

No. 637,609.

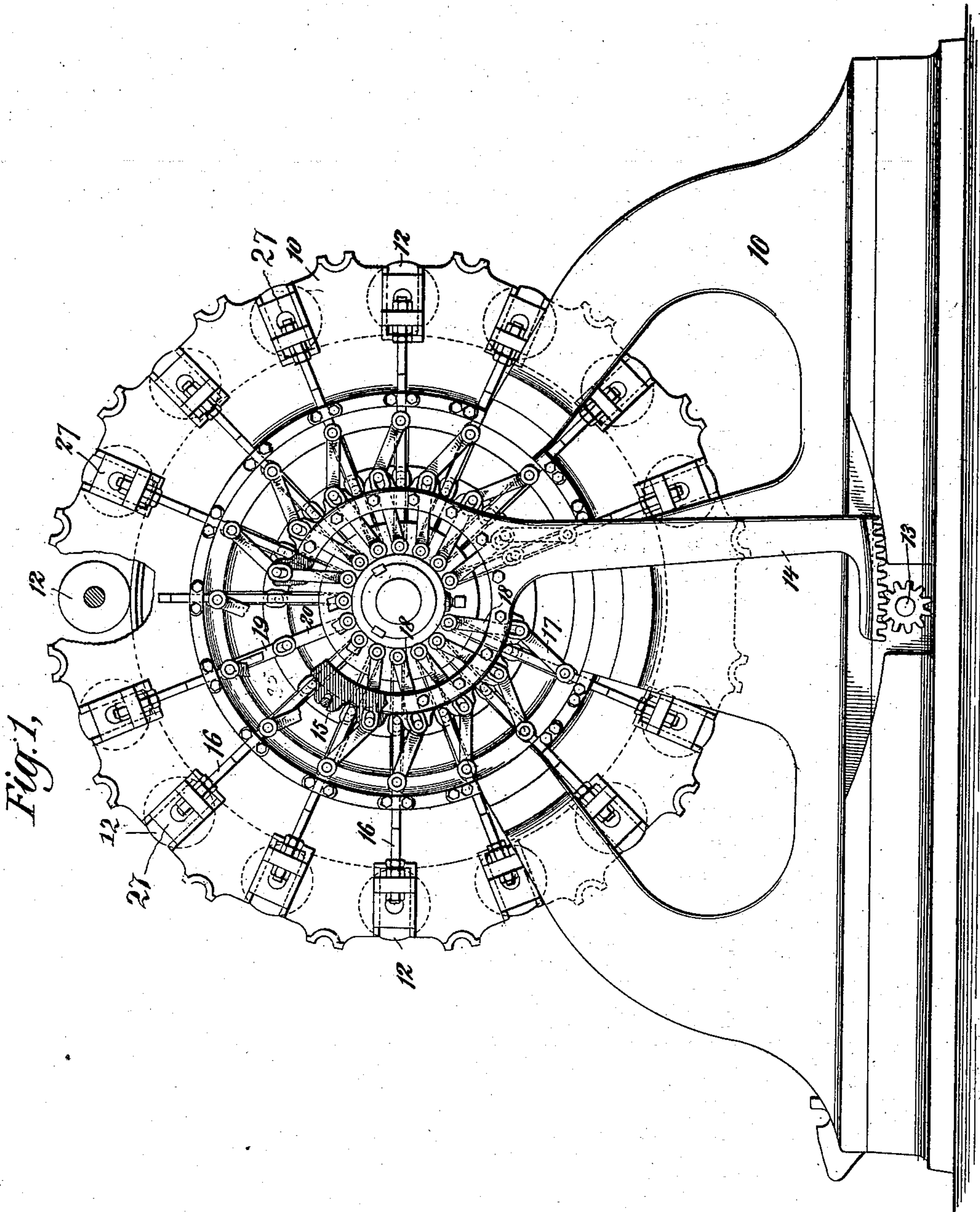
Patented Nov. 21, 1899.

E. HETT.
PRINTING PRESS.

(Application filed Sept. 4, 1896. Renewed May 18, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

N. H. Hayworth
Edwin Leggett

INVENTOR

Edward Hett

BY *Witter & Kenyon*
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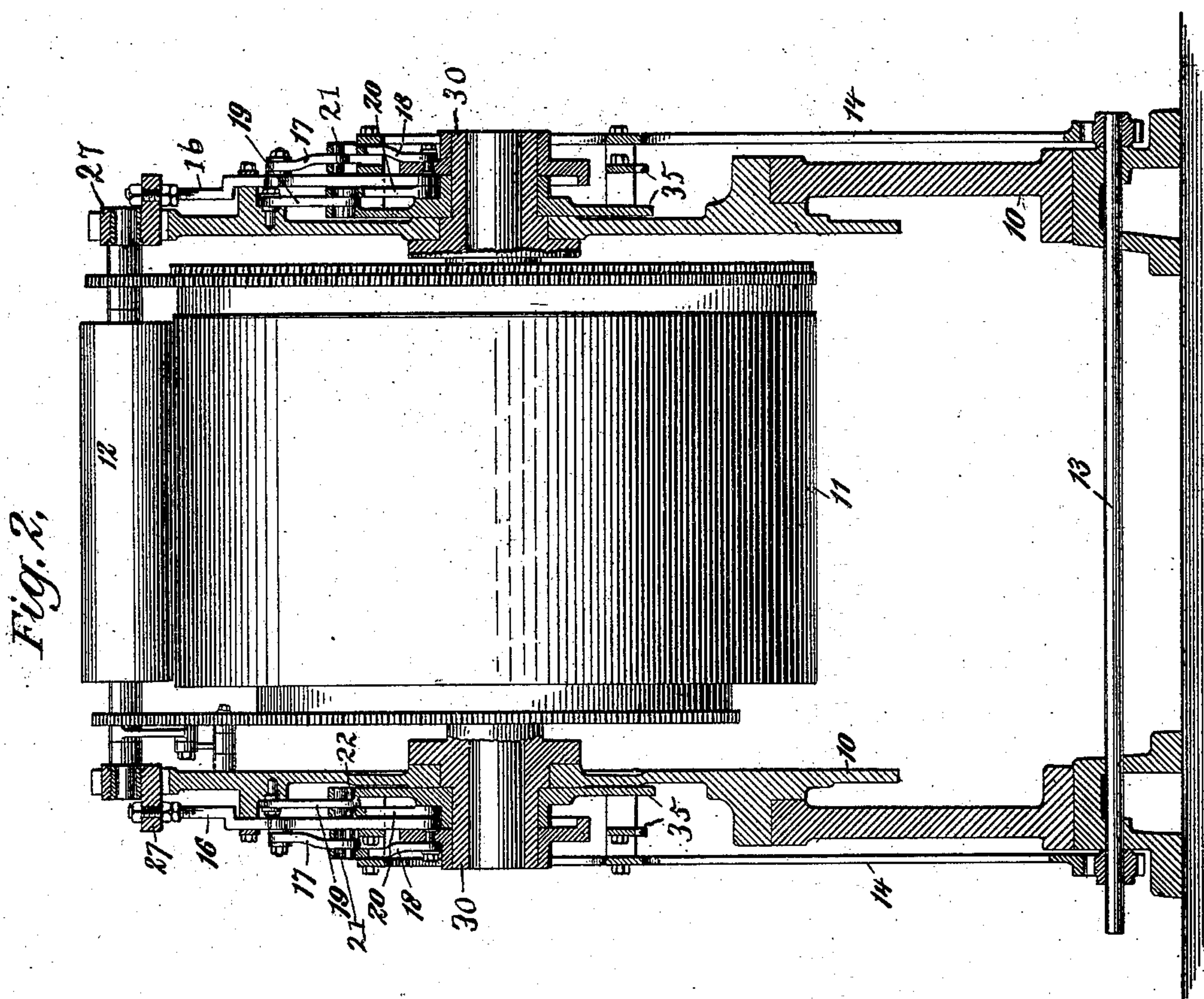
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3 Sheets—Sheet 2.



WITNESSES:

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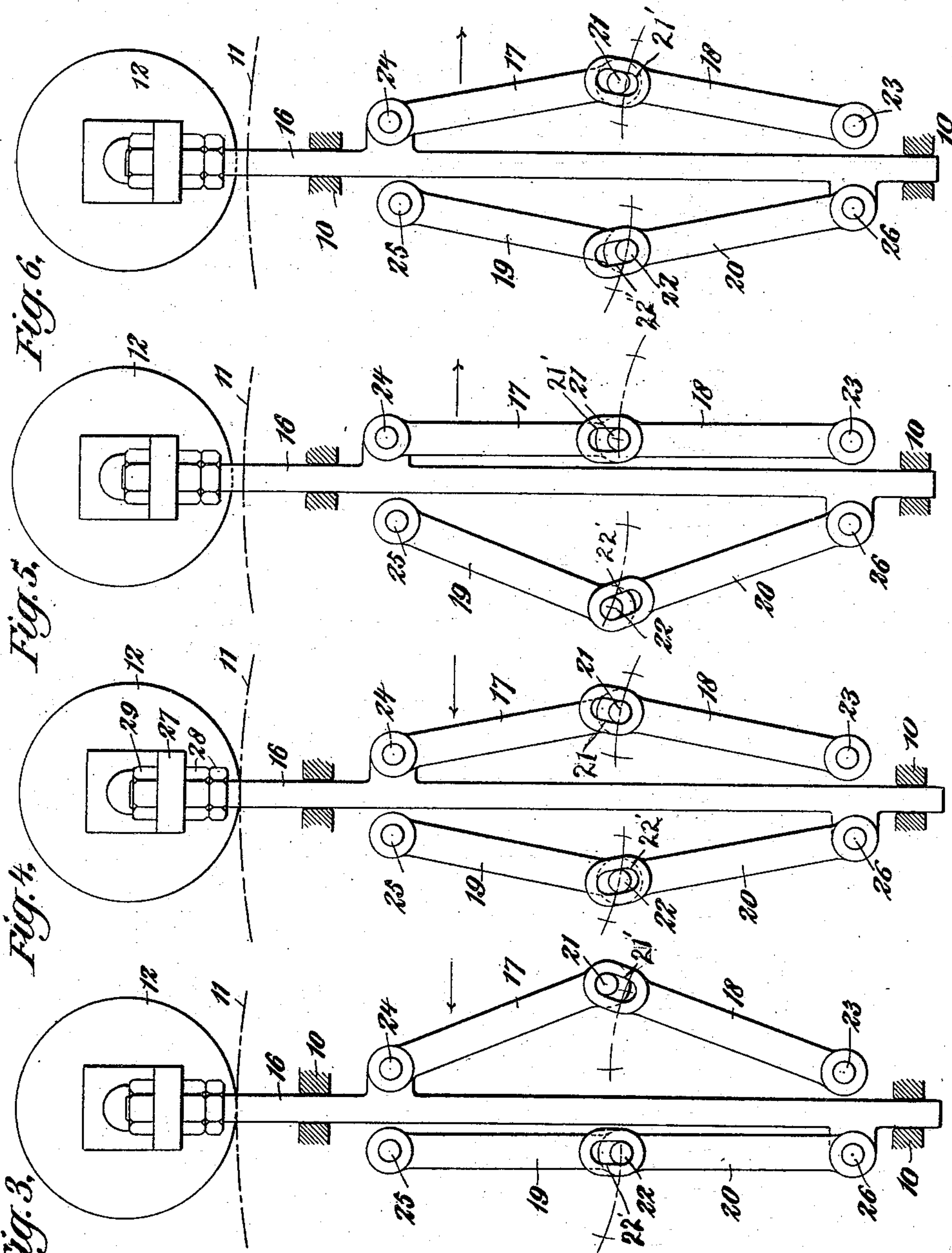
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3 Sheets—Sheet 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 637,609, dated November 21, 1899.

Application filed September 4, 1896. Renewed May 18, 1899. Serial No. 717,288. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp, Staten Island,) in the county of Richmond and State of New York, have
5 invented a new and useful Improvement in Printing-Presses, of which the following is a specification.

This invention relates to reciprocating
10 mechanism adapted for any purpose for which such mechanism may be applied, but more especially designed to be practically used by me in a lithographic or printing machine.

It has for its object the attaining of such re-
15 ciprocating motion with certainty and power in both directions; and it consists of the combinations hereinafter set forth.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side
20 view of a multicolor-printing press embodying my invention. In this view certain portions are broken away to show the underlying parts. The multicolor-printing press shown has a central impression drum or sur-
25 face and has arranged around the outer surface thereof some fifteen cylindrical printing-surfaces. Fig. 2 is an end view of the same, partly in section, with all of the printing cyl-
30 inders or surfaces removed, excepting only one. Figs. 3, 4, 5, and 6 are detail views showing diagrammatically portions of the mechanism for moving the printing-surfaces toward and from the impression-surface.

In the drawings nothing is shown of the
35 inking or dampening devices such as would be employed in lithographic printing, (for which the machine is primarily designed,) because such parts have nothing to do with the present invention. For the same reason
40 the mechanism for driving the impression-drum and the several printing-cylinders positively together for the purpose of printing is not shown (except in some part in Fig. 2) and need not be here described. Nor is the ap-
45 paratus for delivering the paper to and taking it from the machine shown, nor the apparatus for holding the paper on the drum.

The fixed supporting parts or frame of the machine are shown at 10 in the drawings.

50 11 is the impression drum or surface.

12 12 are the cylindrical printing-surfaces. These printing-surfaces are supported and

revolve in boxes or bearings 27, which are ca-
pable of sliding in radial slideways in the
frame of the machine. Secured to these slid- 55
ing boxes by the adjusting-nuts 28 28 and the
holding-nuts 29 are the movable pressure rods
or bars 16, which slide radially in suitable
guideways in the frame of the machine and
carry the sliding boxes 27, and so the printing- 60
surfaces 12. The thrusting outward or inward
of these pressure-bars raises the printing-sur-
faces away from the impression-surface or
presses them down hard onto the impression- 65
surface. The latter operation gives the name
to these pressure-bars. The pressure-bars 16
are operated each one of them by a double set
of reversed toggle-levers, which are shown
diagrammatically in Figs. 3, 4, 5, and 6, those 70
figures representing the four different posi-
tions of one double set of toggle-levers in op-
eration. Fig. 3 represents the position of the
parts when the printing-surface is being
pressed down hard on the impression-surface,
as in the act of printing. At such time the 75
center pin 22 has, by suitable mechanism to
be hereinafter described, been forced into the
position shown in Fig. 3, thereby straighten-
ing the toggle-levers 19 20 and forcing the
pressure-bar 16 inward toward the center of 80
the drum and the printing-surface 12 down
hard onto the impression-surface 11, and this
with great power. To accomplish this, one
arm 19 of this set of toggle-levers is pivoted
at 25 to the frame of the machine, while the 85
other arm 20 is pivoted at 26 to the pressure-
bar 16. The position of the parts when the
printing-surface is raised from the impres-
sion-surface is shown in Fig. 5, where the
other and reversed set of toggle-levers 17 18 90
have just forced the printing-surface into
the position there shown and are holding it
there. To this end the link 18 of this set
of toggle-levers is pivoted at 23 to the frame
of the machine, and the other arm 17 is piv- 95
oted at 24 to the pressure-bar, and the cen-
tral pin or pivot 21 has been moved into
the position there shown by suitable means
hereinafter described. The movement of the
parts from the position shown in Fig. 3 to 100
that shown in Fig. 5 is indicated by Fig. 4
and by the arrow and lines on Fig. 3 indi-
cating motion. Fig. 4 shows the position of
the parts midway of the movement from the

position of Fig. 3 to the position of Fig. 5. The two central pins 22 and 21 have been simultaneously and by suitable mechanism swung in the direction of the arrow on Fig.

3. A further motion of that shifting device in the same direction (indicated by the arrow on Fig. 4) brings the parts finally to the position shown in Fig. 5. The reverse motion of the parts in passing from the position shown in Fig. 5 to the position shown in Fig. 3 is indicated by Fig. 6 and by the arrow and lines in Fig. 5 indicating motion. To accomplish this reverse motion, the shifting device shifts the two pins 22 and 21 of Fig. 5 in the direction indicated by the arrow in that figure until they reach the position indicated in Fig. 6. The pin 22 of the arm 19 and the pin 21 of the arm 17 work in slots 22' and 21' of the arms 20 and 18, respectively. The purpose of this pin-and-slot connection is to permit the toggles to contract and extend in their operation, the toggles being pivotally fixed at their ends. Of course, instead of the pin-and-slot connection being at the points where the members of a toggle are connected together, this pin-and-slot connection could be employed at either or both ends of a toggle. The motion of the shifting device continues in the same direction (indicated by the arrow in Fig. 6) until the parts finally reach the position shown in Fig. 3. By the use of this double set of reversed toggle-levers 17 18 and 19 20 great power is obtained at the latter end of each stroke—that is to say, at the latter end of the movement of the printing-surface down onto and into contact with the impression-surface and also at the latter end of the stroke of the printing-surface up and away from the impression-surface.

To shift the series of central pins or pivots 22 21 of the series of double sets of reverse toggle-levers, I provide the following mechanism, which may be varied, however, without departing from my invention. The shaft 13, suitably driven, oscillates a segmental lever 14, which is centered or fulcrumed with the main drum of the machine, as on the bearing-boxes 30, which carry the shaft of the main drum 11. Bolted to this segmental lever 14 are circular plates having slots or jaws 15, adapting them to circumferentially oscillate the entire series of central pins or pivots 22 21 whenever they themselves oscillate with the lever 14.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a printing-press, the combination, substantially as set forth, with a suitable impression-surface and a suitable printing-surface, of mechanism for moving the said surfaces toward and from each other, said mechanism including a movable pressure-bar, a double set of reversed toggle-levers and a device to simultaneously operate them.

2. In a printing-press, the combination, substantially as set forth, with a suitable impression-surface and a series of suitable print-

ing-surfaces, of mechanism for moving the printing-surfaces toward and from the impression-surface, said mechanism including a series of movable pressure-bars, a series of double sets of reversed toggle-levers, and a device to simultaneously operate the toggle-levers.

3. The combination of pressure-bar 16, toggle-levers 17 and 18, toggle-levers 19 and 20, operating-pins 21 and 22, and a device to simultaneously operate the pins, said pins being secured to one member of each set of toggle-levers and sliding in a slot in the other, substantially as set forth.

4. In reciprocating mechanism, the combination of a device to be reciprocated, and a double set of reversed toggles operatively connected with said device, said toggles disposed on the same side of said device and side by side, and so arranged and connected that when one set is straightened said device is moved in one direction, and when the other set is straightened said device is moved in the opposite direction, substantially as set forth.

5. In a reciprocating mechanism, the combination of a device to be reciprocated, and a double set of reversed toggles operatively connected with said device, said toggles disposed on the same side of said device and side by side, and so arranged and connected that when one set is straightened said device is moved in one direction, and when the other set is straightened said device is moved in the opposite direction, and means for simultaneously operating both sets of toggles, substantially as set forth.

6. In reciprocating mechanism, the combination of a device to be reciprocated, and a double set of reversed toggles operatively connected with said device, said toggles so arranged and connected that when one set is straightened said device is moved in one direction, and when the other set is straightened said device is moved in the opposite direction, and a rocking arm for simultaneously operating both sets of toggles and engaging both sets of toggles substantially at the points where their members are pivotally connected, substantially as set forth.

7. In reciprocating mechanism, the combination of a device to be reciprocated, a reciprocating bar supporting said device, and a double set of reversed toggles operatively connected with said bar, said toggles so arranged and connected that when one set is straightened said device is moved in one direction, and when the other set is straightened said device is moved in the opposite direction, and a rocking arm for simultaneously operating both sets of toggles and engaging both sets of toggles substantially at the points where their members are pivotally connected, substantially as set forth.

8. In a lithographic machine the combination of a printing-surface, a surface designed to be brought into contact with the printing-surface and mechanism for moving said sur-

faces toward and from each other, said mechanism including a double set of reversed toggles so arranged and connected that when one toggle is straightened the surfaces are
5 separated, and when the other toggle is straightened the surfaces are brought together, substantially as set forth.

9. In a lithographic machine, the combination of a printing-surface, a surface designed
10 to be brought into contact with the printing-surface and mechanism for moving said surfaces toward and from each other, said mechanism including a pressure-bar and a double

set of reversed toggles operatively connected with said bar and so arranged and connected 15 that when one toggle is straightened the surfaces are separated and when the other toggle is straightened the surfaces are brought together, substantially as set forth.

In testimony whereof I have signed my 20 name to this specification in the presence of two subscribing witnesses.

EDWARD HETT.

Witnesses:

EDWIN SEGER,

CHARLES J. PUPKI.