

No. 662,530.

Patented Nov. 27, 1900.

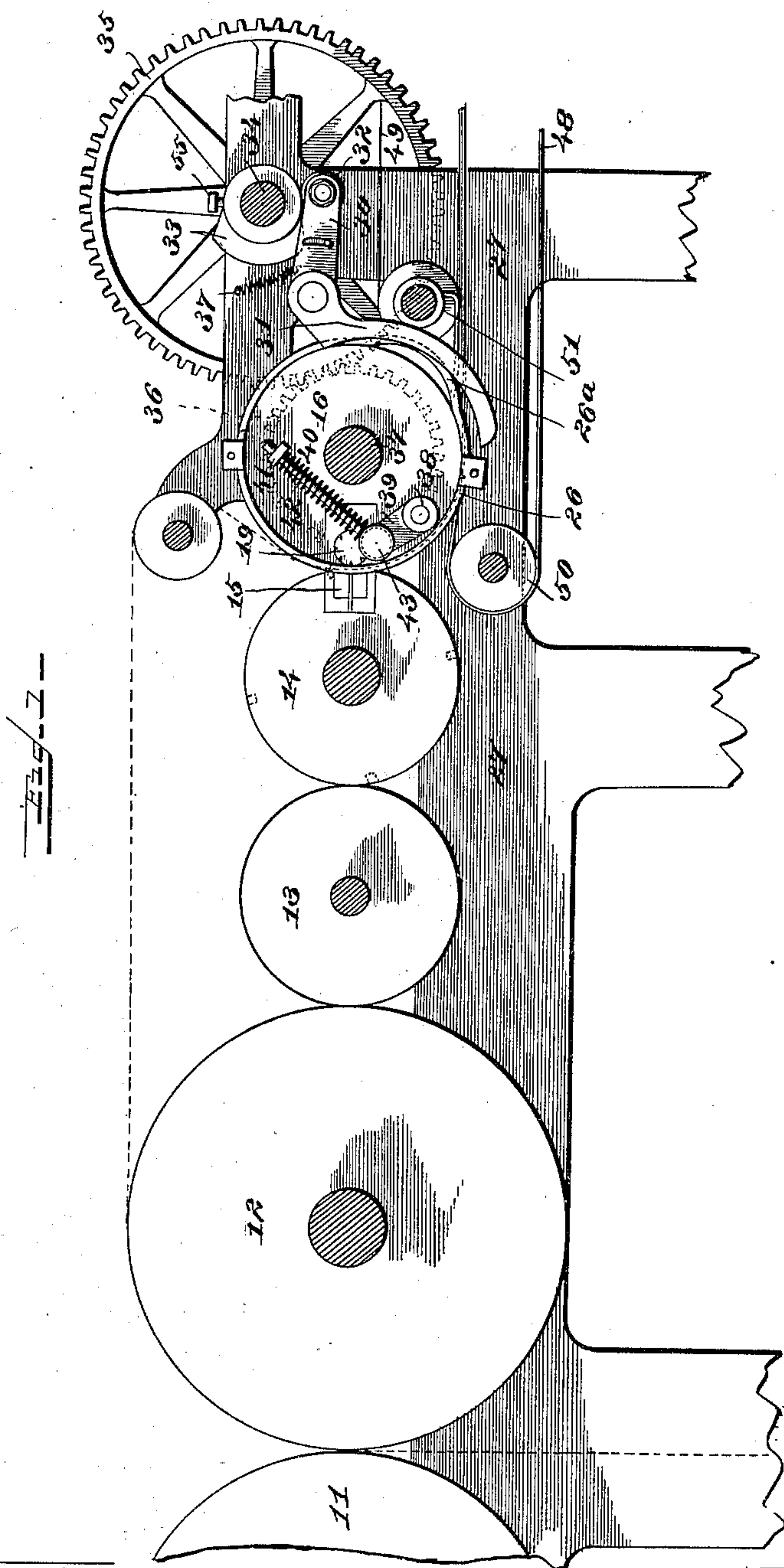
S. G. GOSS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

(Application filed Nov. 15, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

Harold G Barnett

G. A. Pauberschmidt,

Inventor

Samuel G. Hoss.
By Bond Adams, Clerk of Court.
his attys

No. 662,530.

Patented Nov. 27, 1900.

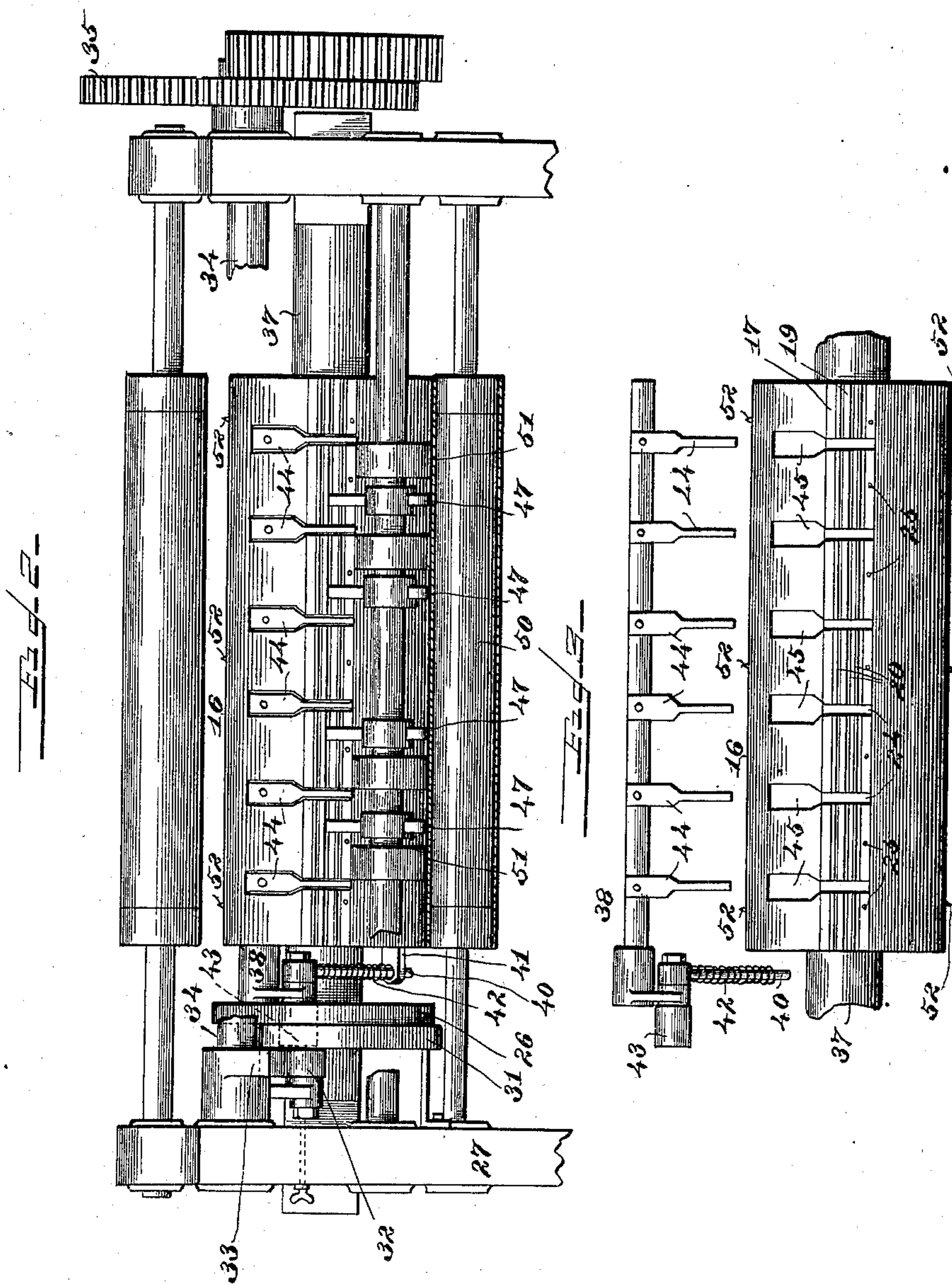
S. G. GOSS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

(Application filed Nov. 15, 1899.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES.

Harold G. Barlett.

G. A. Paulschmidt.

INVENTOR.

Samuel G. Goss.
By Bond, Adams, Putnam & Jackson
his attys.

No. 662,530.

Patented Nov. 27, 1900.

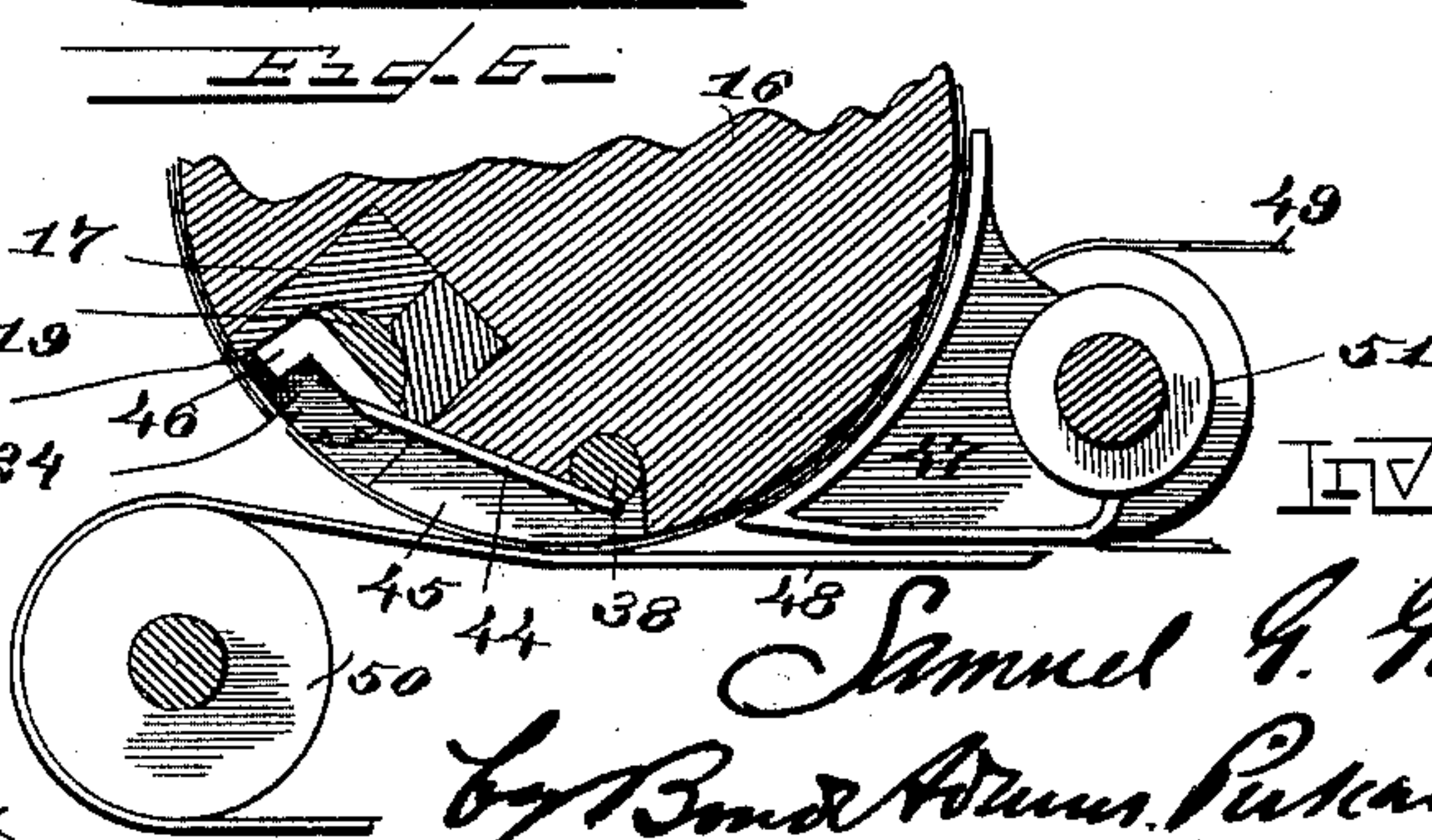
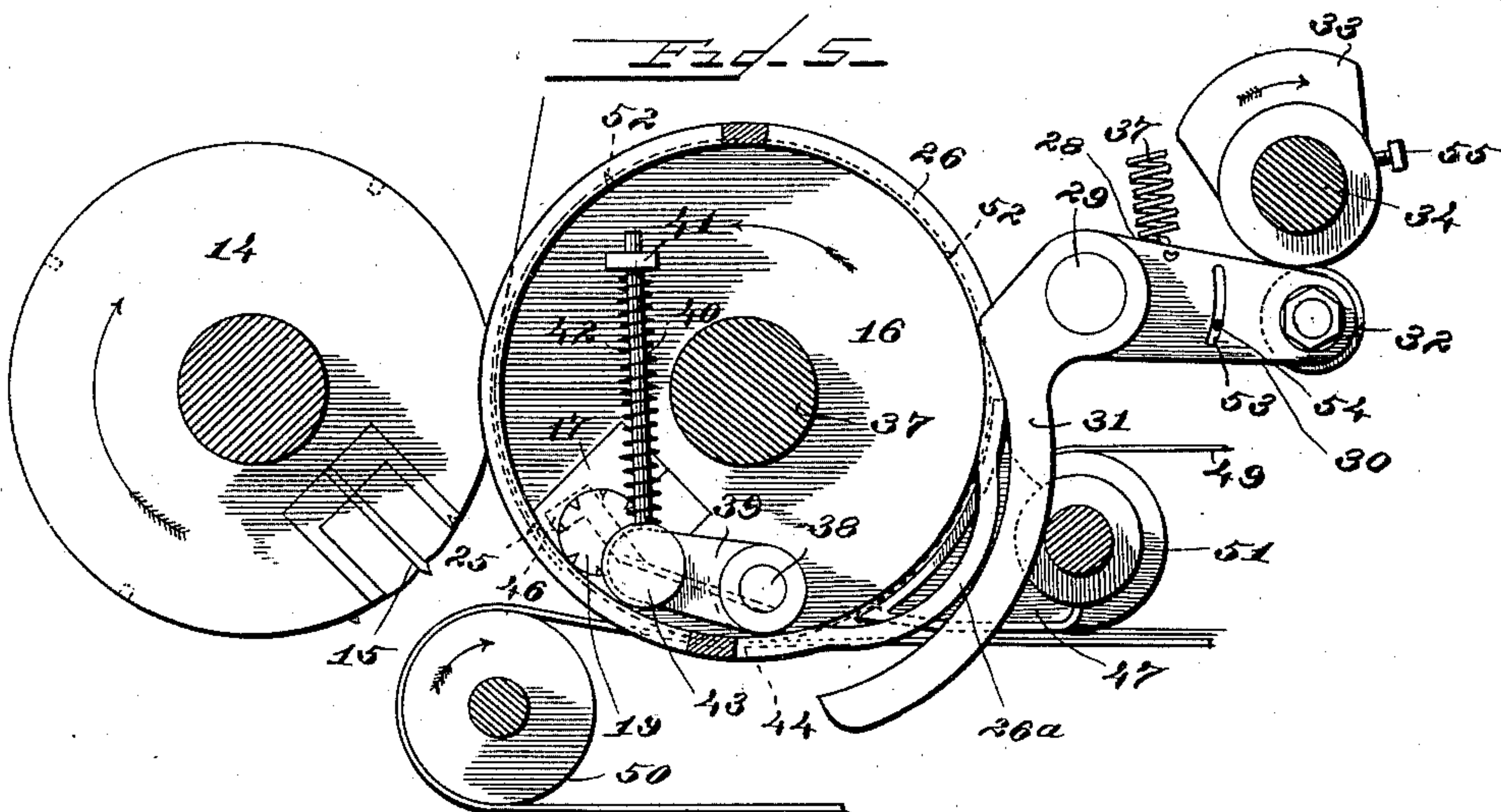
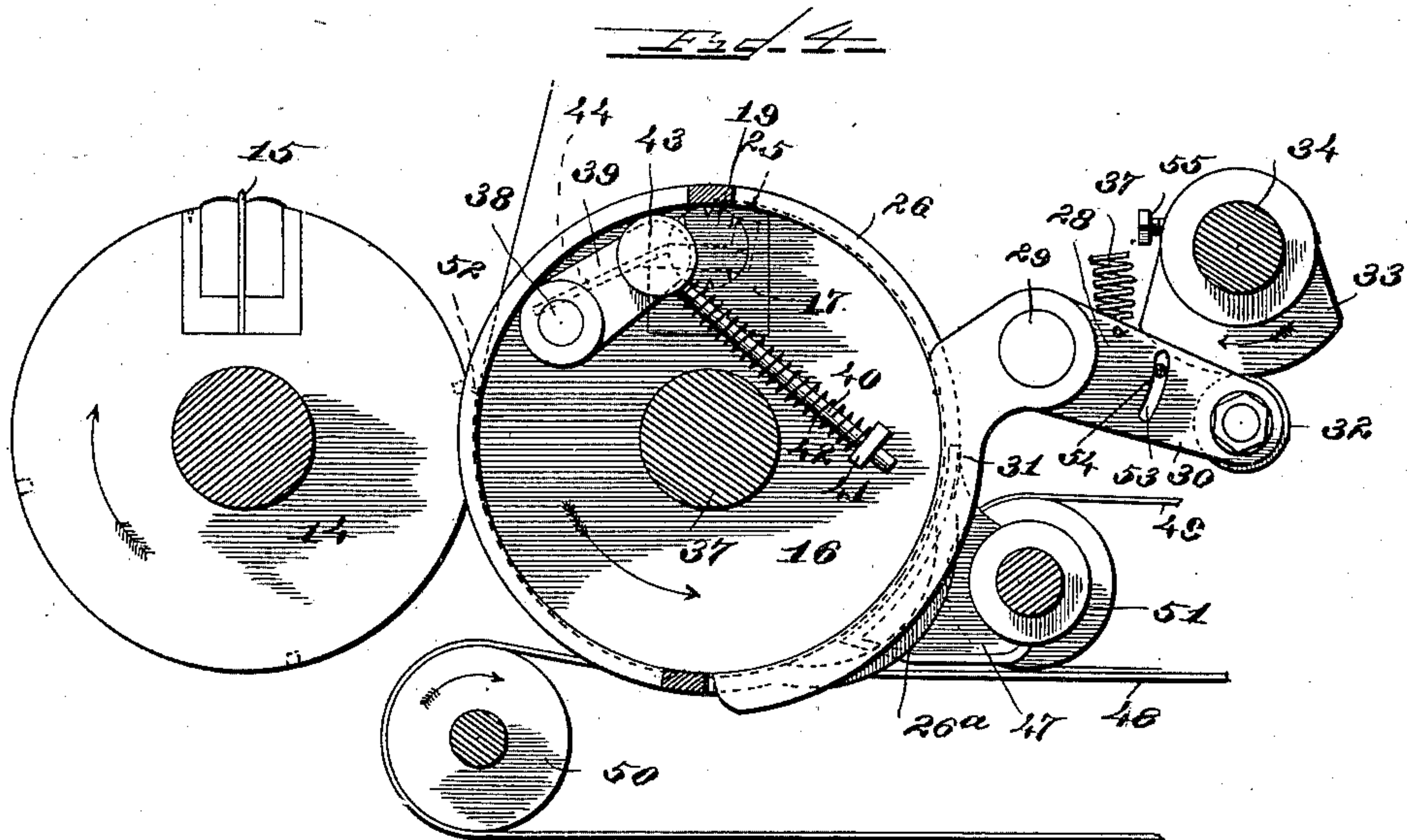
S. G. GOSS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

(Application filed Nov. 15, 1899.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES

Harold Bennett

G. A. Hauberschnitt

INVENTOR

Samuel G. Goss

By Bond Adams, Putnam & Jordan
his Attys

No. 662,530.

Patented Nov. 27, 1900.

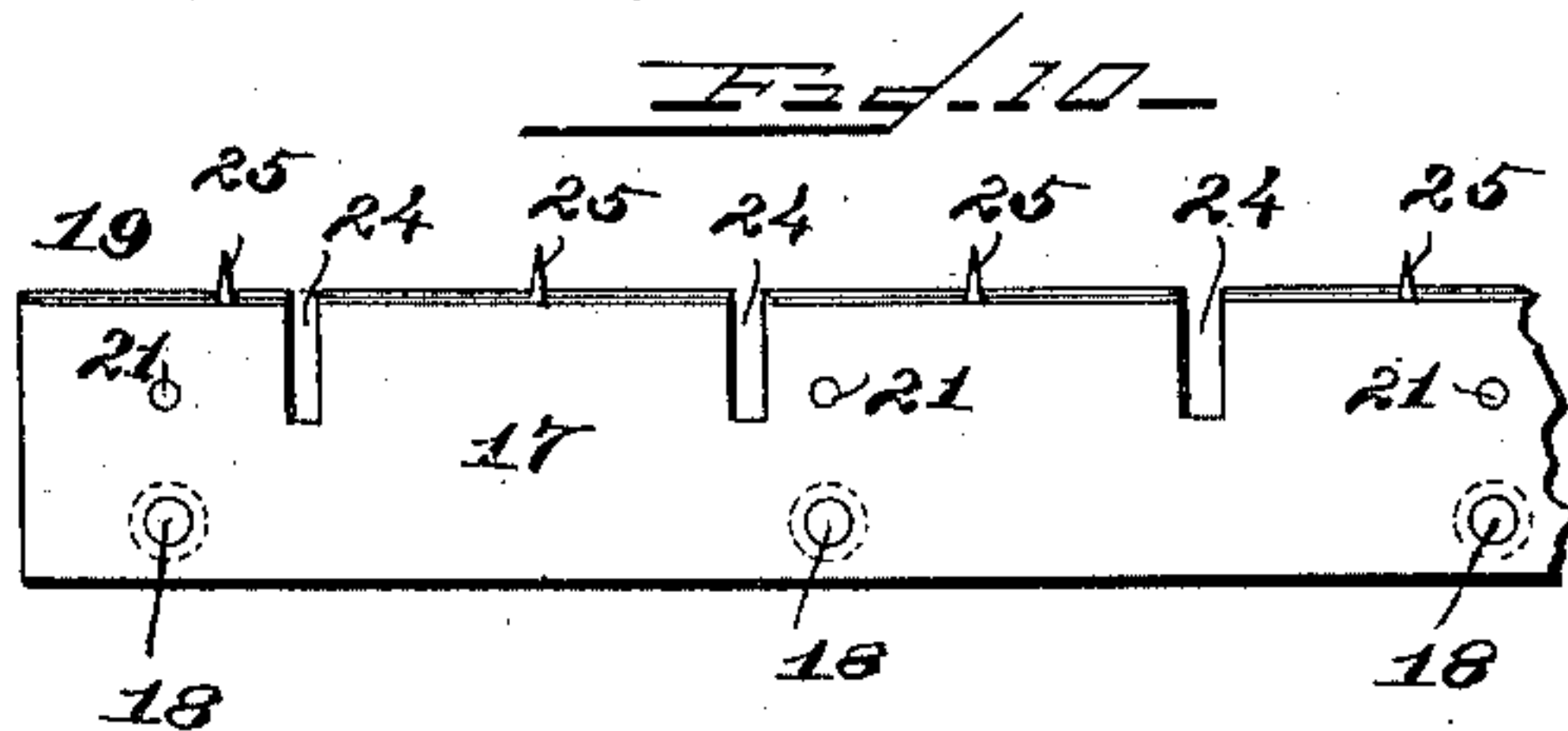
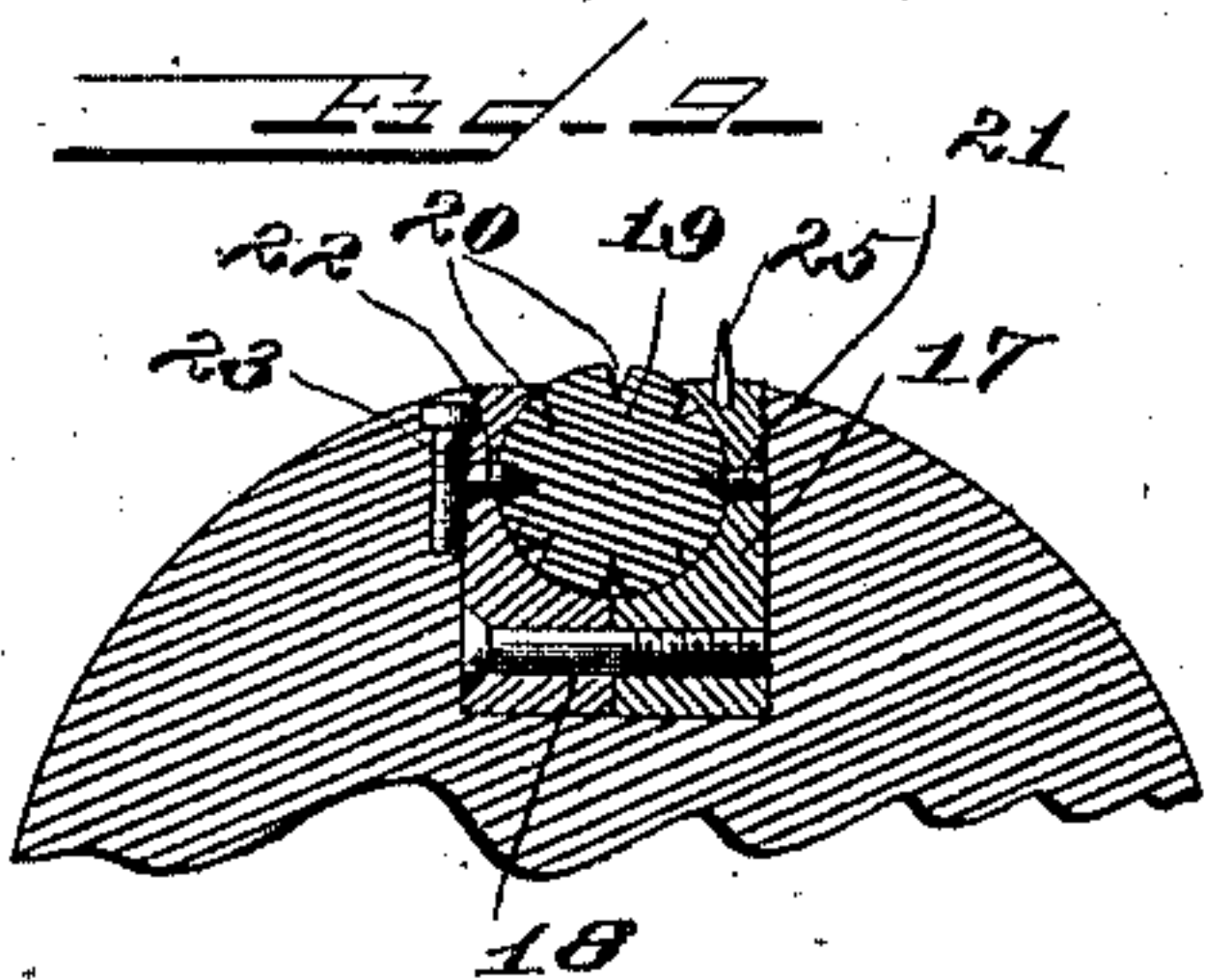
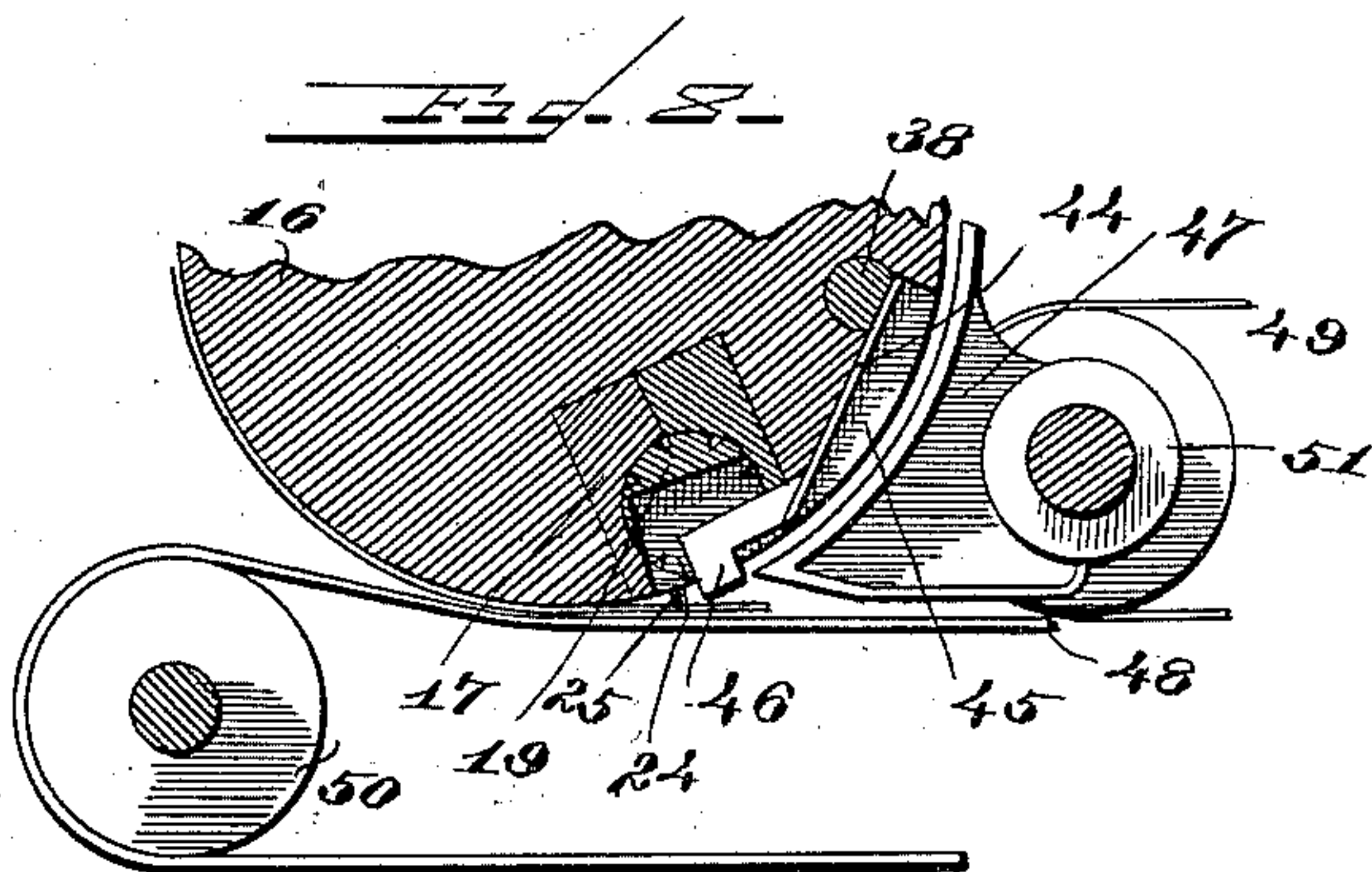
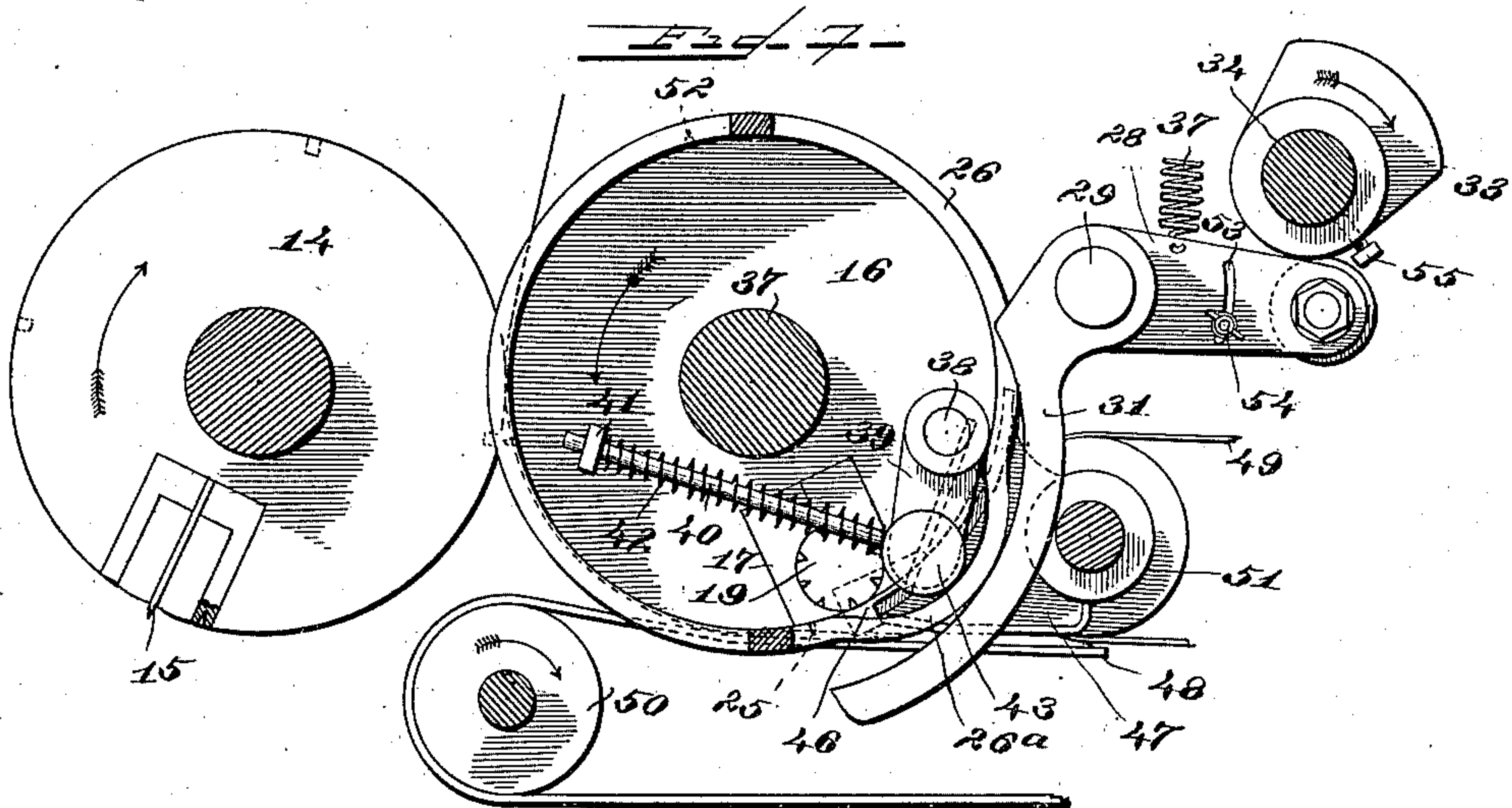
S. G. GOSS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

(Application filed Nov. 15, 1899.)

(No Model.)

4 Sheets—Sheet 4.



WITNESSES

Harold B. Bantitt.

G. A. Pauberschmitt.

INVENTOR

Samuel G. Goss.
By Bowditch, Bicknell & Jackson
His Attys.

UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF SAME PLACE.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 662,530, dated November 27, 1900.

Application filed November 15, 1899. Serial No. 737,065. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cutting and Delivery Mechanism for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to sheet cutting and delivery mechanism for printing-presses, and one object is to provide new and improved cutting-cylinders, one of which also operates as a collecting and delivery cylinder upon which two or more sheets may be successively superposed and the collected sheets disengaged and delivered superposed upon one another.

It has for a further object to provide a new and improved cutting-cylinder with new and improved devices thereon, carried thereby, and connected therewith, by means of which the sheets may be retained upon the cylinder until two or more are superposed or collected and then detached from the cylinder and delivered.

It has for a further object sundry improvements in details of sheet cutting and delivery mechanism hereinafter pointed out.

I accomplish these objects as hereinafter specified and as illustrated in the drawings.

That which I regard as new will be set forth in the claims.

Referring to the drawings, Figure 1 is a side elevation. Fig. 2 is an end elevation. Fig. 3 is a detail of the collecting and delivery cylinder with the arms for detaching the sheets from said cylinder detached. Fig. 4 is an enlarged detail, being an end view of the cutting-cylinders, showing the parts in position when the sheets are collected. Fig. 5 is an enlarged detail, being an end view of the cutting-cylinders, showing the parts in position for the detaching of the collected sheets before the fingers which operate to detach the sheets are operated. Fig. 6 is an enlarged detail, being a section through a portion of the collecting-cylinder, showing the parts in the same position as in Fig. 5. Fig. 7 is an enlarged detail, being an end view of the cutting and collecting cylinders in position to de-

liver the collected sheets and showing the parts adapted to detach the sheets in position to detach the sheets. Fig. 8 is an enlarged detail, being a section through a portion of the collecting-cylinder, showing the parts in the same position as in Fig. 7. Fig. 9 is an enlarged detail, being a cross-section through a portion of the cutting-cylinder carrying the cutting-block and showing the new and improved cutting-block; and Fig. 10 is an enlarged detail, being a side view of the block in which the cutting-rubber is supported removed from the cylinder.

11 12 indicate the last pair of form and impression cylinders of a printing-press, which may be of any form and construction, the dotted line showing the web passing between the same.

13 indicates an intermediate gear.

14 indicates a male cutting-cylinder, which in the drawings is shown of one-half the diameter of the impression-cylinder 12 and carries a knife 15, which may be of any approved form and construction. As shown, the cutting-cylinder is adapted to cut twice for each revolution of the printing-couples 11 12, and this is the way in which I prefer to construct the machine, although of course it may be arranged to cut once with every revolution of the printing-couples or any other number of times.

16 indicates a female cutting-cylinder, which coacts with the cutting-cylinder 14 to sever the web transversely as it passes between them.

Referring particularly to Figs. 9 and 10, 17 indicates a supporting-block which is adapted to fit into a suitable recess in the cutting-cylinder 16 and is formed of two parts held together by screws 18 in order that the cutting-block, hereinafter described, may be inserted in place. Each half of the supporting-block 17 is provided with a groove nearly semicircular in cross-section, so that when the two parts of the block 17 are fastened together, as above described, a cylindrical groove is formed therein open at the top and adapted to receive and retain a cutting-block 19. The cutting-block 19 is circular and may be provided on its periphery with a number

of grooves 20, which extend longitudinally of said cutting-block 19 and are adapted to co-act with the cutting-knife. It is not necessary, however, to cut these grooves in the block beforehand, as the knife may be left to form them as it operates. The cutting-block 19 is preferably made of rubber or wood; but it may be made of any suitable material. 21 22 indicate pins which are adapted to pass through the sides of the supporting-block 17 and engage with the block 19 to prevent its rotation. The block 17 is held in place by set-screws 23, which are countersunk in the cutting-cylinder 16 and whose heads engage with a shoulder on said block, so as to hold it in position. When the block 19 becomes worn with the cutting-knife and the grooves are made too large by the action of the knife, the block 17 may be removed from the cylinders and the cutting-block 19 partially rotated to bring into operation another part of its surface. The supporting-block 17 is provided with a number of transverse slots 24, as is best shown in Fig. 10, for the purpose hereinafter described. 25 indicates pins carried by the supporting-block 17, which engage the lead edge of the sheet as the web passes between the cutting-cylinders and retain said leading edge upon the cylinder 16 until disengaged, as hereinafter described.

Referring to the other figures of the drawings, 26 indicates a ring which is secured to the framework 27 of the machine concentric with the cutting-cylinder 16. The inner surface of the ring 26 is throughout most of its periphery circular, but is provided with a cam portion 26^a, which bends outwardly from the periphery of the circle formed by the rest of the interior surface of the ring 26.

28 indicates a lever which is journaled upon a shaft 29, mounted in the framework 27 of the machine, composed of two arms 30 31.

32 indicates a roller which is journaled upon the outer end of the arm 30.

33 indicates a cam which is secured by a set-screw 55 to a shaft 34, which is journaled in the framework 27 of the machine.

35 indicates a gear-wheel which is keyed upon the shaft 34 and meshes with a gear-wheel 36, which is keyed upon a shaft 37, on which the cutting-cylinder 16 is carried and which is indicated by dotted lines in Fig. 1. The gear-wheel 35 is shown as twice the diameter of the gear-wheel 36 and is driven by the gear-wheel 36, whereby the gear-wheel 35 is given one revolution for every two revolutions of the gear-wheel 36 and the cutting-cylinder 16. This will be the proportions between said wheels when two sheets are designed to be collected, as hereinafter described. In case three or four or more sheets are designed to be collected before being delivered the relative diameters will be varied, of course, accordingly. The arm 31 of the lever 28 is curved, and the curved surface which faces toward the cutting-cylinder 16 is in the arc of a circle of the same radius as the

ring 26, and the lever 28 is so placed upon the shaft 29 that the arm 31 lies close beside the ring 26, as is best shown in Fig. 2.

37 indicates a retractile spring which is connected with the arm 30 of the lever 28 and with any appropriate part of the framework of the machine in such a way as to normally swing the arm 31 upward and hold the parts in the position shown in Figs. 5 and 7 until the said arm is forced down by the operation of the cam 33, which rotates in the direction of the arrow in Figs. 4, 5, and 7.

38 indicates a shaft which is journaled in and carried by the cylinder 16.

39 indicates an arm which is keyed upon the shaft 38 exterior to the cylinder 16, as is best shown in Fig. 2.

40 indicates a pin, one end of which is secured to the arm 39, and the other end passes through a lug 41, which is secured to one end of the cutting-cylinder 16.

42 indicates a spiral spring which surrounds the pin 40 and bears against the lug 41 and the arm 39.

43 indicates a roller which is journaled upon the outer end of the arm 39 and is adapted to bear against the inner periphery of the ring 26, being kept in contact therewith by the expansive force of the spring 42. The roller 43 extends outward beyond the outer surface of the ring 26, as is best shown in dotted lines in Fig. 2, so as to engage with the circular inner surface of the bent arm 31 when the same is in position, as shown in Fig. 4.

44 indicates fingers which are secured to the shaft 38 within the cylinder 16 and are adapted to pass freely in and out of openings 45 in said cylinder, said openings being best shown in Fig. 3. The outer ends of said fingers 44 enter and move freely in the slots 24 in the supporting-block 17 and cutter-block 19. The outer arms of said fingers are provided each with a head 46, as best shown in Figs. 6 and 8. The heads 46 lie within the slots 44 in the position best shown in Figs. 6 and 8.

47 indicates a stripper which is so located with respect to the cylinder 16 that when the sheets are being collected they will pass between the point of the stripper and the cylinder; but when the leading edge of the superposed sheets is detached from the cylinder, as hereinafter described, they will be stripped from the cylinder.

48 49 indicate tapes carried upon suitable rollers, two of which, 50 51, are shown, between which tapes the sheets stripped from the cylinder are carried away. It is obvious, of course, that any other well-known means instead of the tapes 48 49 may be used.

52 indicates pins which are placed in line with each other and in a plurality of rings on the periphery of the cylinder 16 in position to engage the central and side margins of the paper and to assist in retaining the same upon the cylinder 16 until stripped therefrom, as hereinafter described.

The operation of these devices is as follows: The leading edge of the paper being engaged by the pins 25, the paper is carried around by the rotation of the cylinder 16 and is severed transversely into sheets by the operation of the cutting mechanism above described. The parts are so adjusted that the cam 33, bearing upon the roller 32, holds the lever 28 in the position shown in Fig. 4. As the cylinder rotates, the roller 43 on the arm 39 engages with the circular inner surface of the arm 31 of the lever 28, which, as I have said above, is in the arc of a circle whose radius is the same as that of the ring 26, and when the parts are in the position shown in Fig. 4 the inner surface of the ring 26 and of the arm 31 form a complete circle, whereby the roller 43 is prevented from being forced into the cam portion 26^a of the ring 26 by the operation of the spring 42, and the fingers 44 are thus held in the position shown in Figs. 4, 5, and 6 within the outer surface of the cutter-block 19. The movement of the cam 33 is so timed that it bears upon the roller 32 during one rotation of the cutting-cylinder 16 while one sheet is passing around it, the sheet being held to the surface of the cylinder 16 by the pins 52. As the rotation continues the lead edge of the second sheet is engaged by the pins 25 as the sheet passes between the cutting-cylinders 14 and 16. The movement of the several parts is so timed that the cam 33 in its rotation passes free from the roller 32, leaving the spring 37 free to operate, whereby the lever 28 is thrown, by the action of the spring 37, into the position shown in Figs. 5 and 7, so that the curved arm 31 is moved away from its former relationship with the ring 26, leaving the roller 43, as the rotation continues, free to be forced into the cam portion 26^a of the ring 26 by the operation of the spring 42. When the roller 42 is thus forced into the cam portion 26^a of the ring 26 by the operation of the spring 42, the shaft 38 is partially rotated, throwing the fingers 44 outward into the position shown in Figs. 7 and 8. The heads 46 upon the fingers 44 striking the leading edge of the two superposed sheets force the edge from the pins downward upon the tapes 48, as is shown in Fig. 8, and by the operation of the stripper 47 the two superposed sheets are stripped from the cylinder, the stripper 47 being so located with reference to the cam portion 26^a of the ring 26 as to engage the leading edge of the sheet and strip it from the cylinder when it is struck down from the pins by the operation of the fingers 44.

I have shown and described the above devices as operating to collect two sheets, and to that end the cam 33, as I have said above, is geared so as to make one revolution for two revolutions of the cylinder 16. In case it should be desired to collect three sheets the gearing would be so constructed that the cam 33 would rotate once for every three revolutions of the cylinder 16. If it were desired

to collect four sheets, the cylinder 16 would make four revolutions to one revolution of the cam 33, and so on in accordance with the number of sheets which it is desired to collect.

In case it is desired to use the machine for the delivery of single sheets—that is to say, not to use the cylinder 16 in collecting the sheets—I have provided the arm 30 of the lever 28 with a curved slot 53, through which passes a set-screw 54, by means of which the lever 28 may be locked in the position shown in Fig. 7, the cam 33 being slipped to one side, so as not to engage with the roller 32. The lever 28 being thus held in this position, the arm 31 is moved away from the ring 26, leaving the roller 43 free to be forced into the cam portion 26^a of the ring 26 with each revolution of the cylinder 16, so that each sheet is stripped from the cylinder 16 by the stripper 47.

It is obvious that the apparatus for detaching the sheet from the pins above described may be used with any kind of a cutting-block. In case an ordinary cutting-block is used it will be provided with grooves or recesses corresponding with the grooves 24 in the supporting-block 17. In case a revoluble cutter-block is used, such as I have described above, the cutting-block will be made in sections slightly separated from one another, as is indicated in Fig. 10, so as to permit the entry of the fingers 46 between them.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a cylinder provided with pins adapted to impale the lead edge of a sheet, a shaft journaled in said cylinder, fingers mounted on said shaft and adapted, when operated, to disengage said sheet from said pins, and an arm mounted on said shaft, of means for intermittently causing the end of said arm to travel in a circular path and to temporarily swing away from said circular path as said cylinder rotates, to partially rotate said shaft, substantially as described.

2. The combination with a cylinder provided with pins adapted to impale the lead edge of a sheet, and fingers carried by said cylinder and adapted, when operated, to disengage the lead edge of said sheet from said pins, of a fixed ring concentric with said cylinder and having in its interior surface a cam portion, a lever having a curved arm adapted to coact with said ring at said cam portion to form a complete circle, mechanism for intermittently operating said lever to throw its curved arm into and out of coaction with said ring, and mechanism connected with said fingers and adapted to contact the interior surface of said ring and of said curved arm when the same is in coöperative position with said ring, and to intermittently operate said fingers to disengage said sheet from said pins, substantially as described.

3. The combination with a cylinder provided with pins adapted to impale the lead

edge of a sheet, a shaft journaled in said cylinder, and fingers mounted on said shaft and adapted, when operated, to disengage said sheet from said pins, of a fixed ring concentric with said cylinder and having a cam portion on its interior surface, a spring-seated arm mounted on said shaft and adapted at its outer end to contact the inner surface of said ring as said cylinder rotates, and means for intermittently preventing the end of said arm from contacting said cam portion of said ring and causing the same to follow a completely circular path as said cylinder rotates, substantially as described.

4. The combination with a cutting-cylinder provided with pins adapted to impale the lead edge of a sheet, a shaft journaled in said cylinder, and fingers mounted on said shaft and adapted, when operated, to disengage the lead edge of said sheet from said pins, of a fixed ring concentric with said cylinder and provided with a cam portion, a spring-seated arm mounted on said shaft and adapted, at its outer end, to contact with said ring as said cylinder rotates, and, when left free, to contact the

cam portion of said ring, a curved lever adapted to coact with the interior of said ring to form a completely circular bearing for said arm, and a cam adapted to intermittently bear on said lever and throw the curved portion thereof away from coaction with said ring, substantially as described.

5. The combination with a cutting-cylinder adapted to act as a collecting-cylinder, of pins arranged in a plurality of rings on the periphery of said cylinder and adapted to impale a sheet at intervals throughout its length, substantially as described.

6. The combination with a cutting-cylinder adapted to act as a collecting-cylinder, of pins arranged in a plurality of rings on the periphery of said cylinder and adapted to impale the side and middle margins of a sheet at intervals throughout the length of the sheet, substantially as described.

SAMUEL G. GOSS.

Witnesses:

JULIA M. BRISTOL,
A. H. ADAMS.