

No. 637,607.

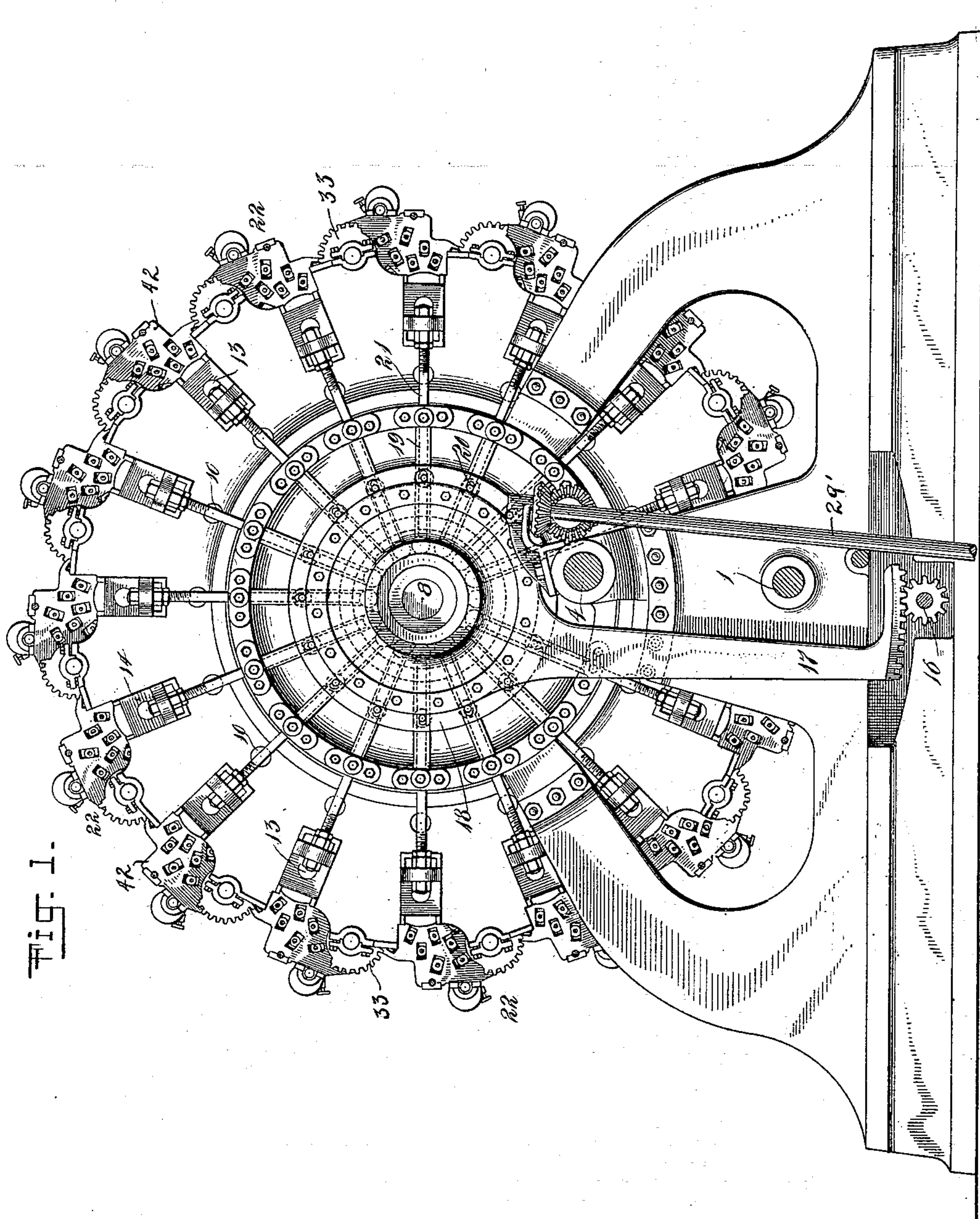
Patented Nov. 21, 1899.

E. HETT.
PRINTING PRESS.

(Application filed Jan. 3, 1899.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

Geoffrey
Sidney Mann.

INVENTOR

Edward Hett

BY

Hitter & Kerrison
ATTORNEYS

No. 637,607.

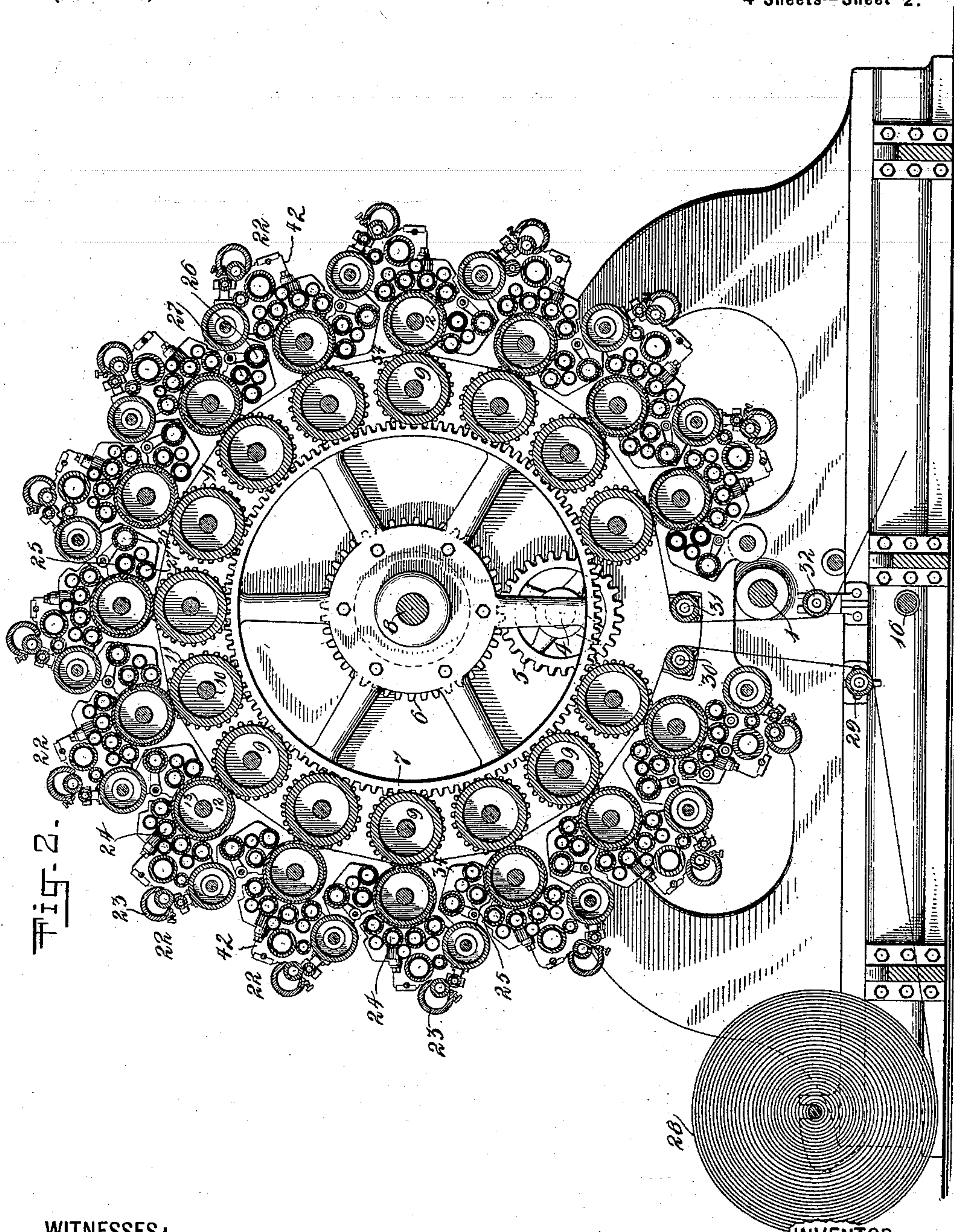
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PRINTING PRESS.

(Application filed Jan. 3, 1899.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES:

Geo W. Mills
Sidney Mann.

INVENTOR

Edward Hett

BY

Nitter & Kenyon
ATTORNEYS

No. 637,607.

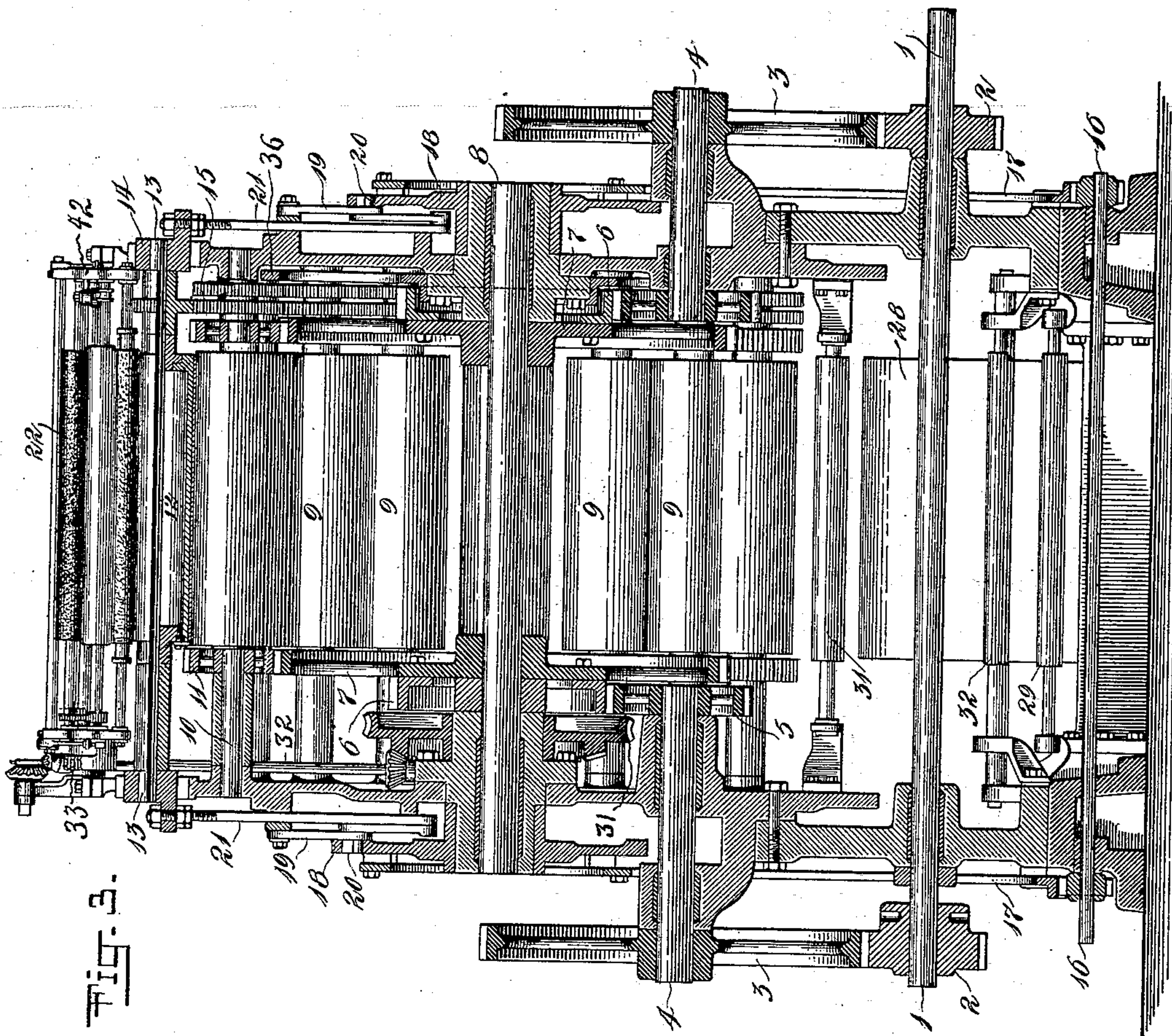
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(Application filed Jan. 3, 1899.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES:

Geo. D. Filley
Sidney Mann.

INVENTOR

Edward Hett

BY

Mitter & Kenyon
ATTORNEYS

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4 Sheets—Sheet 4.

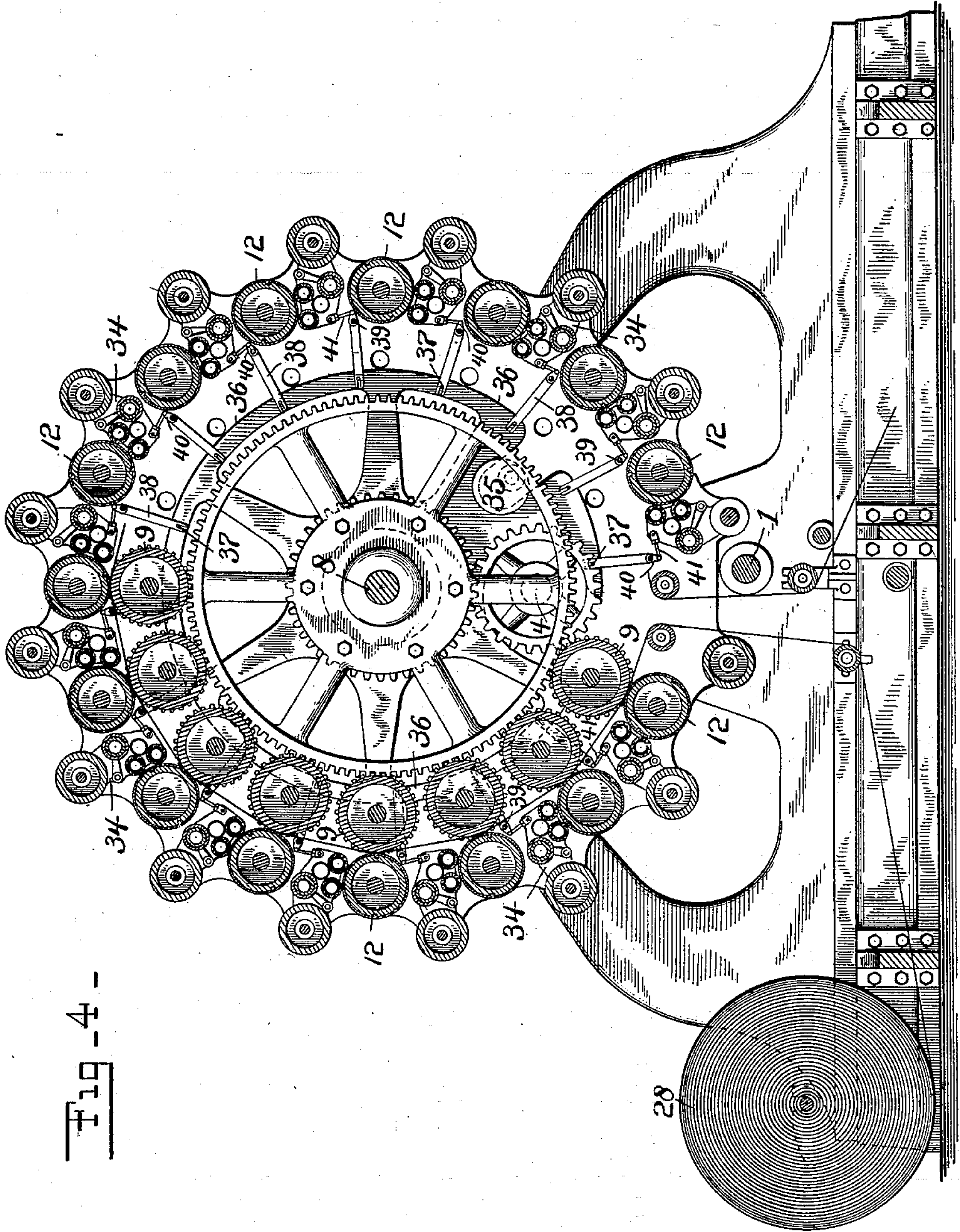


Fig. 4 -

WITNESSES:

Sidney Mann.
John O. Gemples.

INVENTOR

Edward Hett

BY

Kennyon & Kennyon
his ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 637,607, dated November 21, 1899.

Application filed January 3, 1899. Serial No. 700,928. (No model.)

To all whom it may concern:

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

This invention relates to printing-presses, and especially to multicolor lithographic
10 printing presses employing a series of printing-surfaces and inking mechanisms therefor.

In the machine forming the subject of the present invention a series of impression-drums, each having a circumferentially-continuous uniformly-elastic impression-surface
15 and a series of uniform printing-forms are employed, each printing-form having a circumferentially-continuous cylindrical printing-surface. Inking mechanisms are provided,
20 one for each printing-surface, and when the machine is adapted for lithographic printing dampening mechanisms, one for each printing-surface, are arranged between adjacent printing-surfaces. The machine is further
25 provided with mechanism to move the printing-surfaces toward and from the impression-surfaces, to move the printing-surfaces into and hold them in printing contact with the impression-drums in accurate and
30 permanent relationship each printing-surface to all the others, with mechanism for moving the inking and dampening devices toward and from the printing-surfaces, and with suitable paper supplying and delivering devices for
35 supplying paper on the web.

In carrying out the general process of printing in this machine the paper is passed successively between the various corresponding printing-surfaces and their impression-surfaces of the entire series, whereby all the colors (for which separate printing-surfaces are prepared) are printed in substantially instantaneous succession at one printing operation and with but one handling of the paper.

45 In the accompanying drawings I have shown a printing-press adapted for lithographic printing and having the various printing devices arranged circumferentially around a common driving mechanism; but I do not
50 limit my invention to lithographic presses nor to this general circular arrangement.

In the drawings, Figure 1 is a side view of

a printing-press constructed according to my invention. Fig. 2 is a side sectional elevation through the longitudinal center of the press. 55 Fig. 3 is a sectional elevation through the center, taken transversely of the machine. Fig. 4 is a side sectional elevation with some of the parts omitted and some broken away, showing especially the mechanism for moving
60 the water-distributing rollers toward and from the printing-surfaces.

The main driving-shaft 1 has a small gear-wheel 2 near each end, each of which meshes with a large gear-wheel 3 on the outer end of
65 a secondary driving-shaft 4. Each of these secondary driving-shafts 4 has its bearings in the main frame on each side (see Fig. 3) and has on its inner end a small gear-wheel 5, which meshes with a gear 6, bolted fast to
70 the face of a large gear 7. (See Figs. 2 and 3.) Both gear-wheels 7 are carried on a shaft 8, running through the center of the machine and supported by the two main frames, which have two circular bushings for that purpose,
75 as shown in the drawings.

The impression-surfaces are in the form of drums 9, each having, preferably, a circumferentially-continuous elastic impression-surface. The shafts 10 of these drums 9 are supported in bearings in the main frame on each side and are provided at each end of the drum with a gear-wheel 11, all of the gears 11 being arranged circumferentially around and meshing with the large gear 7. 85

The printing-surfaces are in the form of thin tubes or cylinders removable from their supporting parts or form-cylinders, and each presents, preferably, a circumferentially-continuous cylindrical printing-surface. These
90 printing-forms 12 have their shafts 13 carried in sliding journal-boxes 14 and in a machine such as represented in the drawings are arranged in a circle around the impression surfaces or drums 9. These printing-forms 12
95 are driven, in contact with the impression-drums, in accurate and permanent relationship each printing-surface to all the others by a system of gearing 15. (Shown in Fig. 3 of this application and fully described in a
100 pending application, Serial No. 593,796, filed by me June 1, 1896.)

The printing surfaces or forms 12 are moved toward and from the impression surfaces or

drums 9 by the mechanism shown in Figs. 1 and 3, consisting of the shaft 16, levers 17 at each side of the machine adapted to turn about the axis of the shaft 8, a slotted disk 18, secured to each lever, toggle-levers 19, the center pins 20 of which work in the slots of the disk 18, one of the links of the toggle-lever being pivoted to the main frame of the press and the other link pivoted to the inner end of a pressure-bar 21, held in guides on the frame and which carries at its outer end the sliding box 14, sliding in a slot in the main frame of the press and constituting the bearings for the shaft 13 of the printing-forms 12. This mechanism is fully described and shown in my above-mentioned application for patent, Serial No. 593,796.

Each inking mechanism 22 comprises an ink-trough 23, a group of ink-distributing rollers 24, preferably arranged on the outer side of the printing surfaces or forms 12 away from the drums 9, and suitable devices to supply the ink-distributing rollers with ink from the trough 23, the whole being carried by frames 42, adapted to be moved toward and from the printing-surfaces by mechanism fully described and shown in my said application, Serial No. 593,796. This mechanism includes a shaft 29', driven by any desired prime motor, the shaft having a beveled gear at its upper end meshing with and driving a similar gear on the outer end of a short horizontal shaft 30, which has at its inner end a worm which meshes with and drives a central worm-wheel 31. This worm-wheel has a beveled gear on its outer face, which meshes with and drives small bevel-gears at the inner ends of a series of radial rods 32, one for each ink-frame. These rods 32 have a worm cut at their outer ends, which worm meshes with a segmental gear 33, cut in or attached to the ink-frame, so that the rotation of the rods 32 moves the ink-frames and the inking mechanism carried thereby away from or toward the printing-surfaces.

Each dampening mechanism 25 comprises a water-reservoir 26, a group of water-distributing rollers 27, preferably arranged near its printing-surface between two adjacent printing-surfaces, and devices to carry the moisture from the water-reservoir to the water-distributing rollers, the whole being carried by frames 34, adapted to be moved toward and from the printing-surfaces by mechanism fully described and shown in my said application, Serial No. 593,796. This includes an eccentric 35, driven from any desired prime motor, a shifting plate or wheel 36, centered with the main drum and shifted or oscillated to and fro around its center by the eccentric and carrying a series of pins 37, which oscillate the inner ends of the long arms 38 of a series of levers. These levers are carried on rock-shafts 39, and the short arms 40 of the levers are connected by pivoted links 41 to the frames 34, which carry the water-distributing rollers. Through this train of

mechanism the eccentric 35 moves the series of groups of water-distributing rollers toward or from their respective printing-surfaces. 70

The press may be supplied with paper from the web 28, the roll on which it is wound being supported in bearings in the frame, and suitable guiding and delivering devices are provided to properly feed the paper to the press and deliver it therefrom. 75

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

1. In a multicolor-press, the combination of a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical printing-surfaces, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers, and mechanism to move them toward and from the printing-surfaces, and suitable paper supplying and delivering devices for supplying paper on a web, substantially as described. 80 85 90 95

2. In a multicolor lithographic press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical printing-surfaces, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers, and mechanism to move them toward and from the printing-surfaces, and a series of dampening mechanisms, one for each printing-surface, each dampening mechanism including a group of water-distributing rollers and mechanism to move them toward and from the printing-surface, and suitable paper supplying and delivering devices for supplying paper on a web, substantially as described. 100 105 110 115 120

3. In a multicolor-press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical printing-surfaces, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent 125 130

relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers arranged on the outer side of the printing-surfaces away from its drum, and mechanism to move them toward and from the printing-surface, and suitable paper supplying and delivering devices for supplying paper on the web, substantially as described.

4. In a multicolor lithographic press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical lithographic-printing surfaces, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers arranged on the outer side of the printing-surface away from its drum and mechanism to move them toward and from the printing-surface, and a series of dampening mechanisms, one for each printing-surface, arranged between adjacent printing-surfaces, each dampening mechanism including a group of water-distributing rollers and mechanism to move them toward and from the printing-surface, and suitable paper supplying and delivering devices for supplying paper on the web, substantially as described.

5. In a multicolor-press, the combination of a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical printing-surfaces, the said impression-drums and printing-forms being arranged circumferentially around common driving mechanism, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers, and mechanism to move them toward and from the printing-surfaces, and suitable paper supplying and delivering devices for supplying paper on a web, substantially as described.

6. In a multicolor lithographic press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical

printing-surfaces, the said impression-drums and printing-forms being arranged circumferentially around common driving mechanism, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers, and mechanism to move them toward and from the printing-surfaces, and a series of dampening mechanisms, one for each printing-surface, each dampening mechanism including a group of water-distributing rollers and mechanism to move them toward and from the printing-surface, and suitable paper supplying and delivering devices for supplying paper on a web, substantially as described.

7. In a multicolor-press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical printing-surfaces, the said impression-drums and printing-forms being arranged circumferentially around common driving mechanism, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers arranged on the outer side of the printing-surfaces away from its drum, and mechanism to move them toward and from the printing-surface, and suitable paper supplying and delivering devices for supplying paper on the web, substantially as described.

8. In a multicolor lithographic press, the combination with a series of impression-drums each having a circumferentially-continuous uniformly-elastic impression-surface, of a series of uniform printing-forms having circumferentially-continuous cylindrical lithographic-printing surfaces, the said impression-drums and printing-forms being arranged circumferentially around common driving mechanism, mechanism to move the printing-surfaces toward and from the impression-surfaces and to move the printing-surfaces into, and hold them in, printing contact with the impression-drums in accurate and permanent relationship each printing-surface to all the others, a series of inking mechanisms, one for each printing-surface, each inking mechanism including a group of ink-distributing rollers arranged on the outer side of the printing-surface away from its

drum and mechanism to move them toward
and from the printing-surface, and a series
of dampening mechanisms, one for each print-
ing-surface, arranged between adjacent print-
5 ing-surfaces, each dampening mechanism in-
cluding a group of water-distributing rollers
and mechanism to move them toward and
from the printing-surface, and suitable paper
supplying and delivering devices for supply-

ing paper on the web, substantially as de- 10
scribed.

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

EDWARD HETT.

Witnesses:

G. W. DINARDEN,
EDWIN SEGER.