

No. 720,425.

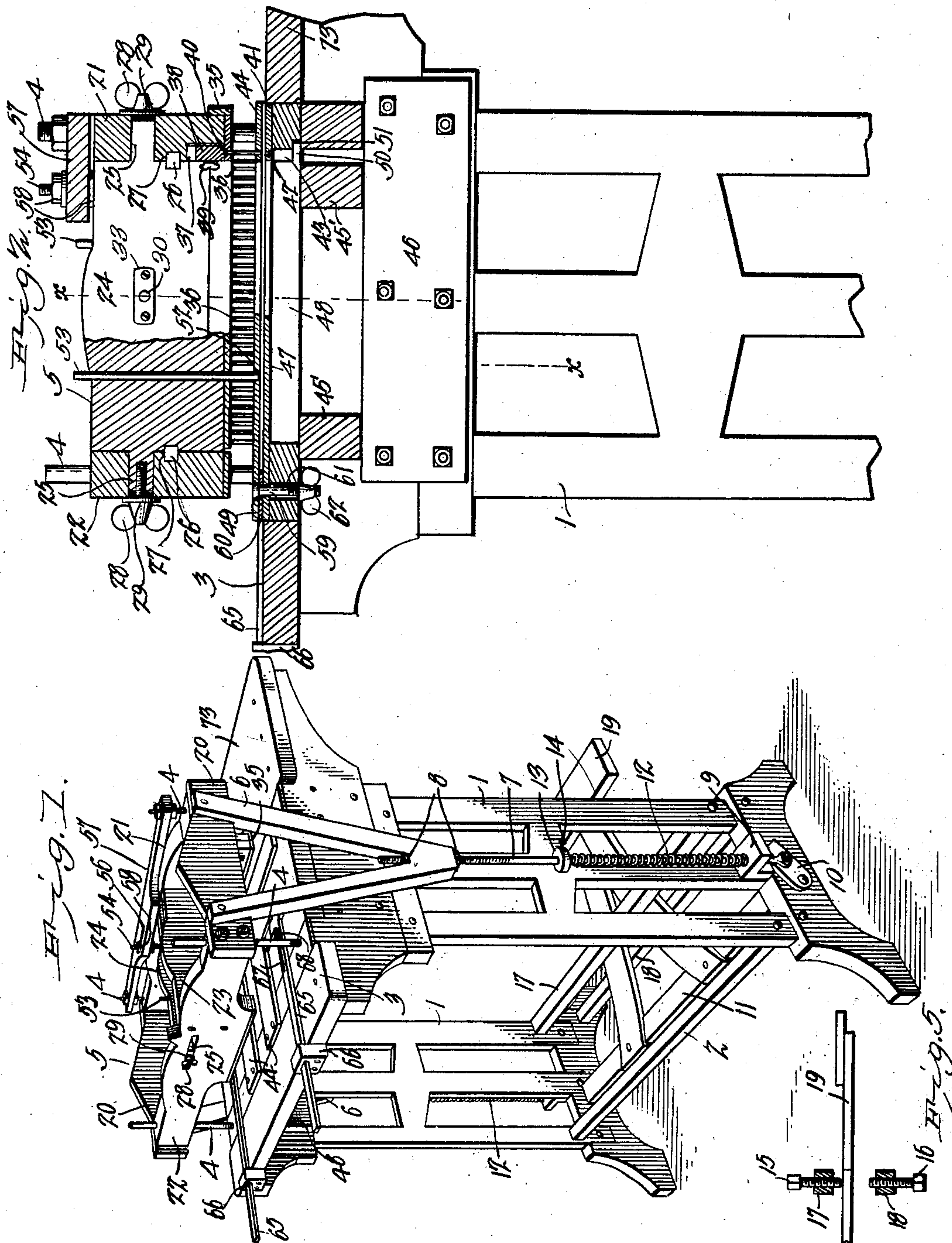
PATENTED FEB. 10, 1903.

J. W. HEDGEPEETH.
PERFORATING MACHINE.

APPLICATION FILED JULY 28, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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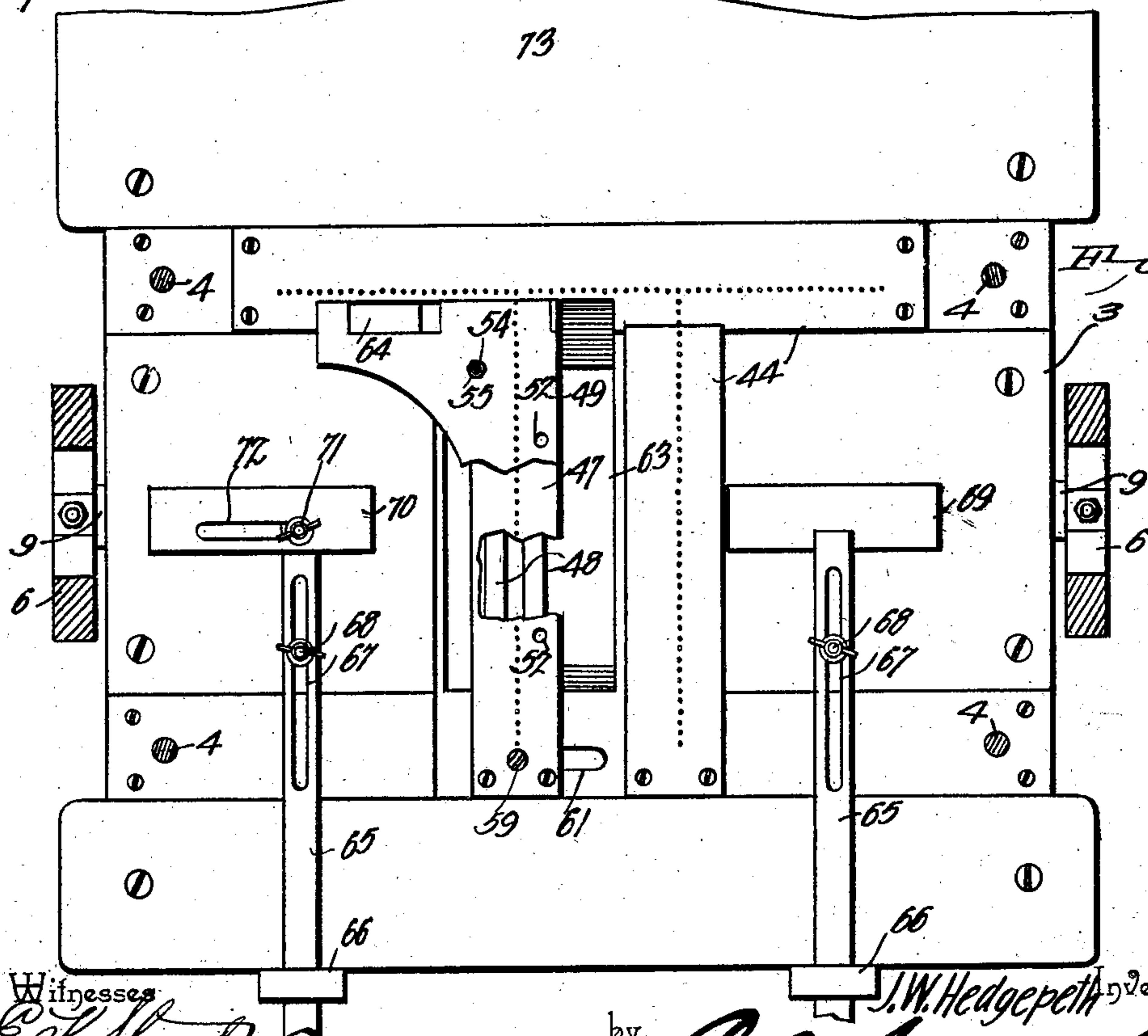
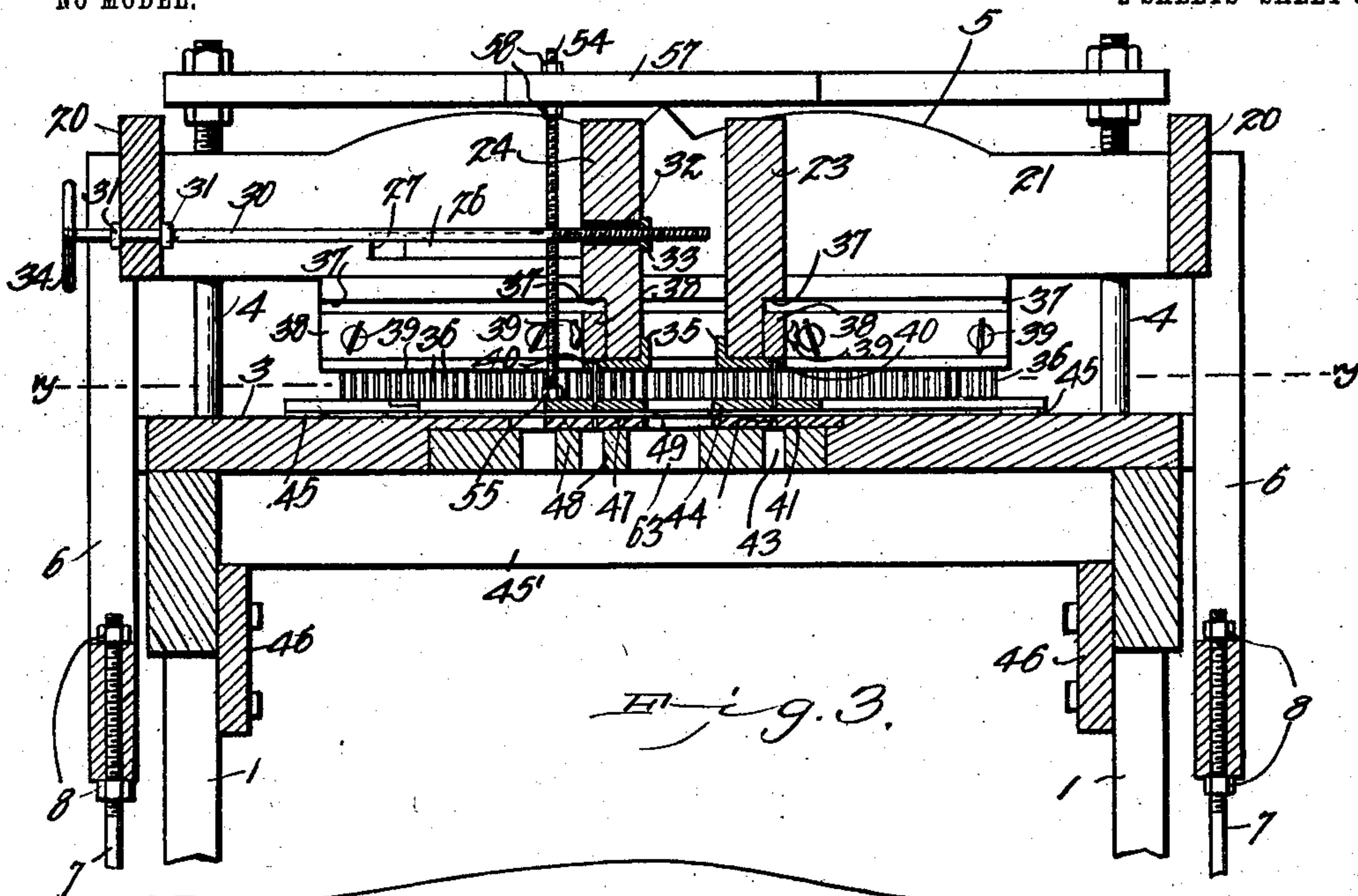
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UNITED STATES PATENT OFFICE.

JOHN W. HEDGEPEETH, OF RIPLEY, TENNESSEE.

PERFORATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,425, dated February 10, 1903.

Application filed July 28, 1902. Serial No. 117,365. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HEDGEPEETH, a citizen of the United States, residing at Ripley, in the county of Lauderdale and State of Tennessee, have invented a new and useful Perforating-Machine, of which the following is a specification.

This invention relates to machines for perforating paper; and it has for its object to provide a machine of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency.

A further object of the invention is to construct a perforating-machine comprising a plurality of needle-bars relatively adjustable, whereby by a single operation a sheet of paper may be punctured along different lines at right angles to each other.

With these and other objects in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view taken from one of the rear corners of a machine constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a vertical sectional view taken on the line xx in Fig. 2. Fig. 4 is a horizontal sectional view taken directly above the clearing-plates on the plane indicated by line yy in Fig. 3. Fig. 5 is a detail sectional view of the handle by means of which the machine is operated, showing the means by which the movement of said handle is limited.

Corresponding parts in the several figures are indicated by like numerals of reference.

The frame of my improved perforating-machine may be described as comprising a pair of uprights 1 1, suitably connected by cross bars or braces, as 2, and supporting the bed of the machine, which, taken as a whole, is designated 3. From the bed rise the vertical posts 4 4, one at each corner, upon which the vertically-movable frame 5 is supported. The sides of said frame are provided with downwardly-extending brackets 6, carrying vertically-adjustable downwardly-extending rods 7, which are screw-threaded at their upper ends and provided with clamping-nuts 8, bearing against the upper and under sides of

the parts of the brackets through which the connecting-rods 7 extend, so that relative adjustment of the said parts may be had—that is, the brackets carrying the frame 5 may be adjusted vertically upon the rods 7. The latter are guided through brackets 9 upon the outer sides of the uprights, and their lower ends are pivotally connected with cranks 10 upon the outer ends of a rock-shaft 11, which is mounted in the lower ends of the uprights 1 1. Springs 12, which are coiled upon the connecting-rods 7, bear at their lower ends against the upper sides of the brackets 9 and at their upper ends against set collars 13, secured upon the said connecting-rods by means of screws 14 and by means of which the pressure in an upward direction of the springs 12 may be regulated. The means for vertically adjusting the frame 5 have already been described. The means for regulating the throw may consist of bolts 15 and 16, vertically adjustable in cross-bars 17 and 18 of the frame and limiting the movement in an upward and a downward direction of the treadle 19, which is secured to and extends forwardly from the rock-shaft 11. It will thus be seen that by operating the treadle the frame 5 and its related parts may be forced downwardly toward the bed of the machine, while when the pressure upon the treadle is released the springs 12 will force it in an upward direction to its normal raised position.

The frame 5 is composed of the end pieces 20 20, the front 21, and the rear piece 22, which are suitably framed and secured together if not cast or otherwise formed in one piece, which will probably be the preferred construction.

The front and rear sides are connected intermediate their ends by a cross-bar 23, which is preferably secured at some distance from the center line of the frame. Another cross-bar 24 is disposed slidingly between the front and rear sides of the frame, the said cross-bar being provided at its ends with arms 25, that slide in longitudinal slots in the front and rear sides of the frame, and with cleats 26, that engage grooves 27 in the said front and rear sides. The said cleats, which of course are horizontally disposed, are of considerable proportionate length, which is desirable in order to insure perfect steadiness

of motion to the said cross-bar. The arms 25 of the latter are provided with thumb-screws 28, bearing against washers 29, that abut upon the outer sides of the front and rear side pieces 21 and 22, thus enabling the said cross-piece to be held and retained very securely at any position to which it may be adjusted.

For the adjustment of the cross-bar 24 I provide a screw-threaded rod 30, journaled in one of the end pieces 20 of the frame and secured against longitudinal movement with relation to said end piece by means of collars 31. The screw-threaded end of the rod 30 extends through an opening 32 in the cross-bar 24 and engages a threaded opening in a nut or plate 33, securely attached to the said cross-bar. It will be seen that by operating the screw-threaded rod by means of a handle 34 at the outer end of the latter the cross-bar 24 is capable of being moved transversely in the frame 5 within the limit of the length of the mortises 26 and the grooves 27.

The front bar 21 and the cross-bars 23 and 24 constitute the punching-bars of the device. Each of said bars is provided at its lower edge with an L-shaped plate 35, suitably secured thereto and having perforations for the reception of the headed needles or punches 36, which are supported by countersinks in the upper sides of the exposed portions of the plates 35. The punching-bars are provided with recesses 37, in which cleats 38 are secured by means of thumb-screws 39. These cleats bear against the upper ends or heads of the needles 40, and thereby secure the said needles in operative position.

The bed of the machine supports the permanent die-plates 41, which are disposed underneath the front bar 21 and the permanent cross-bar 23. The bed is also provided directly underneath the perforations 42 in said die-plates with slots 43 for the escape of the material punched out. Directly above the die-plates 41 are supported the clearing-plates 44, which are elevated at a suitable distance above the said die-plates by means of interposed washer-plates 45 or in any other suitable manner to admit of the insertion between said die-plates and clearing-plates of as many sheets of paper as it may be desired to perforate at one operation. These parts may be constructed and connected together in any suitable well-known manner.

The movable cross-bar 24, which also constitutes a punching-bar on account of its adjustability, requires to be provided with a separate die-plate and clearing-plate, which shall be movable in perfect unison therewith and which in addition requires to be well braced and supported. The support is provided by a pair of cross-bars 45', connecting the uprights 11 and themselves supported upon brackets 46, firmly bolted or otherwise secured to said uprights. The die-plate 47 of the adjustable punching-bar is supported

upon a pair of cross-bars 48, themselves connected by said die-plate, which is firmly secured thereto, although additional means may be provided for securely connecting the said cross-bars. The clearing-plate 49 is supported upon and suitably spaced from the said die-plate. The cross-bars 48 rest and are slidably supported upon the cross-bars 45' and are preferably provided at their front ends with tongues 50, sliding in grooves 51 in the front part of the bed of machine, thereby steadying their movement. The clearing-plate is provided in its upper side with recesses 52 to receive the points of rods 53, extending vertically through the cross-bar 24 and serving in part to connect the said slidable cross-bar with the slidable mechanism arranged underneath the same. Additional connecting means is provided by a vertically-disposed bolt 54, the lower end of which is secured in the clearing-plate 49, with which it is connected by a jam-nut 55. The upper end of said bolt extends through a slot 56 in a cross bar or brace 57, which connects the supports 4 at the front side of the frame of the machine, the said bolt 54 being capable of being firmly secured with relation to said cross-bar by means of nuts 58, bearing against the upper and under sides of the latter. To further secure the movable punching mechanism with relation to the bed of the machine, I provide a headed bolt 59, extending through the clearing-plate 49, die-plate 47, and the washer 60, interposed between said plates, and through a slot 61 in the bed-plate of the machine, a thumb-nut 62 bearing against the under side of the said bed-plate to secure the parts in any position to which they may be adjusted.

The bed of the machine is provided with a slot or opening 63 to admit of the adjustment of the movable punching-bar 24 and its related parts.

The front end of the clearing-plate 49 is supported upon a recessed portion 64 of the front clearing-plate 44, a portion of the said clearing-plate 49 being extended laterally, as shown, so as to give it additional support.

Gage-bars 65 are provided slidable through suitable openings in brackets 66 upon the rear part of the frame of the machine, said gage-bars being provided with slots 67, through which thumb-screws 68 extend into the bed of the machine for the adjustment and securing of said gage-bars. The latter are provided at their front ends with transverse gages 69 and 70, which may thus be adjusted when desired. The gage 70, which is the one adjacent to the movable punching-bar 24, is connected adjustably with its supporting-bar 65 by means of a thumb-screw 71, extending through a slot 72 in the said gage 70, which is thus capable of being adjusted laterally with relation to its supporting-bar when such adjustment shall be necessitated by the adjustment of the movable punching mechanism.

The front of the machine is provided with a table 73, upon which the work may be supported.

From the foregoing description, and especially by reference to Fig. 4 of the drawings, it will be seen that the machine constructed as herein described is capable of forming three rows of perforations, one row being formed by the needles connected with the front punching-bar and the two additional rows being formed at right angles to the first one by the needles connected with the cross-bars 23 and 24. The distance between the latter rows of perforations may be varied to any desired extent within the limits of the capacity of the machine, and thus by a single operation one or more sheets inserted between the die-plates and the clearing-plates may be punctured or perforated in the manner outlined in Fig. 4, the distance between the two parallel rows of perforations being variable at will. When it is considered that heretofore it has been customary to form these perforations a single row at a time, the value of this invention as a time-saver will be readily understood and appreciated.

The capacity of the machine, as will be readily understood, may be increased by simply increasing the size and duplicating or pluralizing the cross-bars 23 and 24. This may be found necessary for commercial work requiring more than two rows of parallel perforations; but such machine of increased capacity may be readily constructed by those skilled in the art to which the invention appertains without the necessity of further description. It will also be understood that the construction of this improved perforating-machine may be varied with regard to the details thereof, and I therefore do not limit myself to the precise construction and arrangement of details herein set forth, but reserve the right to any changes, modifications, and alterations which may be resorted to without sacrificing the utility or departing from the spirit and scope of my invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent of the United States, is—

1. In a perforating-machine, a vertically-movable frame having a plurality of punching-bars, one of said punching-bars constituting the front of the frame, and another being disposed at right angles to and securely connecting the front and rear sides of said frame.

2. In a perforating-machine, a vertically-movable frame having a plurality of punching-bars, one of said punching-bars constituting the front of the frame and another disposed between, at right angles to and transversely movable with relation to the front and rear sides of said frame.

3. In a perforating-machine, a vertically-movable frame having a plurality of punching-bars, one of which constitutes the front of said frame, the remainder of said punch-

ing-bars being disposed between the front and rear bars of said frame and at right angles to said front and rear sides, and one of said intermediate punching-bars being laterally movable with relation to the frame.

4. In a perforating-machine, a vertically-movable frame having a plurality of punching-bars, one of which constitutes the front of the frame, the remainder of said punching-bars being disposed at right angles to and connecting the front and rear bars of said frame.

5. In a perforating-machine, a vertically-movable frame, a punching-bar mounted adjustably in said frame and die and clearing plates suitably connected with and movable with said adjustable punching-bar.

6. In a perforating-machine, a vertically-movable frame, a punching-bar mounted adjustably in said frame, die and clearing plates suitably connected with and movable with the adjustable punching-bar, and a bed having permanent rigid supports for said die and clearing plates.

7. In a perforating-machine, a vertically-movable rectangular frame having punching-bars permanently disposed at right angles to each other, in combination with a punching-bar slidably disposed in said frame, parallel to one of the permanent punching-bars, movably-disposed die and clearing plates, connecting means between said die and clearing plates and the slidable punching-bar to cause them to move in unison, adjusting means, and means for securing the movable punching-bar and the die and clearing plates relating thereto at any point of adjustment in operative position.

8. In a perforating-machine, a vertically-movable frame, a punching-bar slidably disposed therein, a die-plate and a clearing-plate suitably spaced and connected and disposed slidably underneath said punching-bar, said clearing-plate being provided with recesses in its upper side, and connecting-rods movably disposed in vertical openings in the punching-bar and engaging the recesses in the upper side of the clearing-plate.

9. In a perforating-machine, a vertically-movable frame, a punching-bar slidably disposed therein, a die-plate and a clearing-plate suitably spaced and connected and disposed slidably underneath said punching-bar, a screw-threaded rod having rigid connection by means of a jam-nut with the upper side of the clearing-plate, a horizontal, vertically-slotted bar supported independently of the vertically-movable frame to receive the screw-threaded rod which extends through the slot therein, and means for making the said rod secure with relation to said bar.

10. In a perforating-machine, a vertically-movable frame carrying stationary and movable perforating means, in combination with a bed, die-plates and clearing-plates supported permanently upon said bed in proper relation to the stationary perforating means supported by the frame, and die and clear-

ing plates supported slidably in the bed of the machine and connected to move in unison with the movable perforating means.

11. In a perforating-machine, a vertically-
5 movable frame, a punching-bar transversely
slidable in said frame and having arms extending into slots in the front and rear sides of said frame, thumb-screws engaging said
10 arms and bearing against the frame-bars to
secure the punching-bar at its point of adjustment, and cleats extending laterally from

the said punching-bar and engaging grooves in the inner sides of the front and rear sides of the frame.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

JOHN W. HEDGEPEETH.

Witnesses:

J. W. KIRKPATRICK,
M. W. SAVAGE.