudinal feathers which register with corresponding grooves in the knees for adjusting the relative positions of said jaws.

20 2. In combination with a track, a carriage movable thereon, knees movably mounted on said carriage, a jaw movably connected adjacent one end to each of said knees, and a sliding element connected to the opposite end
25 of each of the jaws and to said knees.

3. In combination with a track, a carriage movable thereon, knees movably mounted on said carriage, jaws pivotally connected at their upper ends to said knees, and a movable
30 connection between the lower ends of said jaws and said knees whereby said lower ends of the jaws may be moved vertically.

4. In combination with a track, a carriage movable thereon, knees movably mounted
35 on the carriage, jaws pivoted to said knees at their upper ends, and inclined blocks movable longitudinally of the knees and connected to said knees and to the lower ends of said jaws for raising and lowering the latter.

40 5. In combination with a track, a carriage movable thereon, knees movably mounted on the carriage, jaws pivoted to the knees and provided with pendent lugs formed with protruding tongues, inclined blocks provided with angular ribs interfitting with said
45 tongues, and longitudinally-inclined feathers

on said blocks received in similarly-inclined grooves provided therefor in said knees.

6. In combination with a track, and carriages movable thereon, a movable rod underlying the carriages, a saddle-piece carried
50 by each carriage and projecting downwardly to seat on said rod, a U-bolt passing around the under side of the rod, a yoke-plate secured to the ends of said bolt and formed
55 with a cylindrical portion, and a cam-lever having an eccentric aperture receiving said cylindrical portion.

7. In combination with a track, and carriages movable thereon, a rod underlying the
60 carriages, a chambered saddle-piece having its bottom seating on said rod carried by each carriage, a means encircling said rod and projecting above the top of the saddle, and a cam-lever for operating said means bearing
65 on the top of the saddle.

8. In combination with a track, a carriage thereon, supports movably mounted on the carriage, jaws pivoted at one end to said supports, and inclined blocks having their top
70 and bottom faces slidably related to the opposite ends of said jaws and to said supports.

9. In combination with a track, a carriage movable thereon, knees movably mounted on said carriage, a jaw pivotally connected at
75 its upper end to each of said knees, and a sliding wedge interposed between the opposite end of said jaws and said knees.

10. In combination with a track, a carriage movable thereon, knees movably
80 mounted on the carriage, a jaw pivotally connected at its upper end to each of said knees, and means connected to the lower ends of said jaws and to said knees to move said jaws vertically.

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

JOHN S. F. MARKS.

Witnesses:

PIERRE BARNES,
M. T. CRAWFORD.