

No. 655,153.

Patented July 31, 1900.

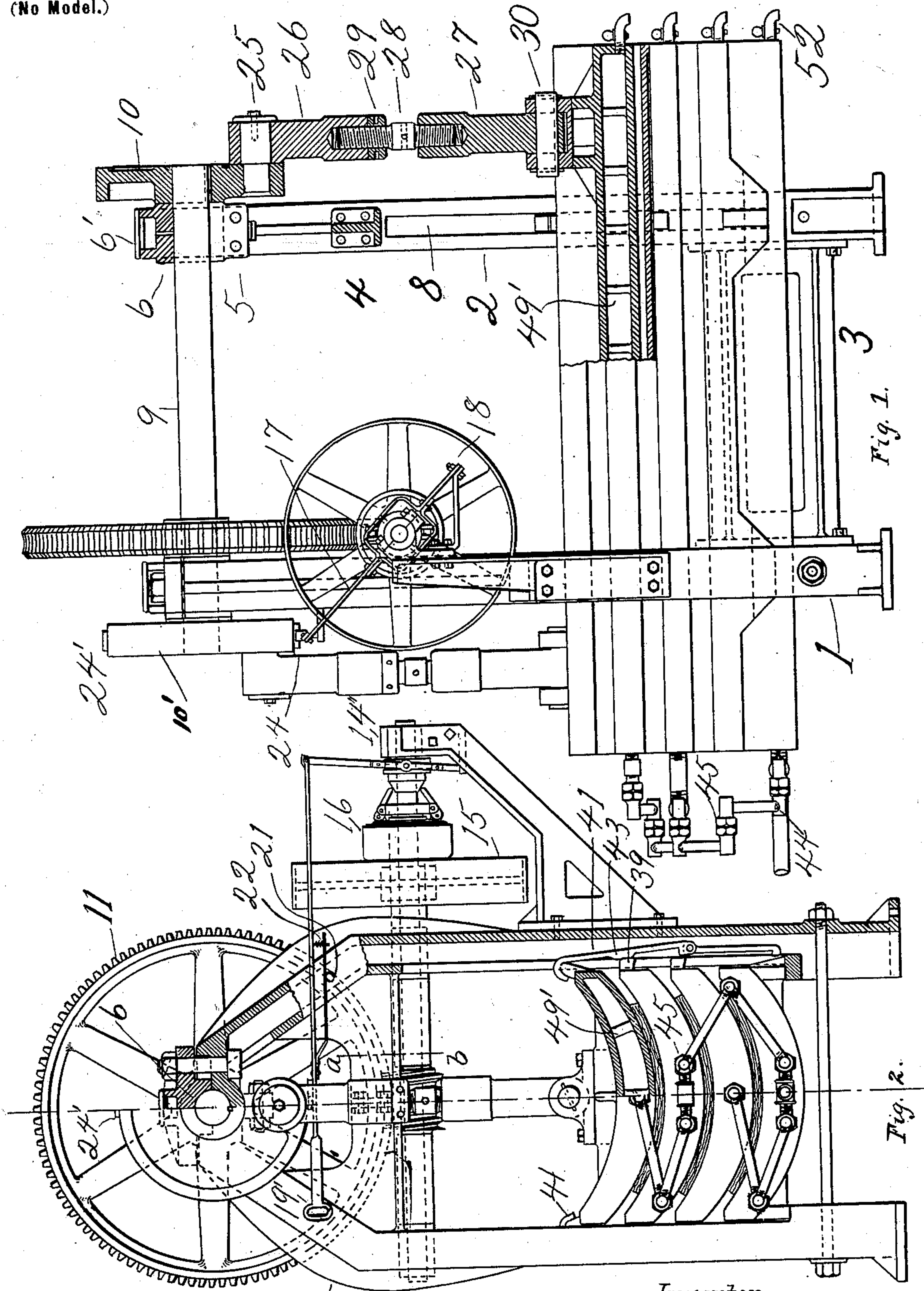
F. HAYES.

CHAIR BACK BENDING PRESS.

(Application filed Dec. 23, 1898.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses.
L. Della McEury.
Richard Hunter Dm.

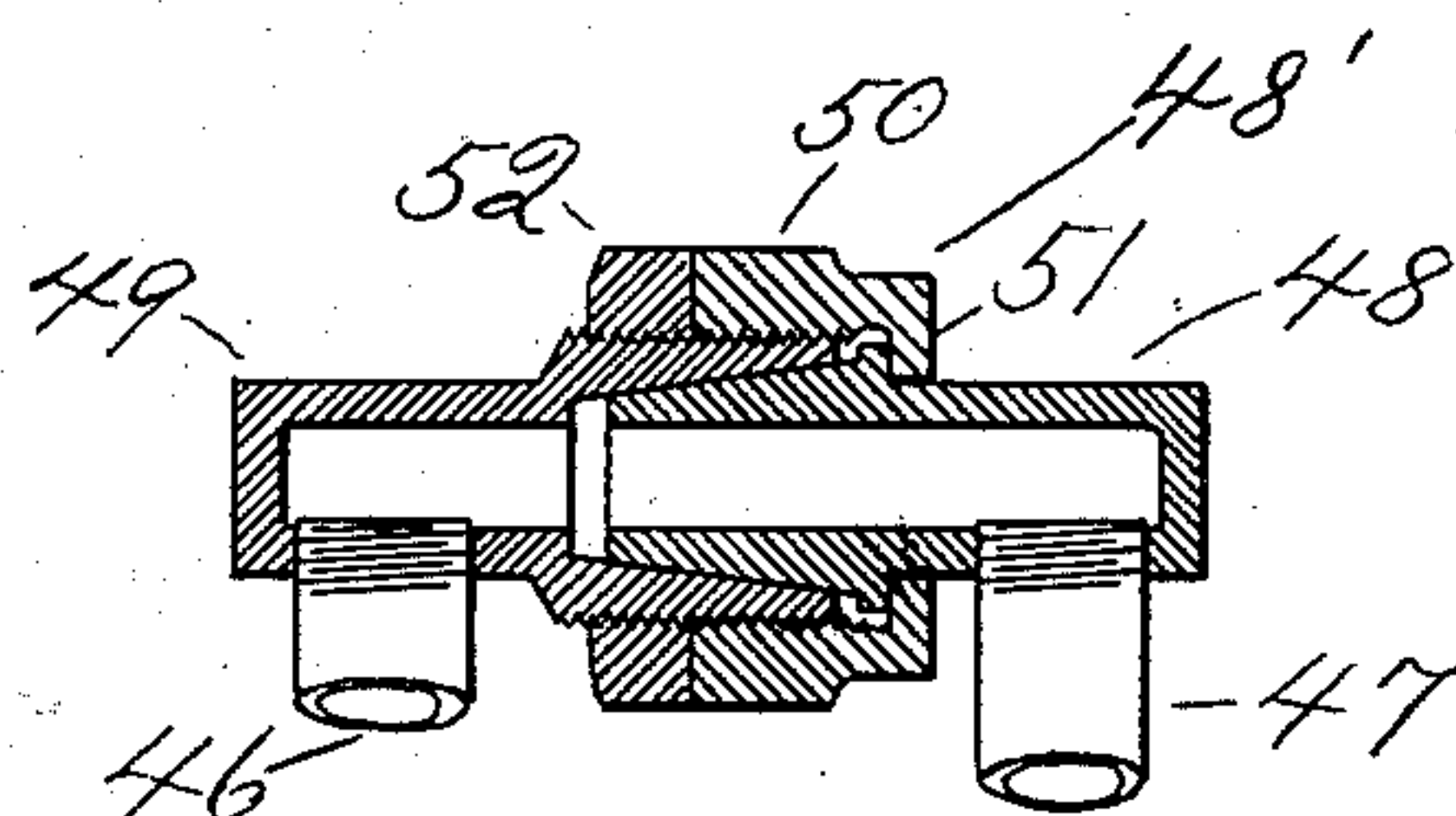
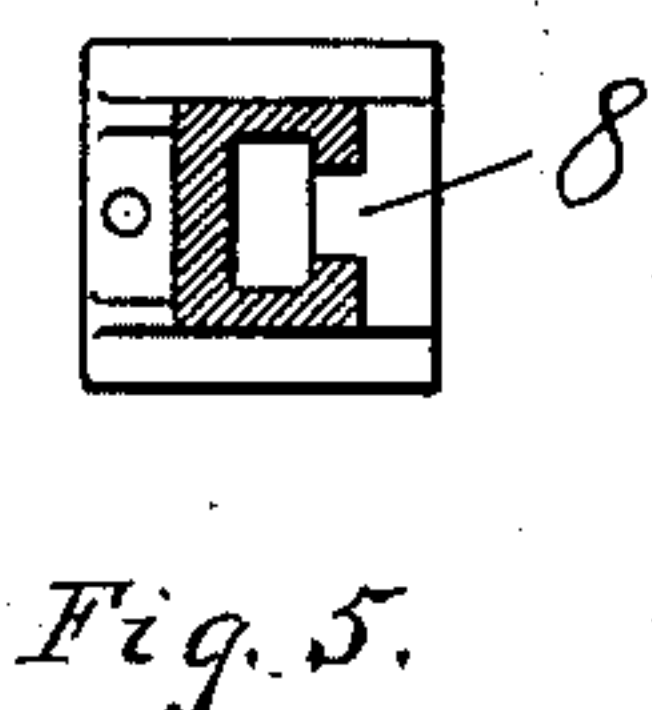
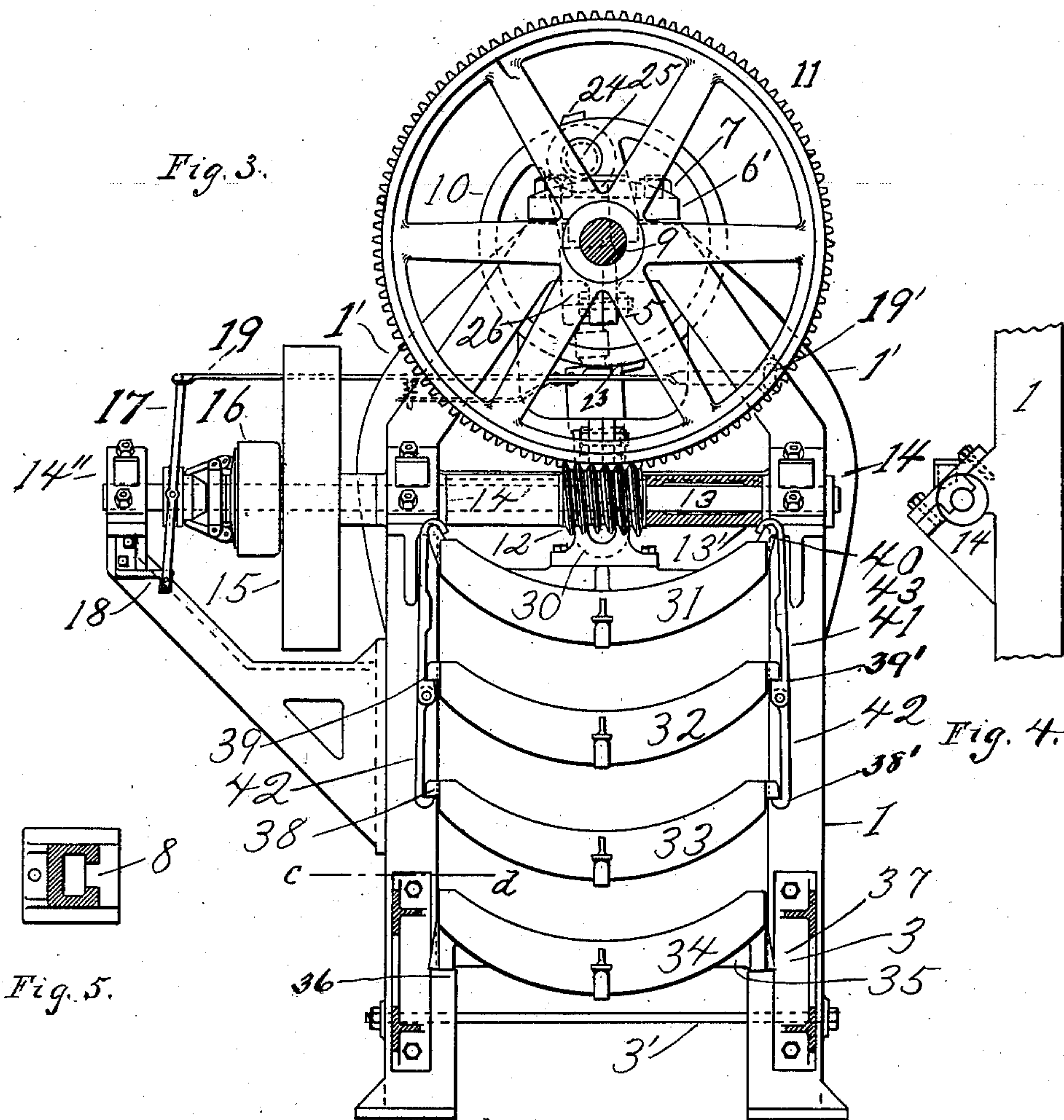
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CHAIR BACK BENDING PRESS.

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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

FRANK HAYES, OF WEST SUPERIOR, WISCONSIN, ASSIGNOR OF ONE-HALF
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CHAIR-BACK-BENDING PRESS.

SPECIFICATION forming part of Letters Patent No. 655,153, dated July 31, 1900:

Application filed December 23, 1898. Serial No. 700,268. (No model.)

To all whom it may concern:

Be it known that I, FRANK HAYES, a citizen
of the United States, residing at West Super-
rior, in the county of Douglas and State of
5 Wisconsin, have invented certain new and
useful Improvements in Chair-Back-Bending
Presses; and I do hereby declare the follow-
ing to be a full, clear, and exact description
of the invention, which will enable others
10 skilled in the art to which it appertains to
make and use the same.

This invention relates to improvements in
machines for bending or pressing wood stock
or other similar material, and relates more
15 particularly to machines for bending chair-
backs.

This invention furthermore relates to ma-
chines for simultaneously bending two or
more chair-backs.

20 This invention also relates to means where-
by the pressing-beds may be heated.

The object of this invention is to provide a
machine of large capacity for bending or com-
pressing wood stock, such as chair-backs,
25 which after being bent is to retain its form.
This is accomplished by placing in one frame
several beds or forms, one above the other, so
connected that they may be operated by one
working mechanism and allow the stock to
30 be placed in layers between each two beds.

In order that my invention may be better
understood, attention is called to the accom-
panying drawings, forming part of this speci-
fication, and in which—

35 Figure 1 is a side view, partly in section, on
the center line of Fig. 2, (the brace 4 is sec-
tioned at the line *a b* of Fig. 2,) the beds
closed. Fig. 2 is an end view, partly in sec-
tion, on the center line of frame 1 of Fig. 1.
40 Fig. 3 is an end view of the machine looking
from the right of Fig. 1 and with frame 2 of
Fig. 1 removed; also, the crank 10 and arm
26 27 of that end removed. Fig. 4 is a side
view of bearing 14. Fig. 5 is a section on
45 line *c d* of Fig. 3, and Fig. 6 is an enlarged
view in section of the curved steam-joint 45
of Fig. 1.

In all the above views corresponding parts
are designated by like numerals of reference.

50 Generally speaking, the frame of the ma-

chine consists of the two end frames 1 2, each
preferably made up of two vertical hollow
metal castings, which may be braced together
by the side frames 3 3. Each frame 1 2 is
preferably made in two parts, which are con- 55
nected together near their lower ends by
means of the rods 3' and at their upper ex-
tremities by means of the webs or flanges 4
and 5. The upper portions of the frames are
strengthened by heavy ribs 1' 1', preferably 60
formed integrally therewith. The inner faces
of the upright frames are slotted, as shown
at 8, Figs. 1 and 5.

At the upper extremities of the side frames
are the bearing-boxes 6 6, covered by heavy 65
caps 6' 6', which may be secured in place by
means of bolts 7 7. The bearings 6 6 support
a horizontal shaft 9, at each end of which is
a crank-disk 10 10'. Between the bearings is
secured a worm-wheel 11, which meshes with 70
a worm 12 on the shaft 13, the latter being
journalled in its boxes 14, 14', and 14'' at right
angles to the shaft 9.

On the shaft 13, between the worm and the
bearings 14 and 14', are the sleeves 13' 13', 75
which are not secured to the shaft, but are
mounted loosely thereon and free to turn be-
tween the worm and the boxes.

The shaft 13 is driven by a pulley 15 and
friction-clutch 16, the latter of any suitable 80
design. The pulley is loosely mounted upon
the shaft, but is directly secured to the clutch.
This clutch is operated by means of a lever
17, one extremity of which is secured to the
bracket 18 and has its free end attached to 85
the horizontal rod 19. The rod 19 extends
across one end of the machine and has at its
free extremity a handle 19'. The free end of
the rod 19 is supported by a leaf-spring 20,
which rests upon a pin 21. The spring 20 90
may be further reinforced by a spiral spring
22. These springs support the free end of
the rod 19 and hold it in contact with the pe-
riphery of the disk 10. On the rod 19 is
formed a lug or stop 23, Figs. 2 and 3, and on 95
the periphery of the disk 10 are two similar
stops 24 24'.

Heavy pins 25 are secured to the faces of
the crank-disks, and attached to these pins
are pitmen, each of which consists of an up- 100

per piece 26, a lower piece 27, an intermediate right and left hand screw 28, and a jam-nut 29. The screw and jam-nut are provided with holes for the attachment of an adjusting-rod.

The arms are secured to the upper bed 31 by brackets and pins 30. Below this bed are other beds 32 33 34, the lower of which, 34, has four brackets 35, which engage with the projections 36 of the frames 1 and 2, by means of which it is supported. On the lowermost bed are projecting lugs 37, and on those above are lugs 38, 39, and 40, which fit into the slot 8 in the upright frames and so serve to guide the beds.

The beds below the uppermost 31 are raised by means of the jointed hooks 41 42, the upper ends of which engage with the lugs 40 of the uppermost bed 31. As this bed is elevated the hooks 38' and 39' successively engage the lugs 38 and 39, formed on the edges of the lower beds, and so raise them.

To prevent the upper hook 39' engaging with the lug 38 of the bed 33, as would otherwise be the case when in the lowered position, a cam projection 43, Figs. 2 and 3, is formed on the inner face of the upper bar 41, which when the beds are down bears against the lug 39 of the bed 32 and prevents the hook from engaging the lug 38.

It is necessary for the proper operation of the device that the beds 31 32 33 34 be heated and kept so, and for this purpose they are made hollow, and an internal circulation of steam is provided for.

On account of the beds being movable it is necessary that flexible connections between them be arranged, and to accomplish this the swivel union 45, Fig. 6, may be employed. This union consists of the two sections 48 and 49, which engage together and have a taper joint. The joint may be ground to a steam-tight fit. The section 49 is externally threaded to engage with a nut 50. The latter has formed upon it a flange 51, which engages with a shoulder 48' on the member 48 and serves to hold the two parts together. A lock-nut 52 is employed to keep the nut 50 from becoming accidentally disengaged.

Suitable pipes 46 and 47 are screwed into either end of the steam-supply pipe 44, and being connected in the manner shown in Figs. 1 and 2 allows freedom of movement of the beds and still prevents the escape of steam.

The beds are braced on the inside to properly withstand the steam-pressure by ties 49', cast in the beds. The beds are drained by cocks 52. The beds may be adjusted for varying thickness of material by means of the screws 28.

The sleeves 13' 13' are for the purpose of carrying the thrust of the worm directly to the frame independently of the shaft on which the worm is keyed.

The operation of the machine is as follows: A belt drives the clutch-pulley 15 continuously. In starting the machine the clutch is

thrown into action by the operator grasping the handle 19', depressing it so that the lugs or stops 23 and 24 clear each other, and then drawing the bar 19 toward himself. The worm 12 then drives the worm-wheel slowly but with great power, and the beds will be drawn up by the arms 26 27 and hooks 41 42. When at the uppermost position, the lug 24' on the disk 10, Fig. 3, will engage the lug 23 on the bar 19 and throw the clutch out of action, thus stopping the machine. After inserting the material to be pressed between the several beds the clutch is again engaged, the disks will be rotated, and the pins 25, having passed the centers, the beds will be depressed and the material tightly compressed.

The necessity of an attendant always prepared to stop the machine at the right time is unnecessary.

While I have described and have shown in the drawings a single pulley 15 and a friction-clutch 16 as means for operating this press, it is of course understood that any other means may be substituted—as, for instance, a fast and loose pulley may be used with a belt-shifter. The latter may be attached to and depend from the rod 19.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. A chair-back-bending press, the combination with the frame therefor, a fixed bed therein, a plurality of vertical movable beds above said fixed bed, means for alternately raising and pressing down the uppermost of said beds to cause engagement of all of the other beds, said means comprising a shaft, and means for imparting a throw thereby, connections between said beds whereby when the uppermost of said beds is raised the other movable beds will be elevated with sufficient separating intervals for the introduction of the work, a continually-moving source of power, a clutch, means for manually engaging and automatically disengaging the same at the extremity of the downward throw of the shaft so that when the clutch is reengaged the further rotation of the shaft in the same direction raises the beds.

2. A chair-back-bending press, the combination with the frame therefor, vertical parallel side pillars thereupon, a fixed bed upon said frame between said pillars, a plurality of vertical movable beds above said fixed bed, means supported upon said pillars for alternately raising and pressing down the uppermost of said beds to cause engagement of all of the beds said means comprising a shaft, and means for imparting a throw thereby, connections between said beds whereby when the uppermost of said beds is raised the other movable beds will be elevated with sufficient separating intervals for the introduction of the work, and a continually-moving source of power, a clutch, means for manually engaging and automatically disengaging the same at the extremity of the downward throw

of the shaft so that when the clutch is reengaged the further rotation of the shaft in the same direction raises the beds.

3. A chair-back-bending press, the combination with the frame therefor, vertical parallel side pillars thereupon, a fixed bed upon said frame between said pillars, a plurality of vertical movable beds above said fixed bed, a shaft supported upon said pillars, means for imparting a throw by said shaft, pitmen connecting the uppermost of the said beds for alternately raising and pressing down the same to cause engagement of all of the beds, connections between said beds whereby when the uppermost of said beds is raised the other movable beds will be elevated with sufficient separating intervals for the introduction of the work, and a continually-moving source of power, a clutch, means for manually engaging and automatically disengaging the same at the extremity of the downward throw of the shaft so that when the clutch is reengaged the further rotation of the crank-shaft in the same direction raises the beds, substantially as described.

4. In a chair-back-bending press, the combination with the frame therefor, a fixed hollow bed therein, a plurality of vertical hollow movable beds above said fixed bed, means for alternately raising and pressing down the uppermost of said beds to cause engagement of all of the other beds, said means comprising a shaft, and means for imparting a throw thereby, connections between said beds whereby when the uppermost of said beds is raised the other movable beds will be elevated with sufficient separating intervals for the introduction of the work a continually-moving

source of power which can be manually engaged and means for automatically disengaging it at the extremity of the downward throw of the shaft so that when the clutch is reengaged the further rotation of the shaft in the same direction raises the beds, a stationary source of steam-supply, and flexible connections between said steam-supply and the movable beds, substantially as described.

5. In a chair-back-bending press, a series of superimposed press-beds, having lugs or projections 37, 38, 39, 40, thereon, the hooks therefor formed of the two parts 41, 42, flexibly connected together, and the cam projection 43, carried by the part 41, for disengaging the hook from the lower beds until the uppermost bed is raised clear, substantially as described.

6. In a chair-back-bending press, the combination with the frame, a plurality of superimposed pressing-beds arranged therein, a horizontal shaft mounted in said frame above the pressing-beds, cranks upon said shaft, pitmen connecting said cranks with the uppermost of said beds, a worm-wheel connected to the horizontal shaft, cams 24, 24', thereon, a clutch, a clutch-operating rod 19, a stop thereon, a supporting-spring 20 normally engaging said stop with said cam, and a handle 19' whereby the clutch may be manually operated.

This specification signed and witnessed this 8th day of December, 1898.

FRANK HAYES.

Witnesses:

HIRAM HAYES,
G. L. H. TUCKER.