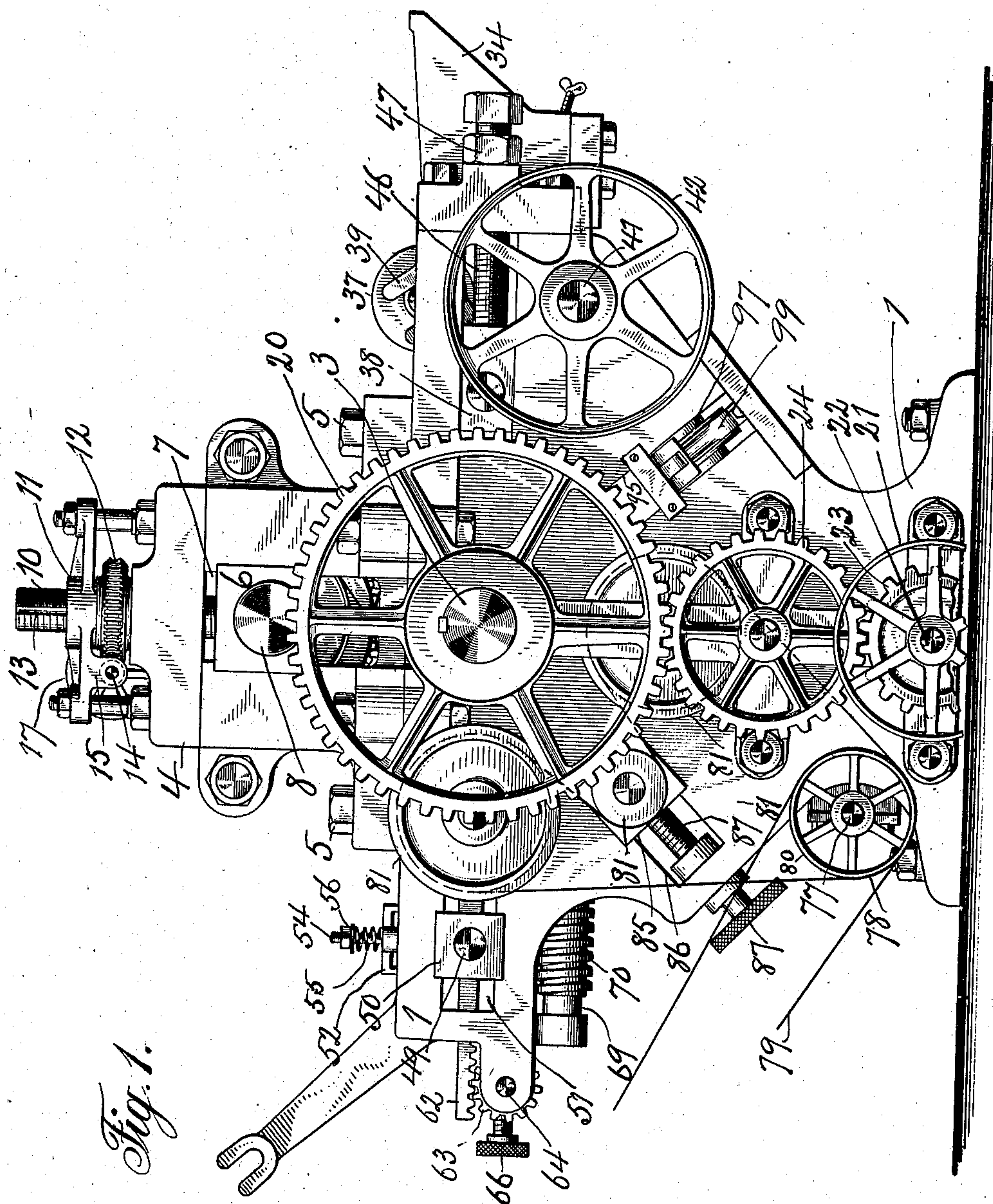


No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.
APPLICATION FILED MAR. 31, 1905.

9 SHEETS--SHEET 1.



Witnesses
John O. Gemples.
Geo. M. Harris.

Inventor
Warren L. Green
By his Attorneys Kenyon & Kenyon

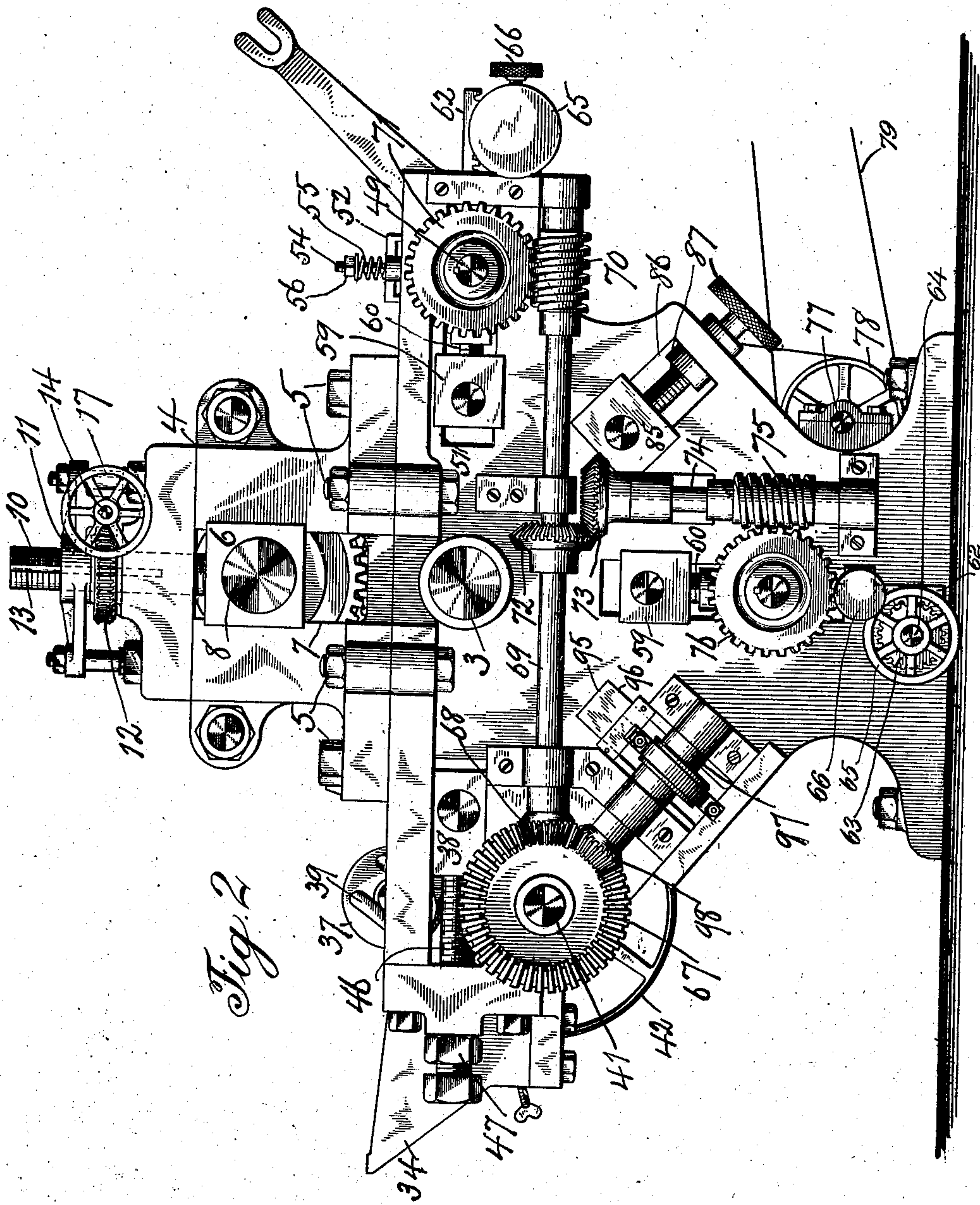
No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.

APPLICATION FILED MAR. 31, 1906.

9 SHEETS--SHEET 2.



Witnesses
John O. Gempler.
Edm. Harris.

Inventor
Warren L. Green
By his Attorneys Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.
APPLICATION FILED MAR. 31, 1906.

9 SHEETS—SHEET 3.

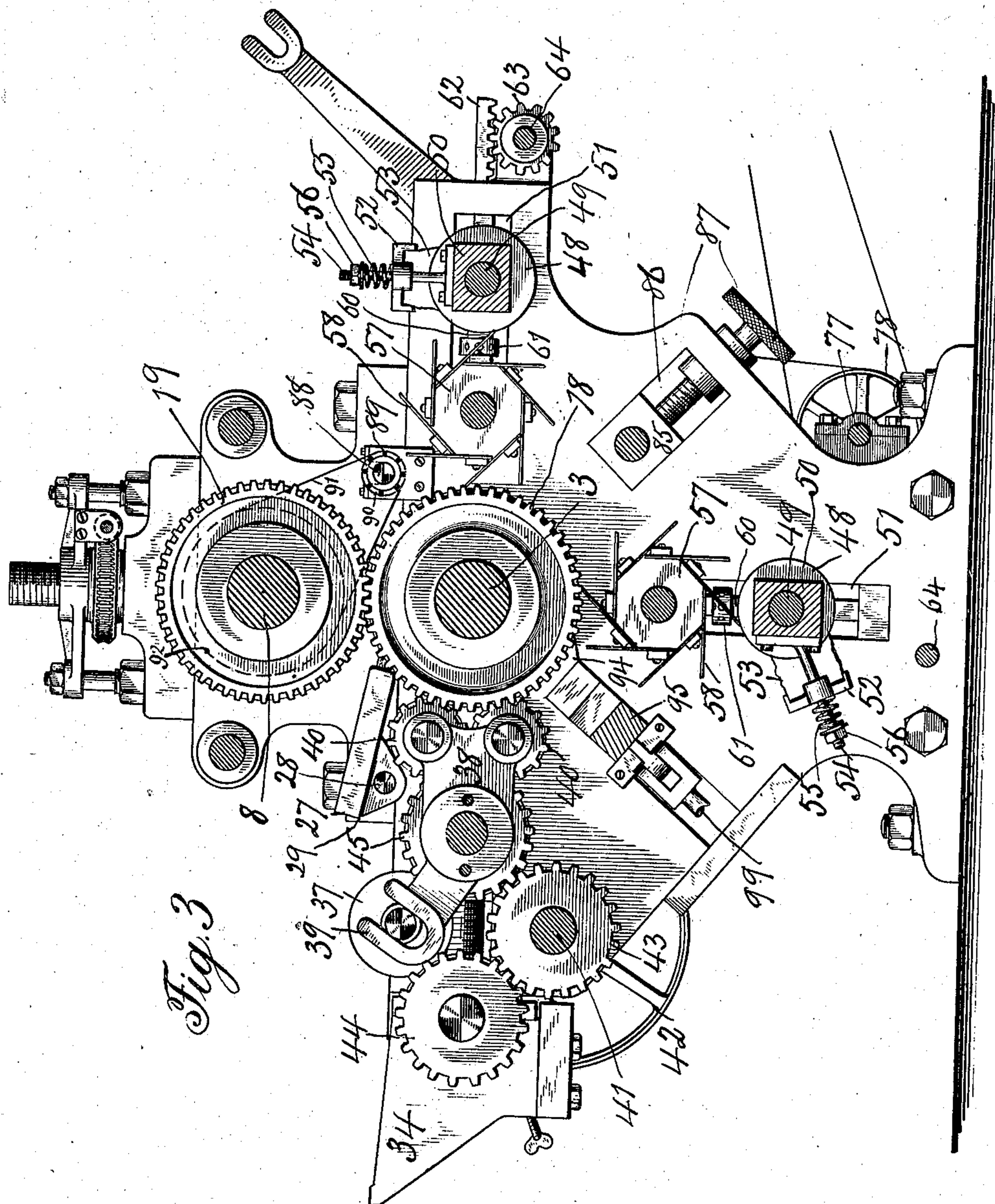


Fig. 3

Witnesses
John O. Kempter
Ed. Morris.

Inventor
Warren L. Green
By his Attorneys Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.

APPLICATION FILED MAR. 31, 1906.

9 SHEETS—SHEET 4.

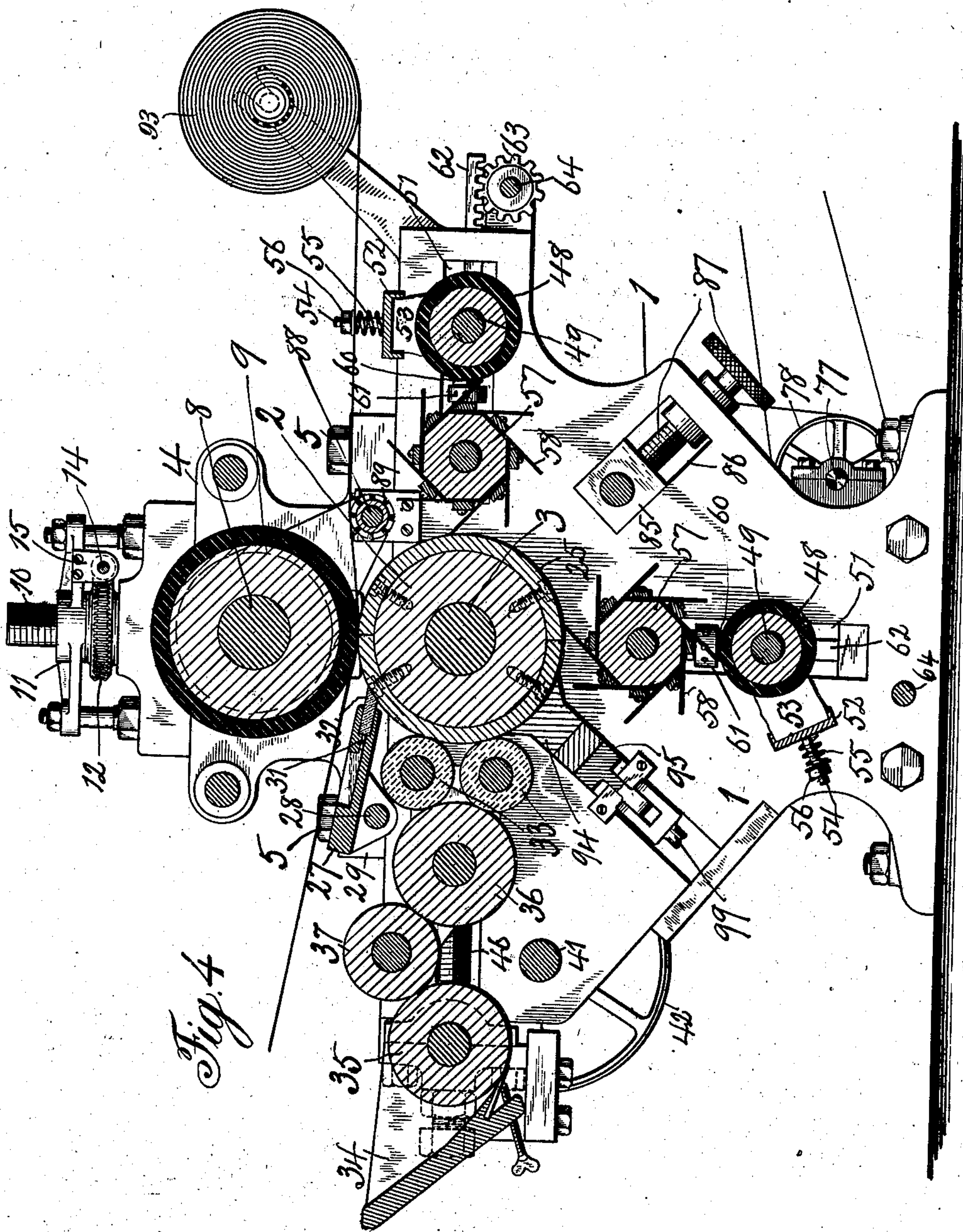


Fig. 4

Witnesses
John O. Gemples.
Edw. M. Harris.

Inventor
Warren L. Green
By his Attorneys Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.
APPLICATION FILED MAR. 31, 1905.

9 SHEETS—SHEET 5.

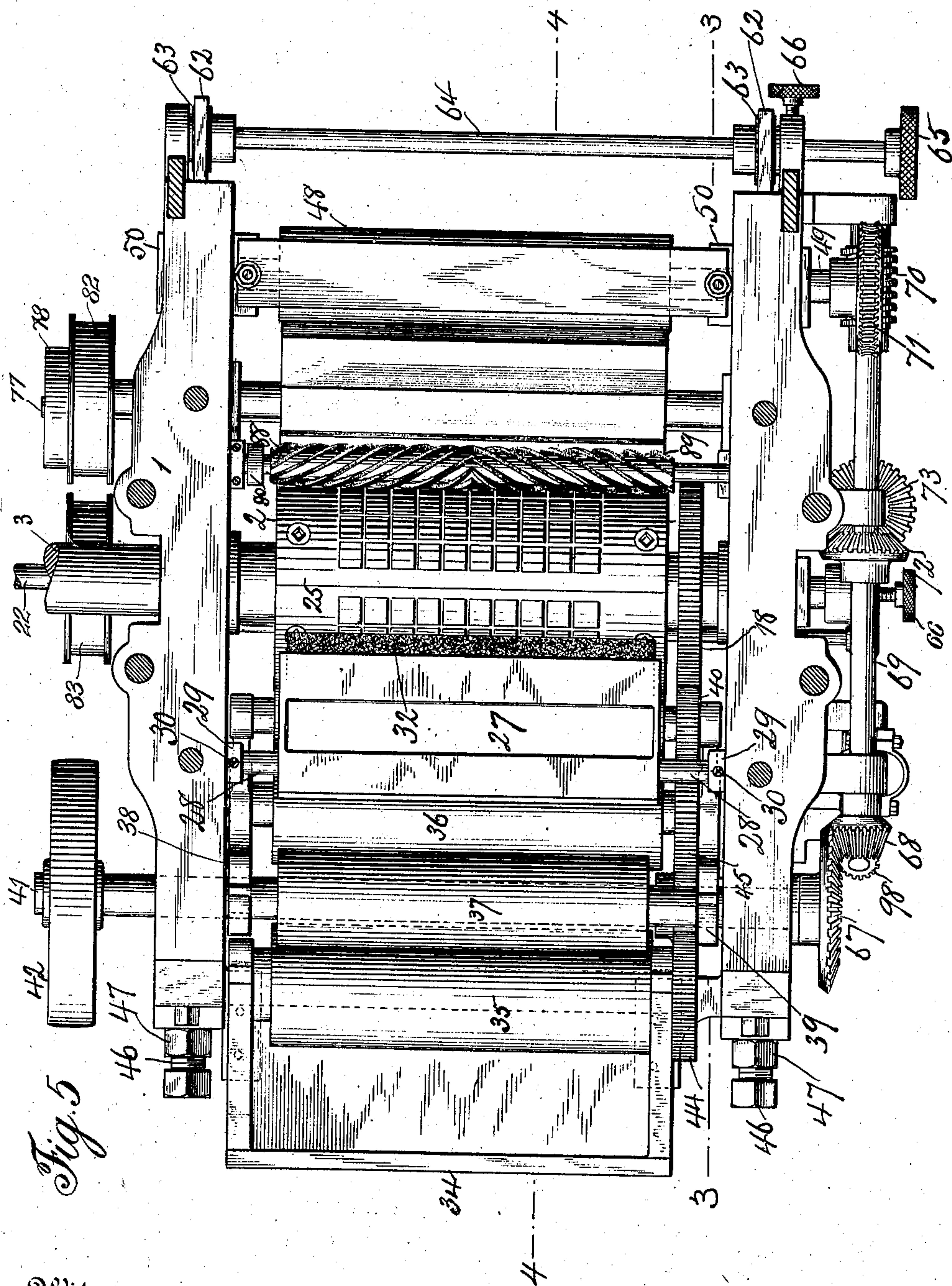


Fig. 5

Witnesses
John O. Kemper
Edm. Harris

Inventor
Wm. L. Green
By his Attorney
Kempson & Kempson

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.

APPLICATION FILED MAR. 31, 1905.

9 SHEETS—SHEET 6.

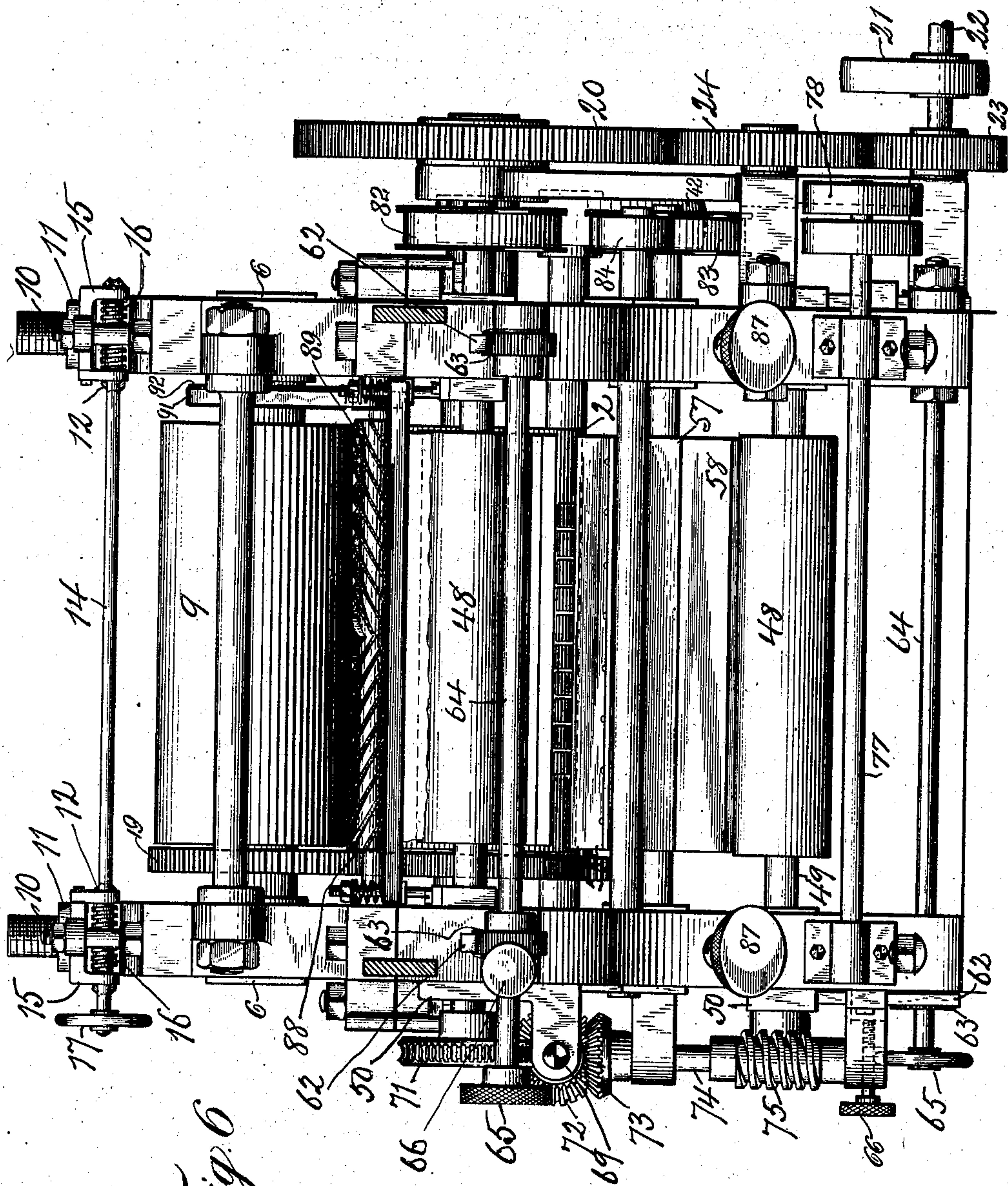


Fig. 6

Witnesses
John O. Hempler.
Edm. Harris.

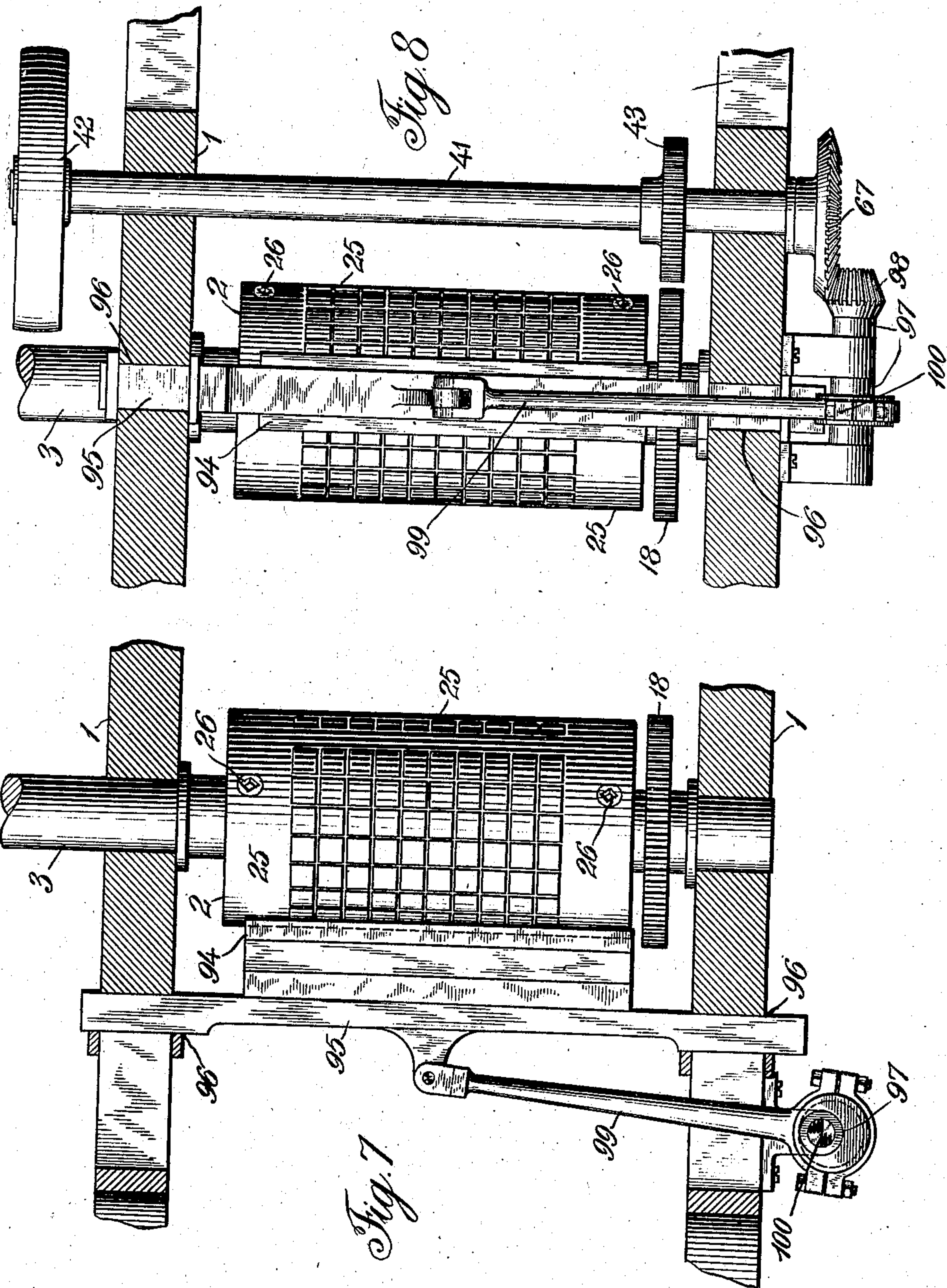
Inventor
Wm. L. Green
By his Attorney Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.
APPLICATION FILED MAR. 31, 1906.

9 SHEETS—SHEET 7.



Witnesses
John O. Gumpier.
Edm. Harris.

Inventor
Wm. L. Green
By his Attorneys Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.

APPLICATION FILED MAR. 31, 1905.

9 SHEETS—SHEET 8.

Fig. 9

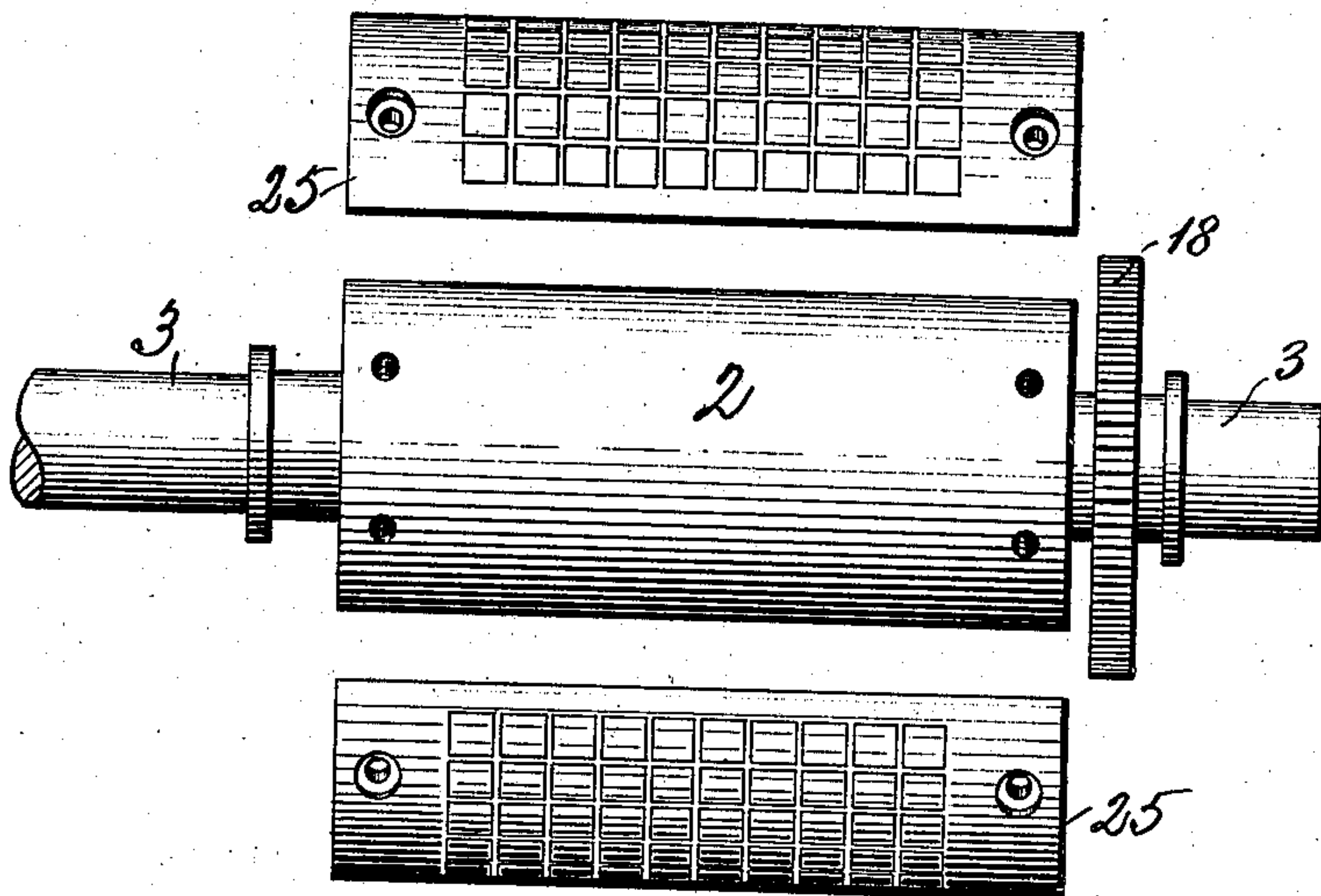


Fig. 10

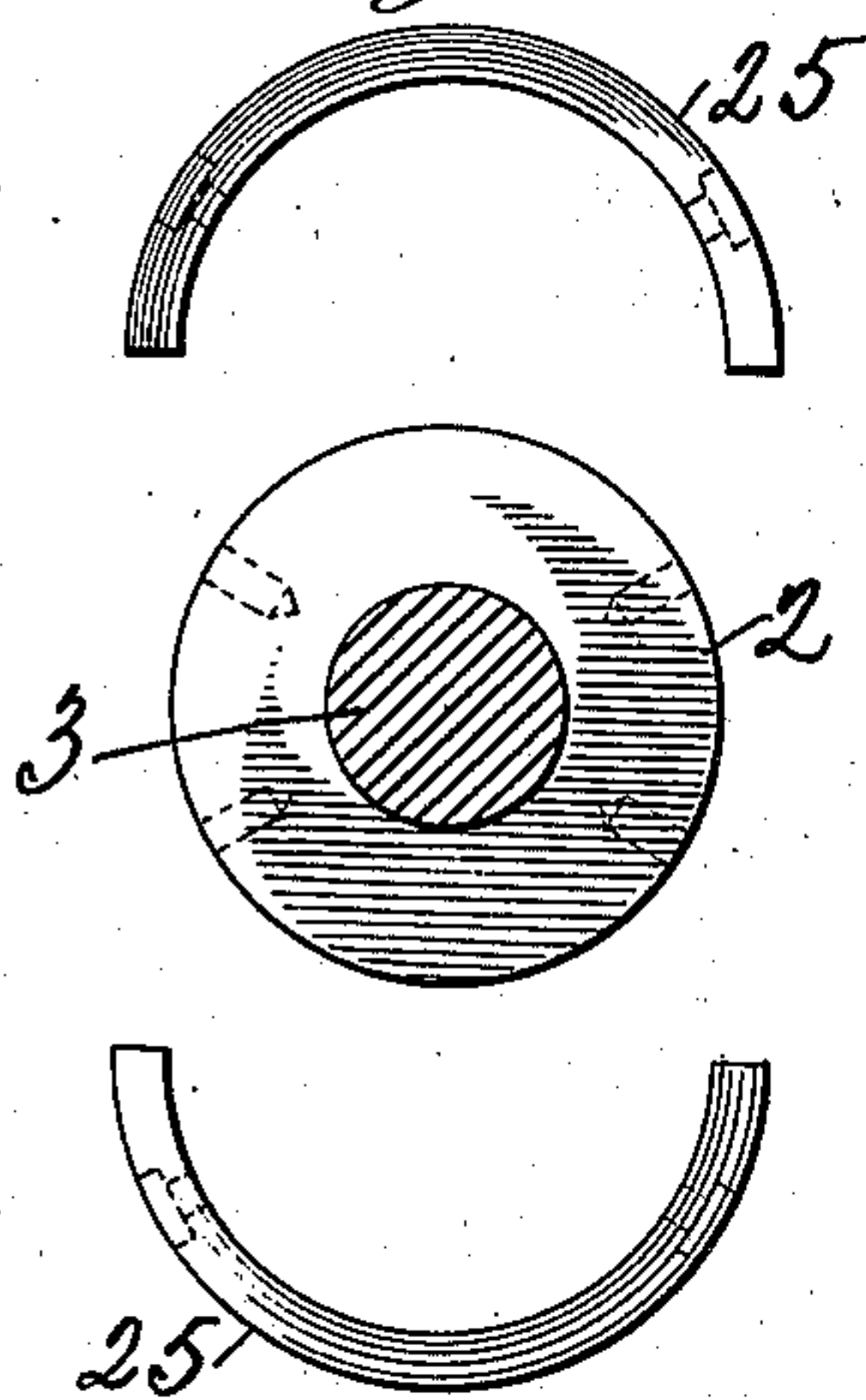
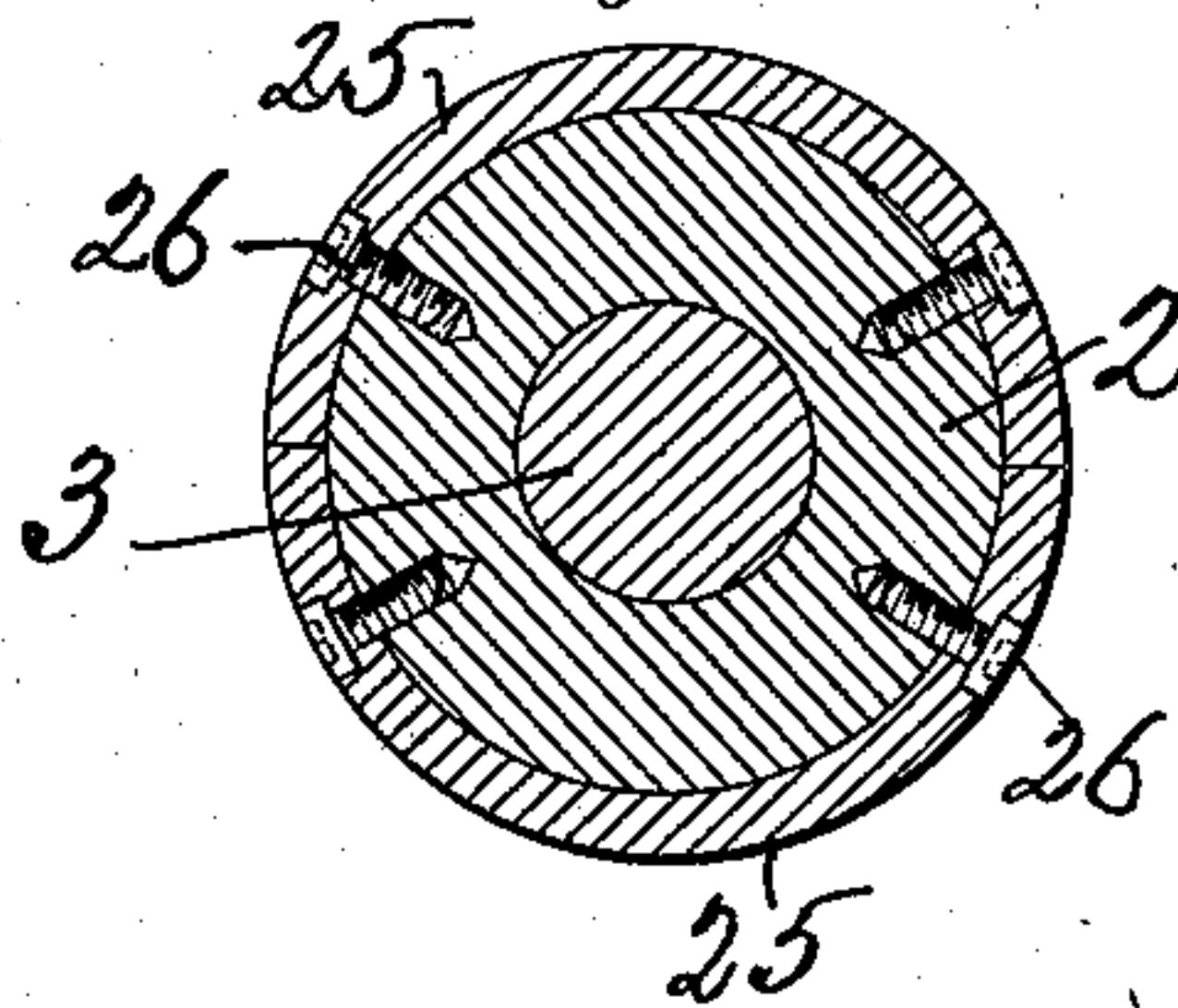


Fig. 11



Witnesses
John O. Gumpel.
Edm. Harris.

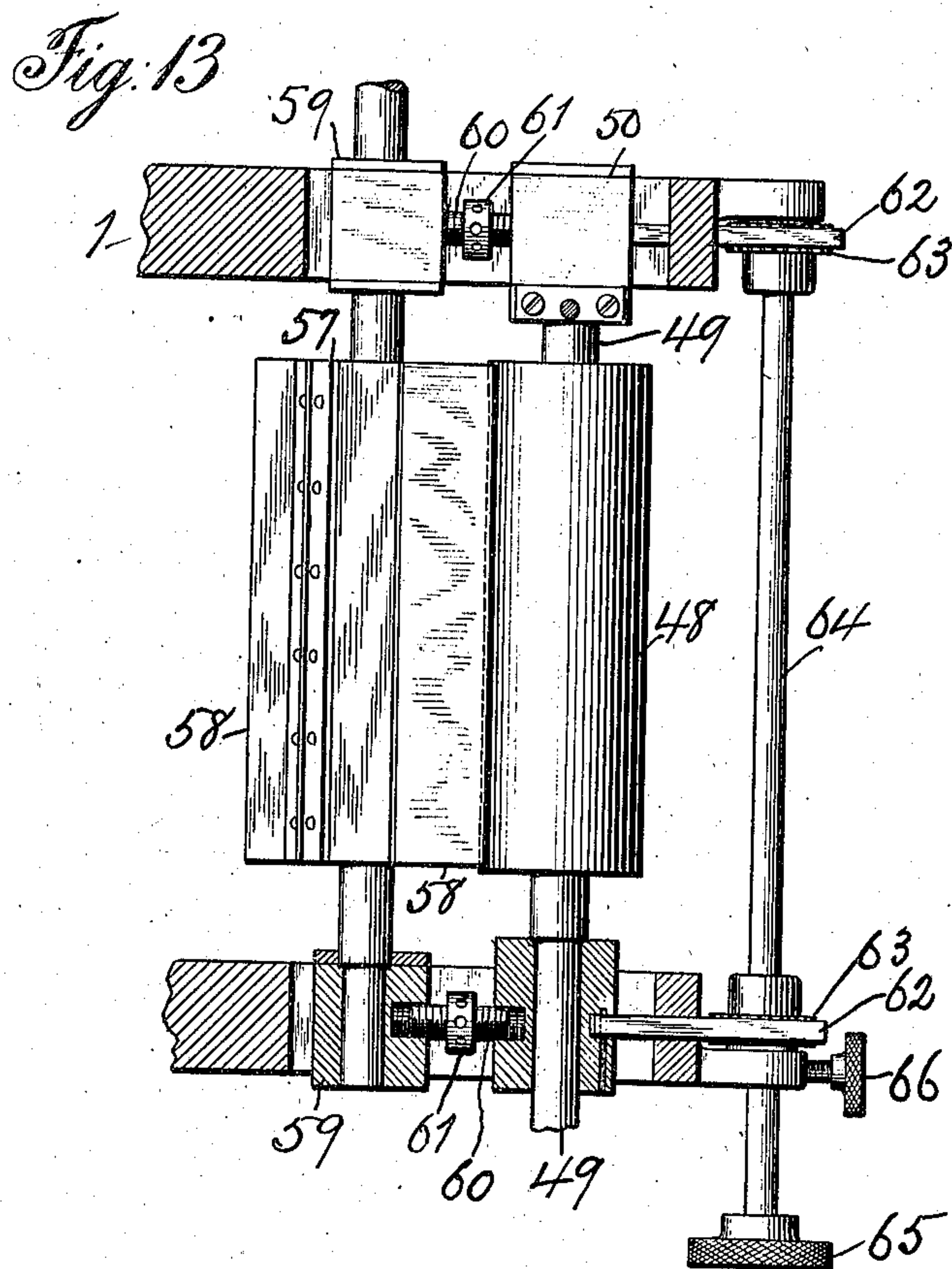
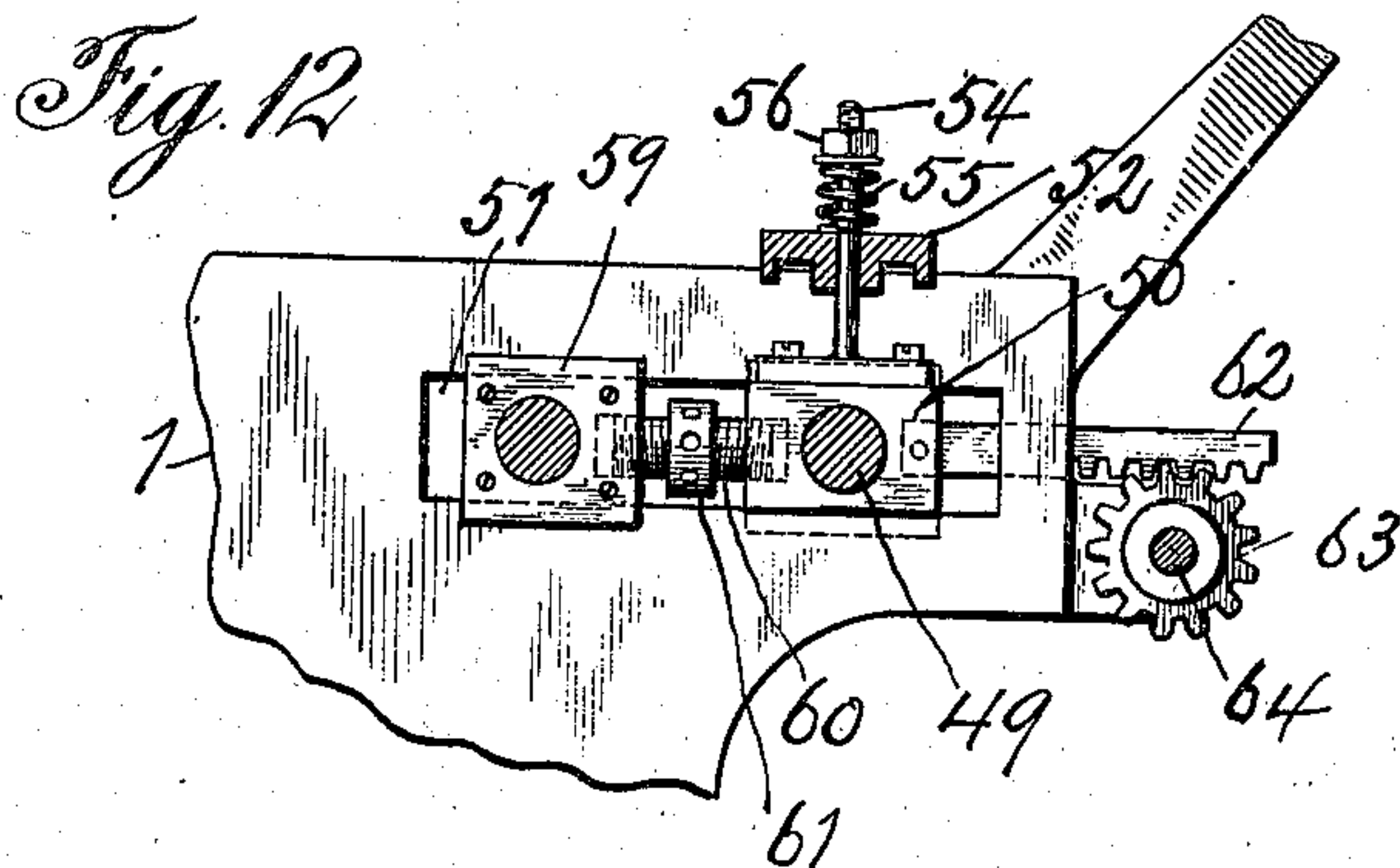
Inventor
W. L. Green
By his Attorneys
Kenyon & Kenyon

No. 885,747.

PATENTED APR. 28, 1908.

W. L. GREEN.
PRINTING PRESS.
APPLICATION FILED MAR. 31, 1905.

9 SHEETS—SHEET 9.



Witnesses
John O. Gemples.
Edw. M. Harris.

Inventor
Warren L. Green
By his Attorney Kenyon & Kenyon

UNITED STATES PATENT OFFICE.

WARREN L. GREEN, OF NEW YORK, N. Y.

PRINTING-PRESS.

No. 885,747.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed March 31, 1905. Serial No. 253,136.

To all whom it may concern:

Be it known that I, WARREN L. GREEN, a citizen of the United States, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to plate printing presses.

10 In the old method of printing from plates, in which the printing parts or design from which the printing is accomplished, is formed of engraved or intaglio lines on said plates, and in which the printing ink is first applied 15 to the surface of the plate, and then said surface rubbed to remove all of the ink except from the lines, a great deal of time is consumed and about nine tenths of the ink that is applied to the plate is rubbed off and 20 wasted.

The principal object of my invention is to provide a press that will avoid the necessity of rubbing off the ink from the surfaces, and that will thereby save much time and trouble 25 to the operator; and also that will save the ink which has heretofore been wasted.

Another object of my invention is to provide means for continuously printing from a surface provided with printing or intaglio 30 lines.

My invention consists in the press and details and features of the same, as hereinafter described and shown.

35 In the accompanying drawings, I have shown one embodiment of my improved press in which,

Figure 1 is a side elevation looking toward one side of the machine. Fig. 2 is a similar elevation looking toward the opposite side 40 of the machine to that shown in Fig. 1. Fig. 3 is a longitudinal section through the line 3—3 of Fig. 5. Fig. 4 is a central longitudinal vertical section through the line 4—4 of Fig. 5. Fig. 5 is a plan. Fig. 6 is a front 45 elevation. Figs. 7 and 8 are details showing the form cylinder and adjusting scraper, and means for operating the scraper. Figs. 9, 10 and 11 are details of the form cylinder and engraved or printing plates, Fig. 9 showing 50 a side elevation of the cylinder and plates detached from each other, Fig. 10 showing an end elevation of the same, and Fig. 11 showing a transverse section through the cylinder plates and securing screws. Figs. 55 12 and 13 are details of one of the whiting cylinders and burnishers, supports for the

same, and means for adjusting said supports, Fig. 12 being a partial vertical section, and Fig. 13 being a partial horizontal section.

Similar numbers represent like parts in all 60 the figures.

1 is the main frame of the machine.

2 is the form cylinder, and 3 is its shaft which is journaled in bearings in frame 1.

4 is the upper part of the machine frame or 65 superstructure secured to the frame 1 by screw bolts 5, so that said superstructure may be readily attached to or removed from the frame 1.

6—6 are blocks supported in vertical 70 guideways 7 in the superstructure 4, and which blocks serve as vertically adjustable journal bearings for the shaft 8 of the impression cylinder 9.

10—10 are vertical adjusting screws that 75 pass through and engage with screw-threaded openings or holes in the superstructure 4, and also in collars 11 at the top of said superstructure.

12—12 are worm-wheels loosely surround- 80 ing the respective screws 10—10, and provided with integrally extending splines or feathers (not shown) engaging with a vertical groove 13 in the respective screws 10.

14 is a shaft journaled in bearings 15 of the 85 superstructure and provided with worms 16—16, said shaft and worms being adapted to be rotated by a hand-wheel 17 secured to said shaft. The lower ends of the screws 10 are secured to the block bearings 6 so that said 90 screws may turn in said bearings. When the shaft 14 is turned the worms 16 will rotate the worm-wheels 12, and by reason of their feathers engaging with the grooves 13, the screws 10 will be rotated so as to cause ver- 95 tical adjustment of the block bearings 6, and the impression cylinder 9.

18 is a gear secured to the shaft 3 of the form cylinder 2. This gear engages with a gear 19 secured to the shaft 8 of the impres- 100 sion cylinder 9, and the rotation of the gear 18 will therefore cause the two cylinders 2 and 9 to revolve so as to feed the paper between them and print the same. The rotation of the cylinders 2 and 9 is caused by the 105 rotation of a large gear 20 which is secured to the shaft 3 of the cylinder 2, and the rotation of this gear 20 is caused by a driving pulley 21, its shaft 22, the gear 23 on said shaft and an intermediate gear 24.

The form cylinder 2 is formed of a core to 110 which arc-shaped form plates 25 are secured,

preferably by means of screws 26, passing through holes in said plates into the core of the cylinder. These form plates 25 are preferably semi-cylindrical on their inner periphery corresponding with the adjacent periphery of the core of the cylinder, as shown in Figs. 4, 5, 7, 8, 9, 10, and 11.

27 is a fountain or pan for quicksilver or other amalgamating material, supported on the frame 1 back of the cylinders 2 and 9 in adjusting rock journals 28 in bearings 29.

30 are set screws passing through the bearings 29 and adapted to bear upon the journals 28, so as to permit the fountain 27 to be rocked to its adjusted position, and fixed in such position. The fountain 27 is provided with a slit or outlet opening 31 at its portion nearest the two cylinders 2 and 9, and the outer end of this opening 31 is filled with felt or other absorbent material 32, (see Fig. 4). This absorber should rest upon the cylinder 9 when the fountain is in its right position, as shown in Fig. 4.

33—33 are two rollers for applying the ink to the plates 25 of the form cylinder 2, said rollers when in use being in tangential contact with said plates.

34 is an ink fountain or tank situated at the rear end of the machine and in which the ink collecting roller 35 is situated and is adapted to revolve.

36 is a roller for transferring the ink to the applying rollers 33, and is adjacent thereto. The ink is transferred from the collecting roller 35 to the transferring roller 36 through the medium of a rider or lazy friction roller 37.

38 is a horizontally adjustable frame having bearings for the journals of the rollers 33, 36 and 37. The journal bearings 39 for the roller 37 are U-shaped (see Fig. 3), and provide means by which said rollers can be lifted out or dropped into place so as to rest upon the two rollers 35 and 36. The journals of the rollers 33 are provided with gears 40—40 which engage with the gear 18 on the shaft 3 of roller 2, which gears 40 receive their rotary motion through said gear 18.

41 is a shaft adapted to revolve at slow speed, and on said shaft is secured a driving pulley 42 for transmitting motion to the shaft. The object of said shaft and pulley will be hereinafter described. Loosely journaled on the shaft 41 is a gear 43 which engages with a gear 44 secured to the shaft or journal of roller 35 and also with a gear 45 secured to the journal of roller 36, said gear 45 also engaging with one of the rollers 40. The rotation, therefore, of the cylinder 2 and shaft 3 will, through the gear 18 on said shaft, transmit motion to the gears 40 and the gears 45, 43 and 44, so as to rotate all of said rollers 33, 36, 35 and 37, thus causing the ink to feed from the roller 35 to the roller 37 and from the said roller to the roller 36, then to the rollers 33, and from said rollers to the

plates 25 on the cylinder 2. The rollers 33 should have a slight adjustment toward and away from the cylinder 2 for the purpose of supplying more ink, as desired, to the plates 26 on said roller 2, the nearer said rollers 33 are to the cylinder, the thinner the layer of ink that is applied to same. The adjusting mechanism is the following: 46—46 are screws extending horizontally through screw-threaded openings in the sides of the frame 1, and with their inner ends secured to the frame 38, so that said screws may turn in said frames. The turning of the screws 46 in one direction will bring the frame and its supported parts, including the rollers 33, 36 and 37, nearer to the cylinder 2, and the turning of said screws in the reverse direction will bring the frame and said supported parts further away from the cylinder 2. The screws 46 are provided with lock nuts 47 for securing said screws and the frame 38 and its supported parts in their adjusted position.

48—48 are rollers for collecting the whiting, (preferably) to be applied to the form plates 25 on the cylinder 2. I have shown in the drawing two of such rollers, one being journaled near the front of the machine, and the other one near the bottom of the same. The shafts or journals 49 of said rollers are journaled in adjustable blocks or bearings 50, so as to permit the rollers to be adjusted nearer to or further away from the form cylinder 2. Said bearings are shown in the form of blocks (see Fig. 3) resting in guideways 51.

52 represents the holders for cakes or blocks 53 of the whiting. These holders are supported on rods 54 which are secured to the blocks 50, and said blocks are held in tensional contact with the rollers 48 by means of tension springs 55 situated between the holder 52 and a tension nut 56 on the end of the outer screw-threaded end of the rod 54.

57—57 are rotary burnishers or polishers situated between the whiting rollers 48 and the form cylinder 2. These burnishers are provided with outwardly extending flexible blades or paddles 58 of hide, canvas, cloth or similar burnishing material, so that when said burnishers revolve, they will run over the peripheries of the rollers 48 and the form plates on the cylinder 2, transferring the whiting from said rollers to said form plates so as to polish the same.

59—59 are bearings for the journals of the burnishers 57 and which bearings are similar to the bearings 50 of the rollers 48. 60 is a right and left hand screw entering and engaging with corresponding screw-threaded openings in the bearing 50 and 59, for the purpose of adjusting the rollers 48 and burnishers 57 in proper position toward and away from each other, and so that the paddles 58 will make the desired contact with said rollers 48. The screw 60 is provided with a collar 61, having openings in its periphery

in which a pin may be inserted to rotate the screw so as to cause the proper adjustment, as above stated. 62 are racks secured respectively to the bearings or blocks 50, and extending outward from the same. 63 are pinions secured to their respective shafts 64, and engaging with the racks 62, the purpose of said pinions and racks being to adjust the rollers and burnishers in their proper positions toward and away from the form cylinder 2, the rotation of the shafts 64 and the pinions 63 causing the racks 62 to move and thereby cause said adjustment. The shafts 64 are provided with hand-wheels 65 for rotating said shafts. 66 is a set screw which passes through the bearings of the shaft 64 and adapted to impinge upon said shaft so that the different parts may be set and held firmly after they have been adjusted. (The above construction is shown in detail in Figs. 12 and 13).

A slow rotary motion is imparted to the rollers 48 as follows: 67 is a beveled gear secured to the slowly revolving shaft 41. 68 is a pinion engaging with the gear 67 and secured to a transmitting shaft 69. On said shaft is a worm 70 which engages with a worm-wheel 71, secured to the journal 49 of the upper roller 48. The slow revolution of the gear 67 will, through the pinion 68, worm 70 and worm-wheel 71, impart a slow revolution to said roller 48, which, in said revolution, will run against the block of whiting 53 that is held in contact with the periphery of said roller. Secured to the shaft 69 is a beveled pinion 72 engaging with a similar pinion 73 secured to a shaft 74, said shaft being provided with a worm 75, engaging with a worm-wheel 76 secured to the shaft of the lower roller 48. Said roller will be given its slow rotary motion in a manner similar to that of the upper roller 48, through the shaft 69, pinions 72, 73, shaft 74, worm 75 and worm-wheel 76.

77 is a shaft journaled in the frame 1 and provided with a pulley 78 which receives rapid revolution from a driving belt 79. Secured to the shaft 77 is a pulley 80, which drives both the upper and the lower burnishers 57 by means of a belt and pulley system 81, as shown in Fig. 1, which system includes therein a tension roller 84 for keeping the belt taut. This roller is journaled in blocks or bearings 85 supported in parallel guideways 86 in the frame 1 which extend toward the belt and permit movement of the bearings 85 and roller 84, toward and away from said belt.

87 are adjusting screws passing through screw-threaded openings in the outer portion of the frame 1, and secured to the bearing blocks 85, so as to permit said screws to turn in relation to the blocks, whereby the inner and outer rotation of said screws will cause the blocks 85 and the roller 84 to be

adjusted, the inner rotation of the screws permitting the tension roller 84 to be pressed against the belt to cause the necessary tension of said belt and the outer movement of said screws permitting said tension to be relieved or lessened.

88 is a rotary brush journaled in the two sides of the frame 1 and extending parallel with the cylinder 9 and having its upper periphery a little above the plane of contact of the two cylinders 2 and 9. This brush 88 is provided with outwardly extending bristles 89 arranged preferably as shown in Figs. 5 and 6, although this is unimportant. The shaft of this brush 88 is provided with a pulley 90 and said brush is rotated by means of a belt 91 surrounding said pulley 90 and a pulley 92 secured to the shaft 8 of the cylinder 9. The brush 88 will therefore rotate in unison with, but more rapidly than the cylinder 9. The object of said brush 88 is to sweep the lower surface of the strip of paper 93, as it comes from the roll (not shown), and before it passes between the cylinders 2 and 9, said sweeping or rotation of the brush upon the under surface of the paper serving to straighten out and even up the same before it enters the two cylinders.

94 is a scraper preferably of metal, having a concave contact surface bearing against the periphery of the plates of the cylinder 2. This scraper has a slight longitudinal movement to permit it to rub back and forth on the plates 25 of the cylinder 2, so as to remove any excess of amalgamating material that may be on said plates after the ink has been deposited on the same by the rollers 33.

95 is a longitudinal sliding frame to which the scraper 94 is secured, and which has its longitudinal movement in guideways 96 in the frame 1.

97 is a shaft which receives a slow rotary movement through the gear 67, engaging with a pinion 98 on said shaft 97.

99 is a rod or pitman pivoted to the frame 95 and an eccentric 100 on the shaft 97. The slow revolution of the gear 67 will cause the shaft 97 to rotate slowly, and by means of the eccentric 100 and pitman 99, will slowly reciprocate the frame 95 and the scraper 94 back and forth longitudinally in contact with the form plates 25.

The operation of the press is as follows: The fountain 34 being supplied with printing ink and the fountain 27 with an amalgamating material said fountain 27 should be adjusted so that the absorber 32 rests upon or touches the plates 25 of said cylinder 2, and the frame 38 should be drawn back to disengage the rollers 40 from the gear 18. The printing lines of the plates 25 are then filled with ink or grease. The machine is then put in operation through its driving shafts, and the cylinders 2 and 9 begin to revolve slowly. During the revolution of the cylinder 2 the

peripheries of the plates 25 have become coated with the amalgamating material from the absorber 32, but said amalgamating material (preferably mercury or quicksilver) will pass over or not enter the indented or intaglio lines in said plates, but the remainder of the peripheries of said plates will be coated with amalgamating material, it being presumed that said plates or the outer peripheries of the same are of metal that can be amalgamated. The surfaces of the peripheries therefore of the plates 25 with the exception of the lines will be amalgamated or covered with an amalgam which will repel printing ink or to which said ink cannot adhere. The rollers 33, 36 and 27 are then adjusted inward so that the rollers 40 will engage with gear 18, and said rollers, as well as the roller 35 will be caused to revolve, and the ink will be fed to the plates 25, but the surfaces of said plates with the exception of the lines being covered with the amalgam or an ink repelling substance, the ink will only be transmitted from the rollers 33 to and into said lines. The scraper 94 will reciprocate longitudinally against the peripheries of the revolving plates 25, and thus remove any excess of amalgam and ink that might be on said plates. The whiting will then be transferred from the blocks 53 to the rollers 48, and from thence through the paddles 58 of the revolving burnishers 57 to the surfaces of the revolving plates 25 thus polishing said plates. The web 93, of paper or other material is fed over the revolving brush 88 between the cylinders 2 and 9, and said web is printed upon by the ink which was in the lines of the plates 25 being transferred to said web. As long as the machine is in operation, the cylinders 2 and 9 will continuously feed said web between them, and the printing upon the web from said cylinders will be continuous.

My invention provides a new and valuable printing press for engraved printing that will produce superior results, and that will save a vast amount of time and ink, that heretofore has been necessarily used.

My invention in its broader aspects is not limited to the precise apparatus herein described, as many changes other than those suggested may be made without departing from the main principles of my invention or sacrificing its chief advantages.

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

1. In a printing machine for printing from intaglio printing plates, the combination with an intaglio printing surface, means for applying an ink repelling metal to said surface, means for inking said surface, and means for removing the surplus ink.

2. In a printing machine for printing from intaglio printing plates, the combination with an intaglio printing surface provided

with intaglio printing lines, means for applying ink repelling metal to said surface, means for inking said surface and means for removing the surplus ink.

3. In a printing machine for printing from intaglio printing plates the combination of a printing surface having intaglio printing lines and capable of amalgamation, means for applying an amalgamating substance to said surface, means for inking said surface, and means for rubbing said surface to remove the excess of amalgamating material and ink.

4. In a printing machine for printing from intaglio printing plates, the combination of a printing surface having intaglio printing lines and capable of amalgamation, means for applying an amalgamating substance to said surface, means for inking said surface, means for rubbing said surface to remove the excess ink and amalgam, and means for polishing said surface.

5. In a printing machine for printing from intaglio printing plates, the combination of a printing surface having intaglio printing lines and capable of amalgamation, means for applying an amalgamating substance to said surface, and means for polishing said surface.

6. In a printing machine for printing from intaglio printing plates, the combination with a printing surface having intaglio printing lines and capable of amalgamation, means for applying an amalgamating substance to said surface, means for inking said surface, and means for polishing said surface.

7. In a printing machine for printing from intaglio printing plates, the combination of a printing surface having intaglio printing lines, an absorbent device in contact with said surface, said device and surface having a movement, one relatively to the other, said absorbent device constructed to hold an ink repelling, amalgamating liquid and to apply it to the surface, and means for applying ink to the surface, the parts being so arranged that the ink repelling liquid is applied to the surface previous to the application of the ink to the same.

8. In a printing machine for printing from intaglio printing plates, the combination with a printing surface, a receptacle for an ink repelling metal, a pad of absorbent material adapted to feed said metal from said receptacle to said printing surface.

9. In a printing machine for printing from intaglio printing plates, the combination with an intaglio printing surface, a receptacle for an ink repelling, amalgamating material, a pad of absorbent material, adapted to transfer said metal from said receptacle to said surface, means for applying ink to said surface and means for moving said ink applying means out of contact with said surface, when the machine is first put in operation.

10. In a printing machine for printing from

intaglio printing plates, the combination with an intaglio printing surface, a receptacle for an ink repelling, amalgamating material, an absorbent device connected with said receptacle, means for adjusting said receptacle, whereby said absorbent device may be placed in and out of contact with said surface, inking mechanism, and means for throwing said inking mechanism in and out of contact with said surface.

11. In a printing machine for printing from intaglio printing plates, the combination with an intaglio printing surface, means for applying an ink repelling, amalgamating material to said surface, a rubber, the surface and the rubber being in contact, and means for producing a movement of the rubber with relation to said surface.

12. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing surface thereon, means for applying an ink repelling, amalgamating material to said surface, a rubber in contact with said surface, and means for reciprocating said rubber parallel to the axis of said cylinder.

13. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, inking apparatus comprising an ink fountain and one or more form inking rolls, said rolls being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a rotary polisher, the axis of said polisher being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

14. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, inking apparatus comprising an ink fountain and one or more form inking rolls, said rolls being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a rotary polisher, a roll in contact with said polisher, means for supplying whiting to said roll, the axis of said polisher being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

15. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio

printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, inking apparatus comprising an ink fountain and one or more form inking rolls, said rolls being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a plurality of rotary polishers, the axes of said polishers being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

16. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, inking apparatus comprising an ink fountain and one or more form inking rolls, said rolls being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a plurality of rotary polishers, a roll in contact with each of said polishers for applying whiting to said polisher and means for supplying whiting to said roll, the axes of said polishers being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

17. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, inking apparatus comprising an ink fountain and one or more form inking rolls said rolls, being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a plurality of rotary polishers, each including a plurality of rotary blades, a plurality of rolls, one roll for each polisher and adapted to contact with said rotary blades, means for supplying whiting to each roll, the axes of said polishers being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

18. In a printing machine for printing from intaglio printing plates, the combination with a rotary form cylinder, an intaglio printing plate secured thereto, an adjustable receptacle to supply amalgamating material to the plate on said form cylinder, a pivotally adjustable receptacle for supplying amalgamating material to the printing surface,

means for securing said receptacle in its adjusted positions, an absorbent pad arranged at the mouth of said receptacle, inking apparatus comprising an ink fountain and one or more form inking rolls, said rolls being adjustable toward and from said form cylinder, a scraper, means for reciprocating said scraper parallel with the axis of said form cylinder, a plurality of rotary polishers, each including a plurality of rotary blades, a plurality of rolls, one roll for each polisher and adapted to contact with said rotary blades, means for supplying whiting to each roll, the axes of said polisher being adjustable toward and from said form cylinder, whereby said printing surface may be thoroughly amalgamated before applying ink to said surface and the printing operation subsequently completed.

19. In a printing machine for printing from intaglio printing plates, the combination with a form cylinder, an intaglio printing plate secured thereto, means for supplying amalgamating material to said plate, inking mechanism for said plate, means for scraping the surface of the printing plate carried by said cylinder and polishing means for polishing said surface.

20. In a printing machine for printing from intaglio printing plates, the combination with a form cylinder, an intaglio printing surface secured thereto, means for supplying amalgamating material to said surface, an ink fountain and inking rollers for supplying ink to said surface, a scraper,

means for reciprocating said scraper, polishing means, means for supplying whiting to said polishing means and means for rotating said polishing means.

21. In a printing machine for printing from intaglio printing plates, the combination with a form cylinder, an intaglio printing plate secured thereto, means for feeding a web of paper to said form cylinder, means for supplying amalgamating material to said plate, inking mechanism for said plate, means for scraping the surface of the printing plate carried by said cylinder and polishing means for polishing said surface.

22. In a printing machine for printing from intaglio printing plates, the combination with a form cylinder, an intaglio printing surface secured thereto, means for feeding a web of paper to said form cylinder, means for supplying amalgamating material to said surface, an ink fountain and inking rollers for supplying ink to said surface, a scraper, means for reciprocating said scraper, polishing means, means for supplying whiting to said polishing means and means for rotating said polishing means.

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

WARREN L. GREEN.

Witnesses:

WM. S. EATON,
T. R. COLLINS.