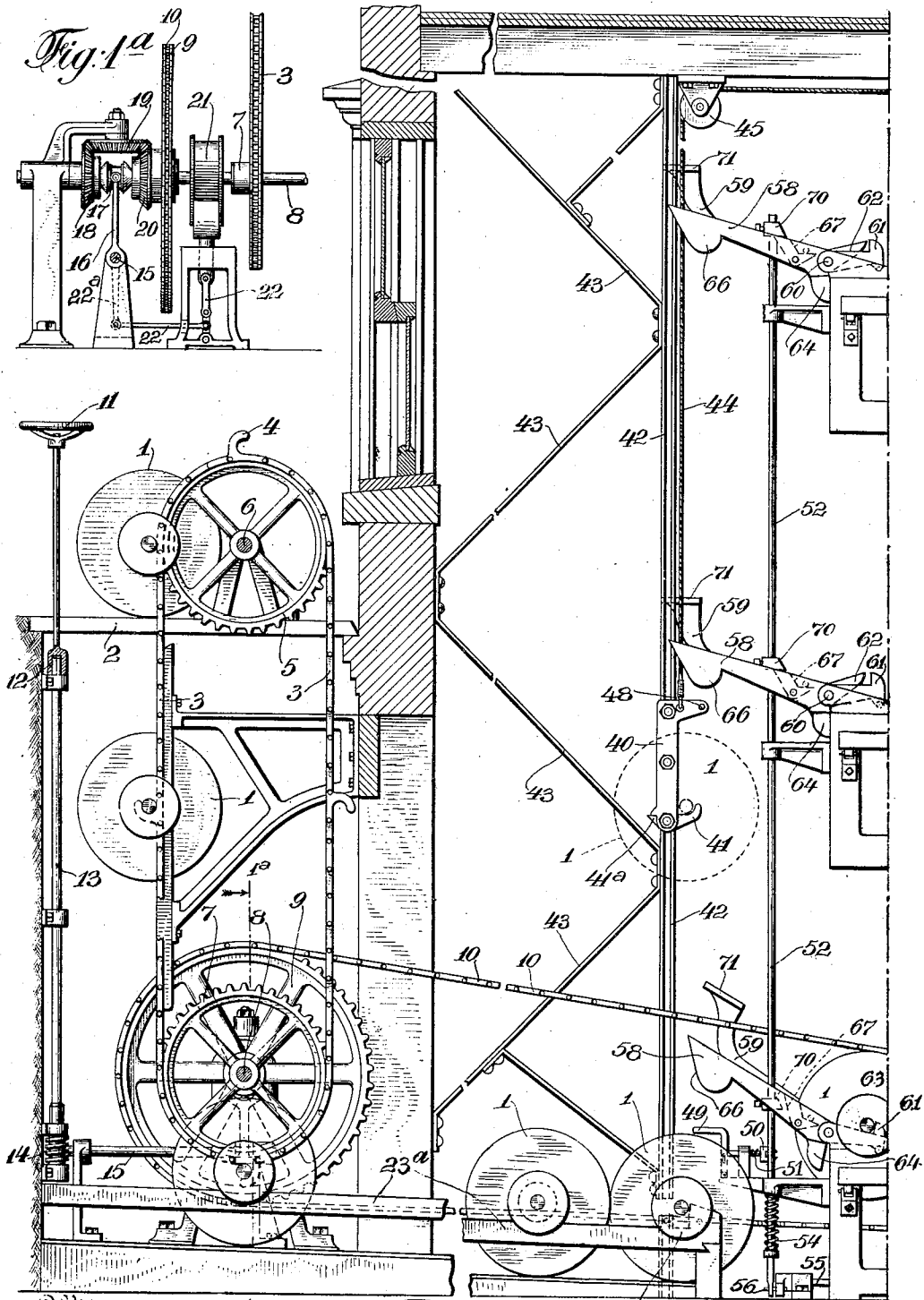




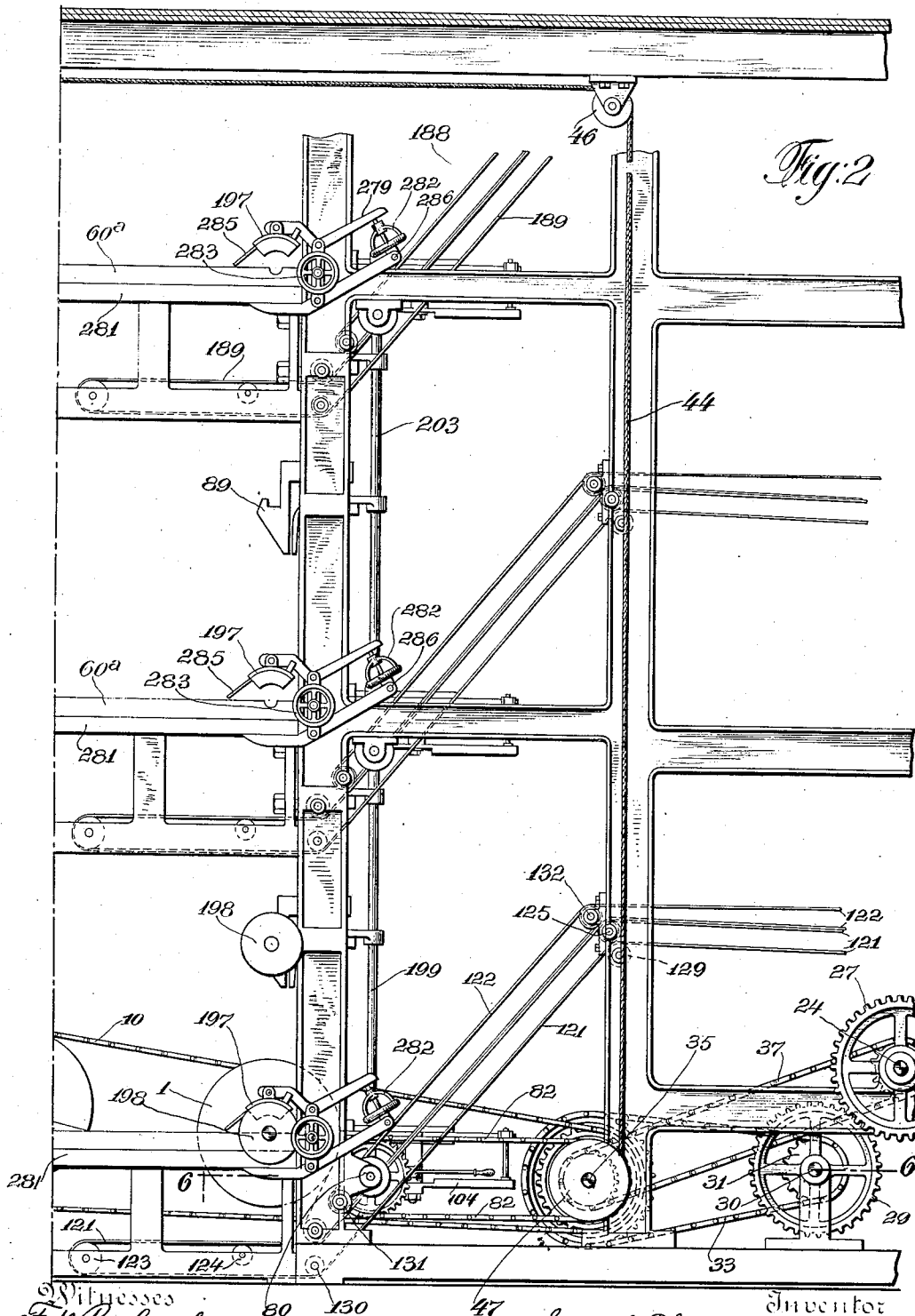
Witnesses
 F. N. Roehrich
 John J. Kitts

Fig. 1

Inventor
 Samuel Thomas Walkup
 By his Attorneys
 Kenyon & Kenyon

S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.
 Patented Jan. 7, 1913.
 22 SHEETS—SHEET 2.

1,050,047.



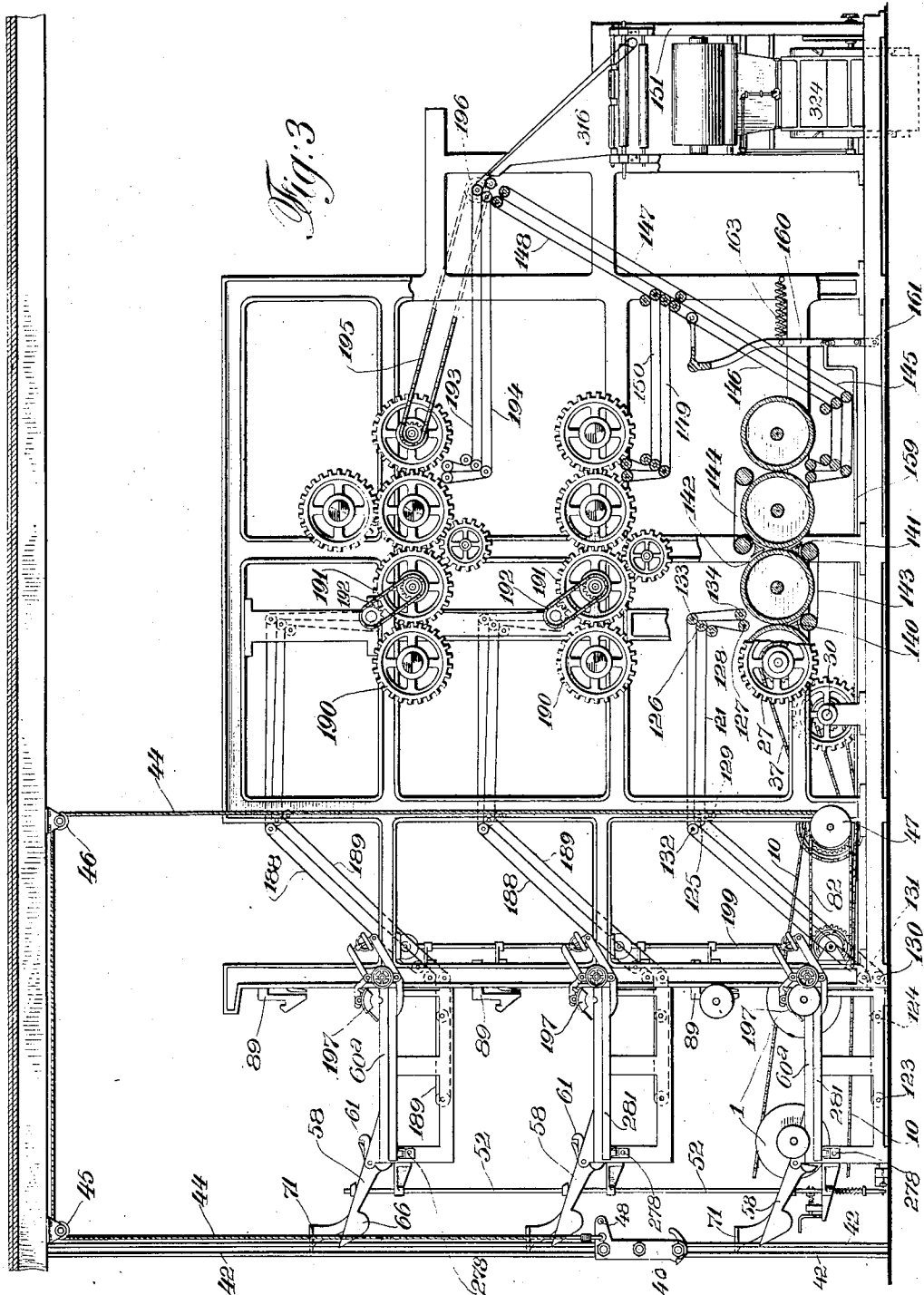
Witnesses
F. H. Roehrich
John J. Kittles

Inventor
Samuel Thomas Walkup
 By his Attorneys
Kenyon & Kenyon.

S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.
 22 SHEETS—SHEET 3.



Witnesses
F. H. Roehrich
John J. Kittles

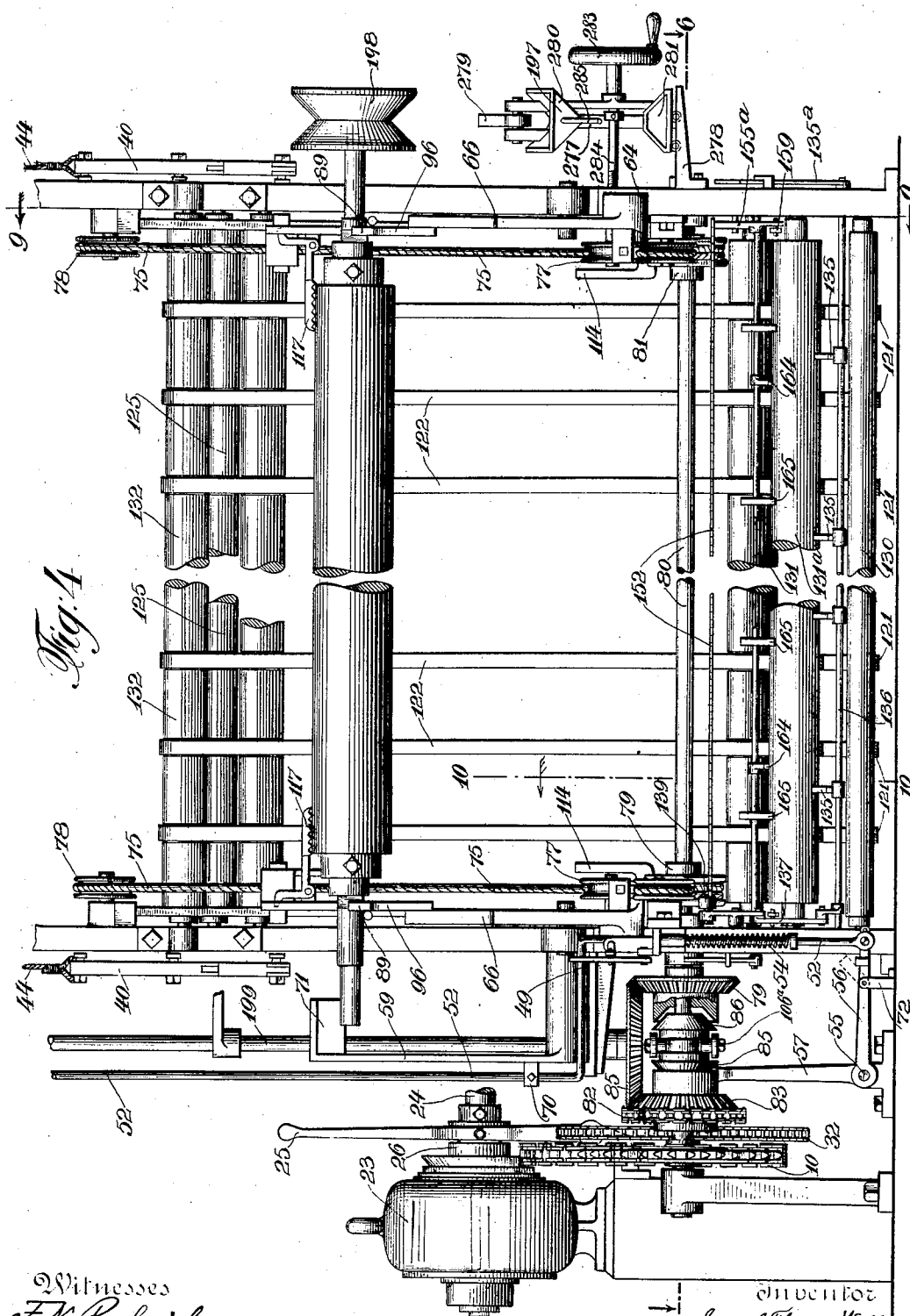
Inventor
Samuel Thomas Walkup
 By his Attorneys
Kenyon & Kenyon

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

Patented Jan. 7, 1913.

22 SHEETS--SHEET 4.

1,050,047.



Witnesses
F. N. Roehrich
John J. Kittles

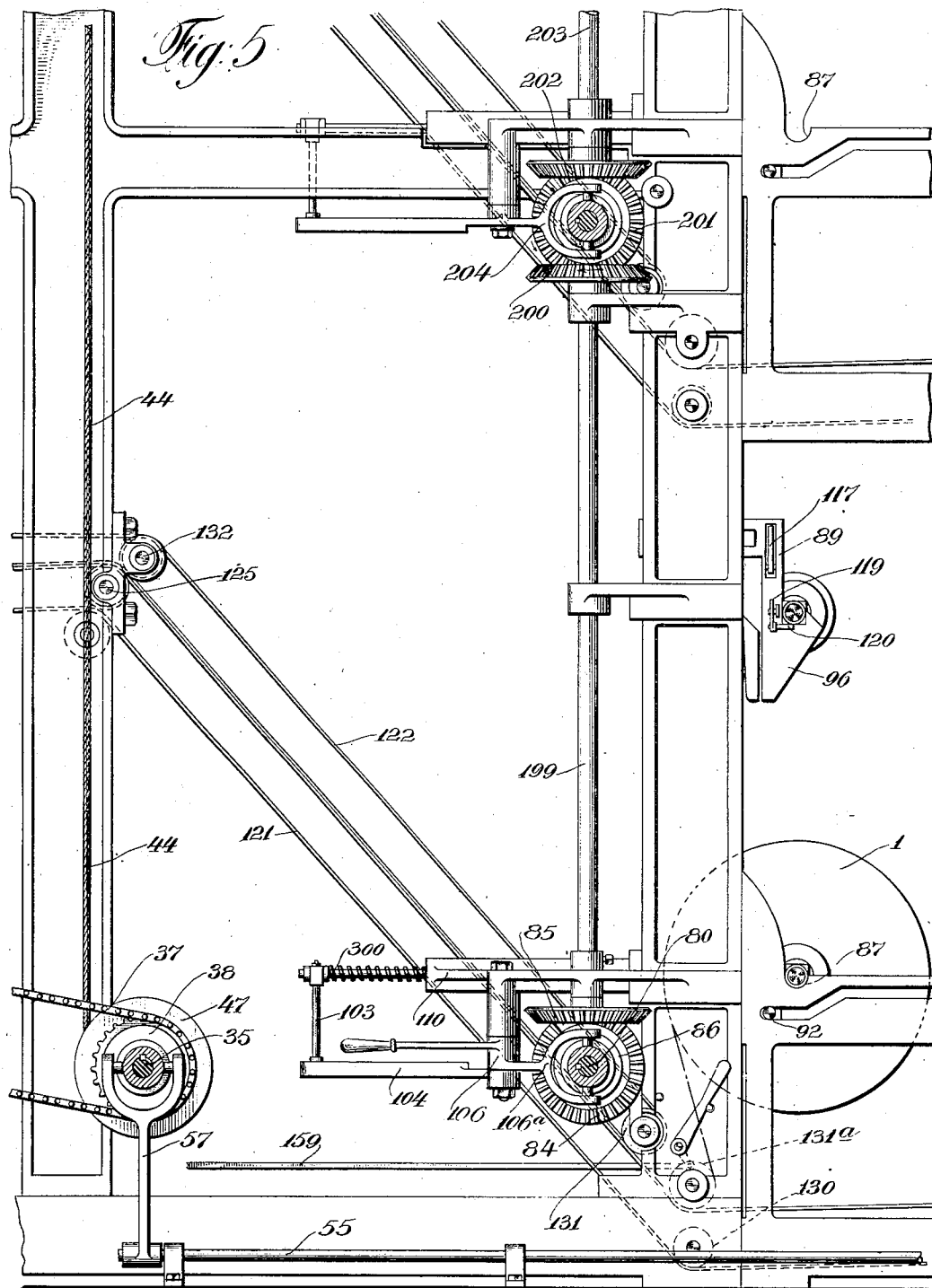
Indemnitor
→ Samuel Thomas Walkeup.
By his Attorneys
Kenyon & Kenyon

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 5.

1,050,047.



Witnesses
T. N. Roehrich
John J. Kittler

Inventor
Samuel Thomas Walker
By his Attorneys
Kinzon & Kinzon

S. T. WALKUP.

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 6.

1,050,047.

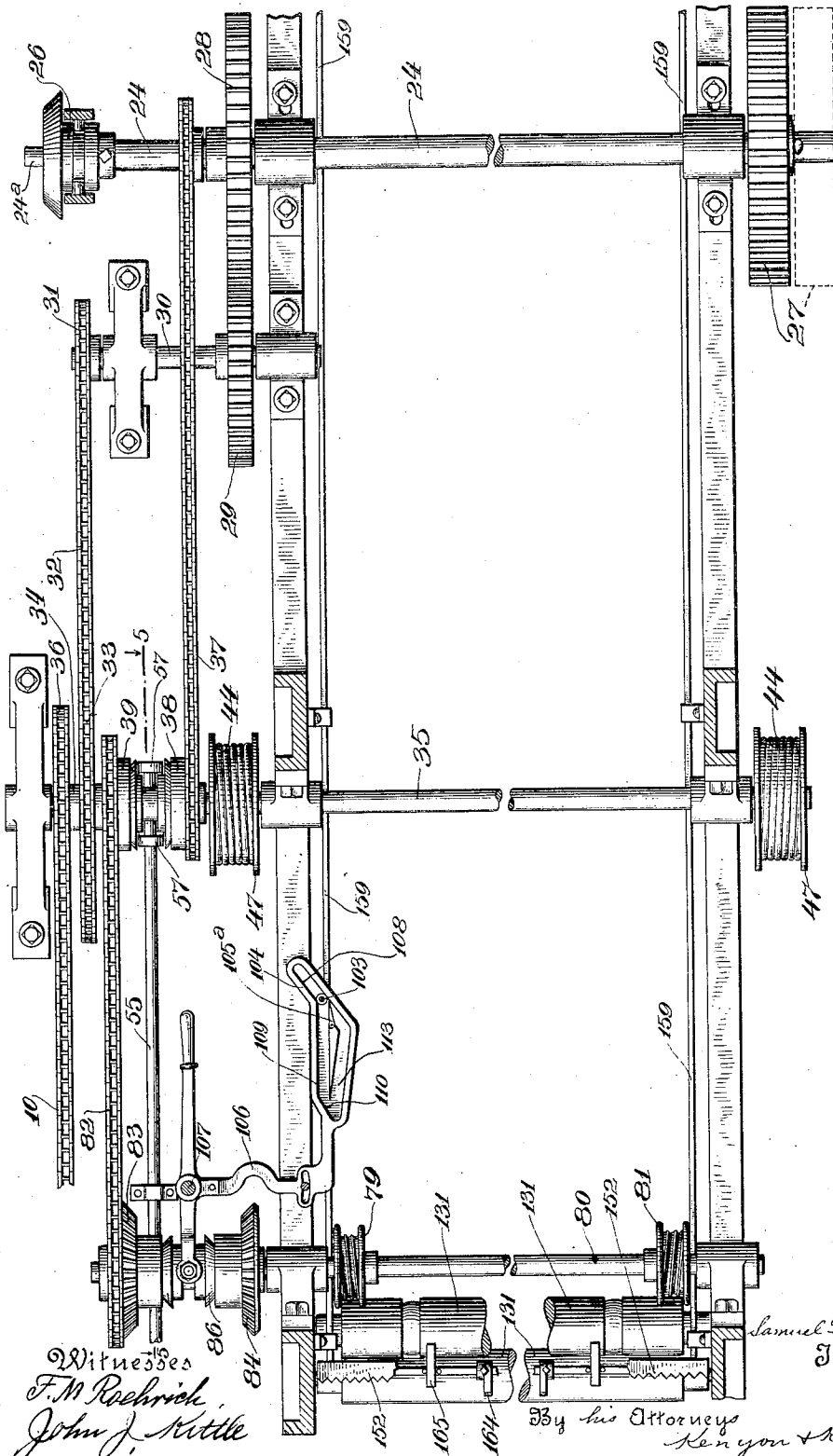


Fig. 6

Witnesses
F. M. Roehrich
John J. Kittle

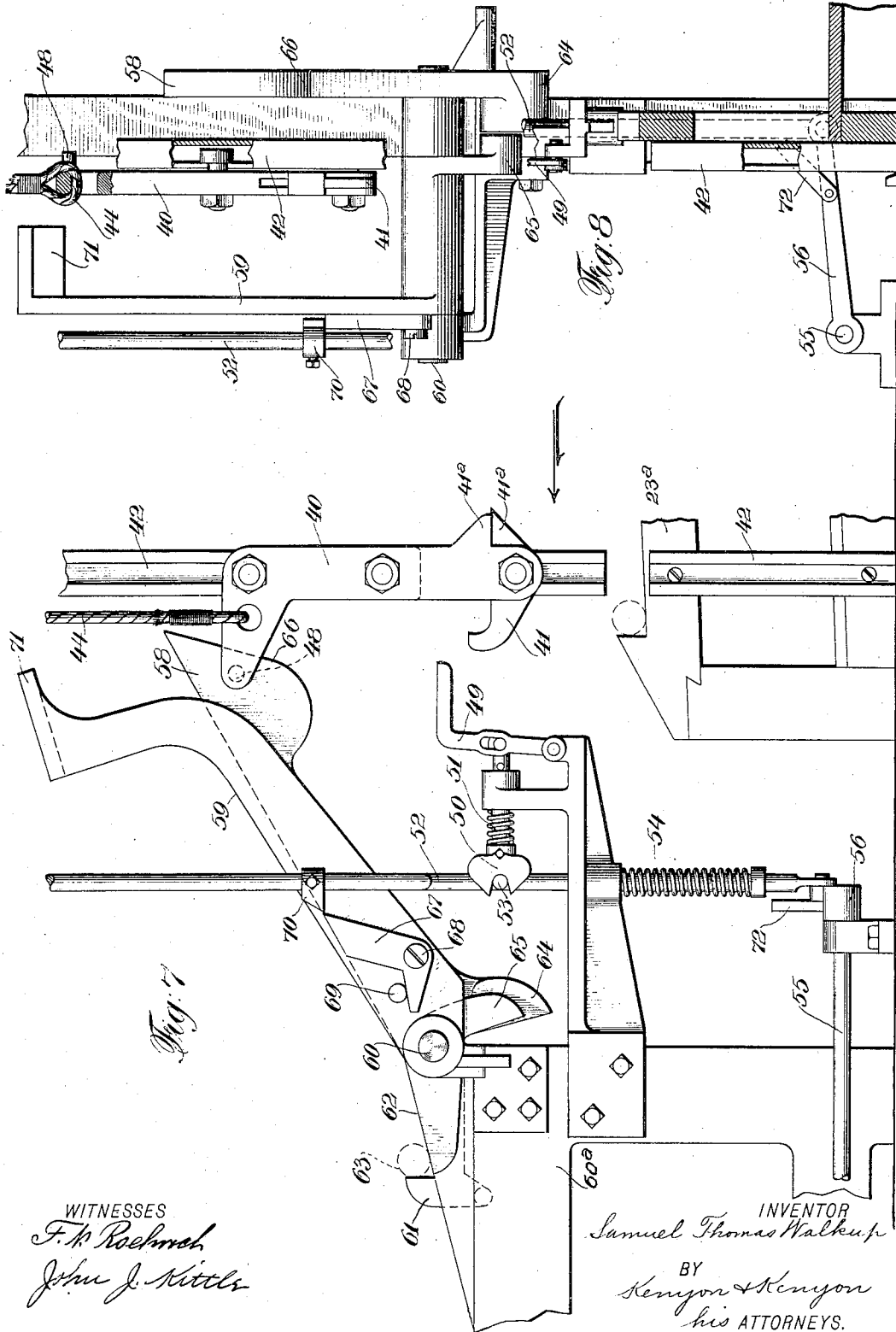
Samuel Thomas Walkup
Inventor

By his Attorneys
Kenyon & Kenyon

S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.
 22 SHEETS—SHEET 7.



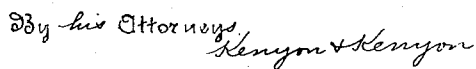
WITNESSES
F. R. Roehmer
John J. Kittler

INVENTOR
Samuel Thomas Walkup
 BY
Kenyon & Kenyon
 his ATTORNEYS.

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES

Patented Jan. 7, 1913.

1,050,047.

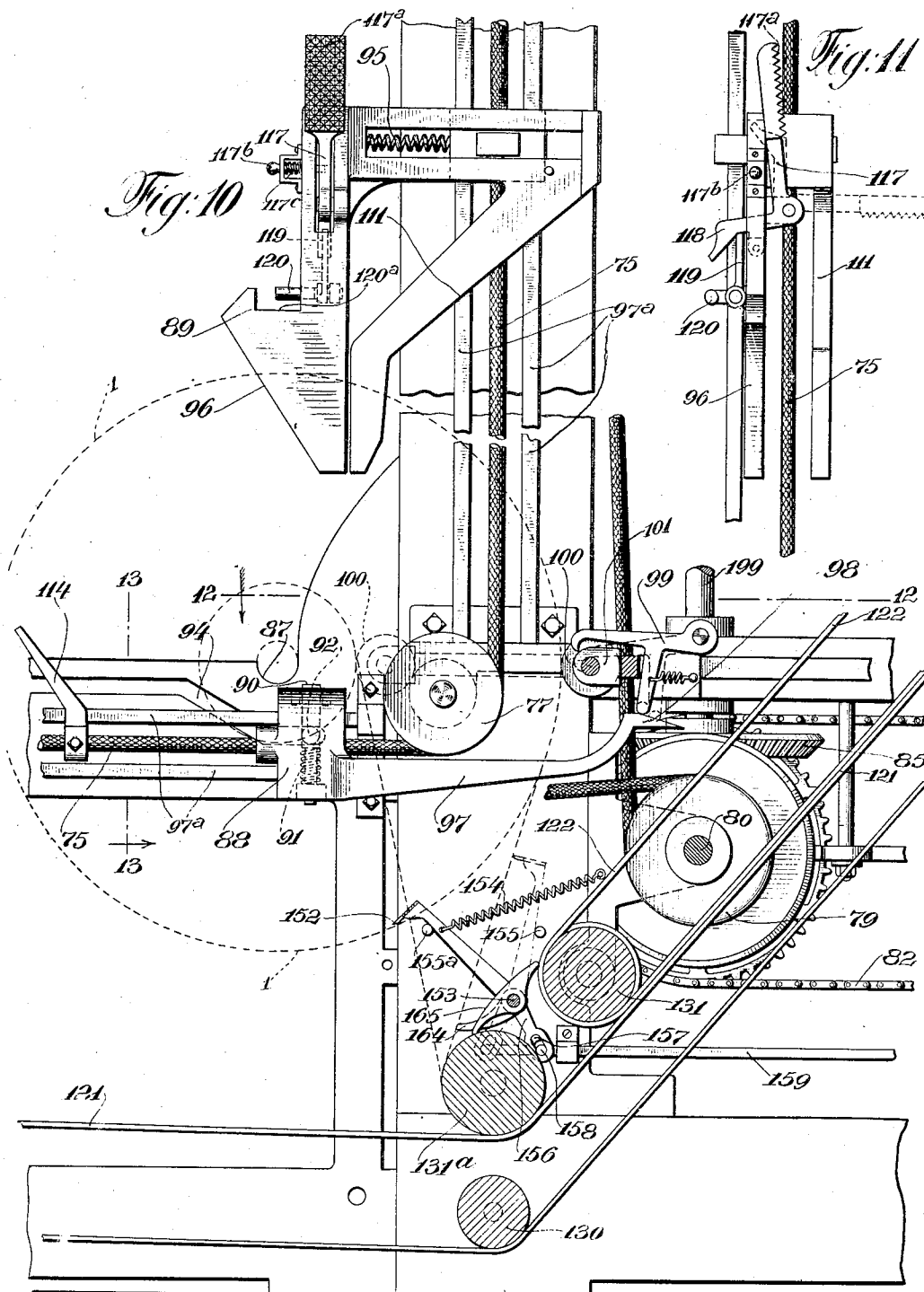


Witnesses
F. K. Roehrich
John J. Kittels

S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.
 22 SHEETS—SHEET 9.



Witnesses
 F. M. Roehrich
 John J. Kittles

Inventor
 Samuel Thomas Walkup
 By his Attorneys
 Kenyon & Kenyon

S. T. WALKUP.

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 10.

1,050,047.

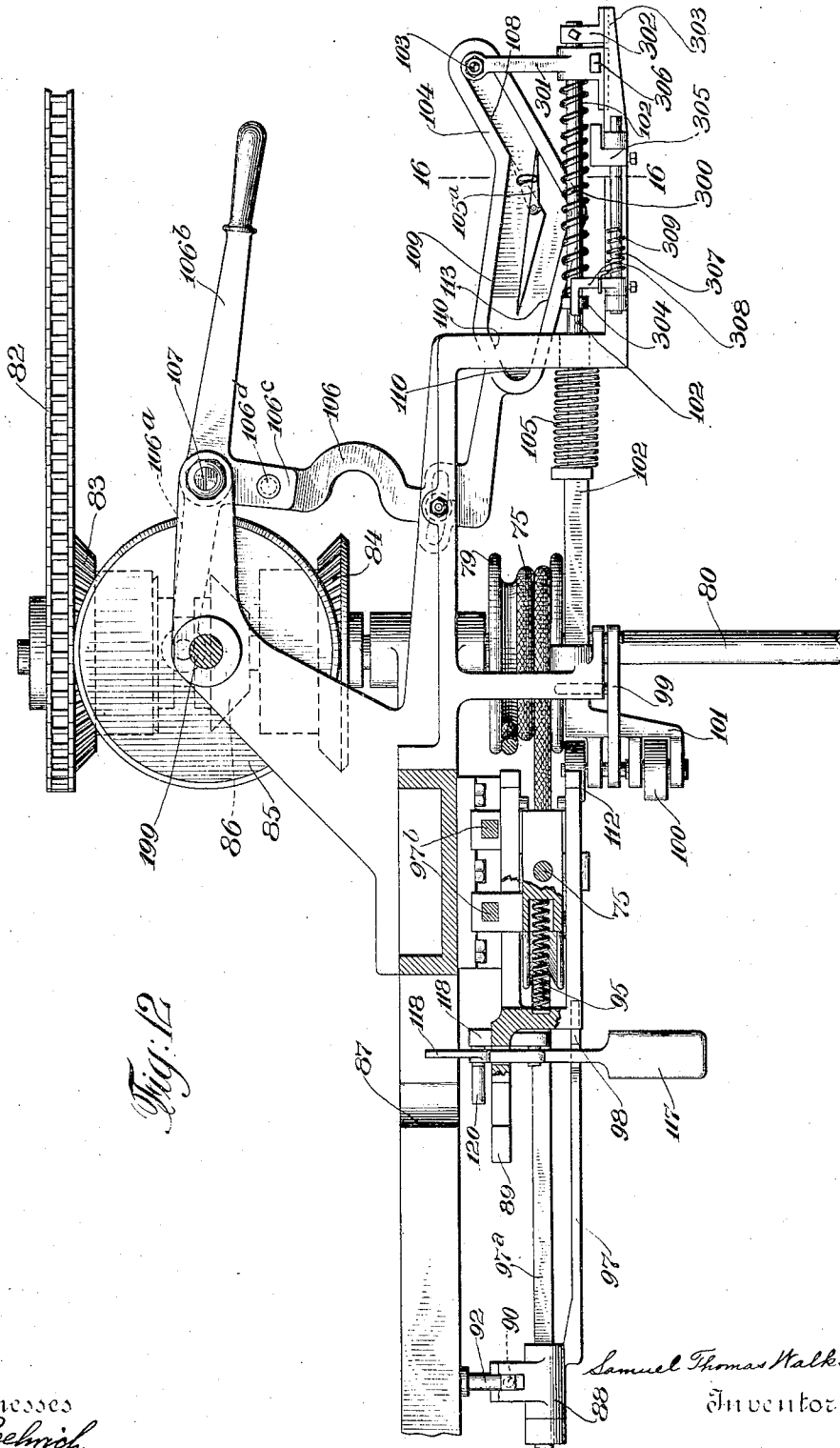


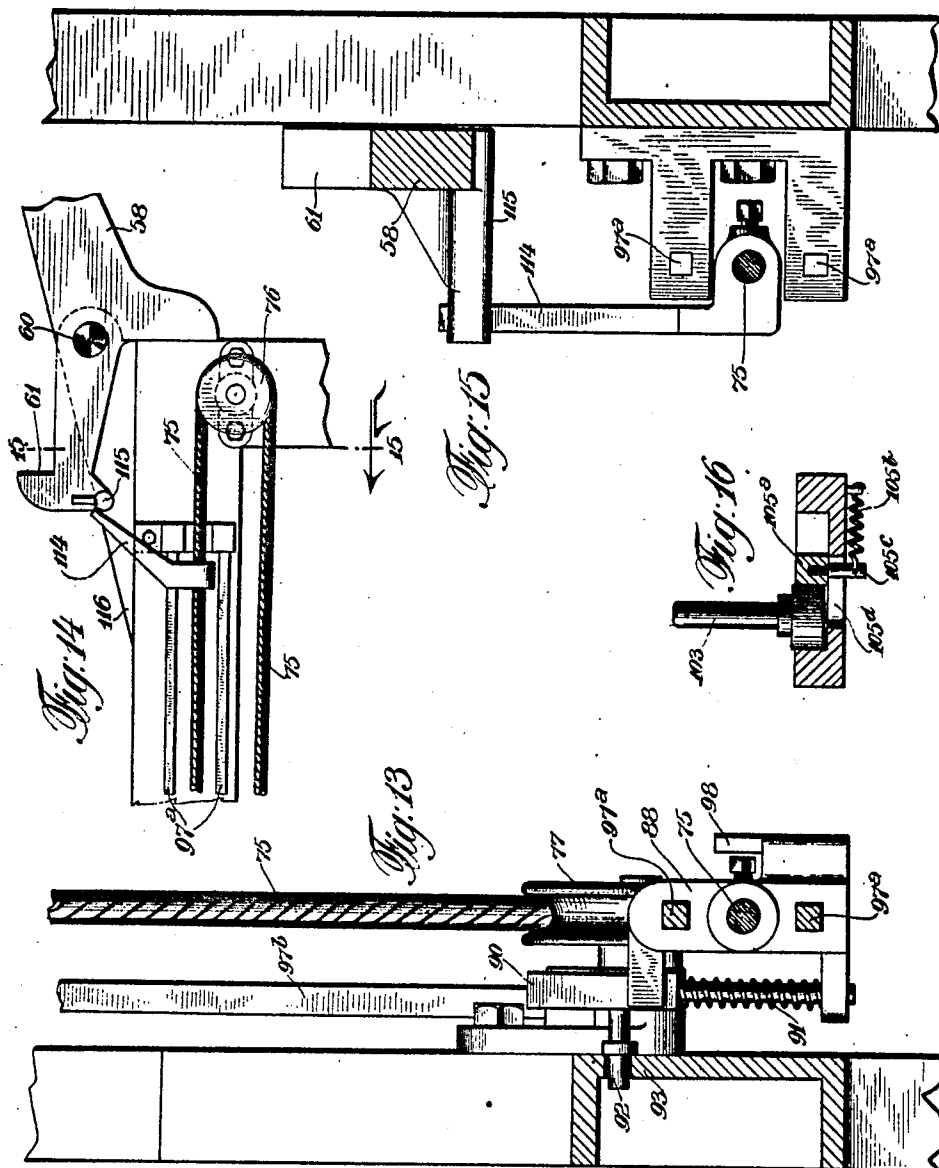
Fig. 12

Witnesses
F. M. Roehrich
John J. Kittle

Samuel Thomas Walkup
Inventor
By his Attorney
Kenyon & Kenyon

S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.
 22 SHEETS—SHEET 11.



Witnesses
 F. M. Roehrich
 John J. Kittles

Samuel Thomas Walkup
 Inventor

By his Attorneys
 Kenyon & Kenyon

22 SHEETS—SHEET 12.

Samuel Thomas ^{Inventor} Halkup
By his Attorneys
Kenyon & Kenyon

S. T. WALKUP.

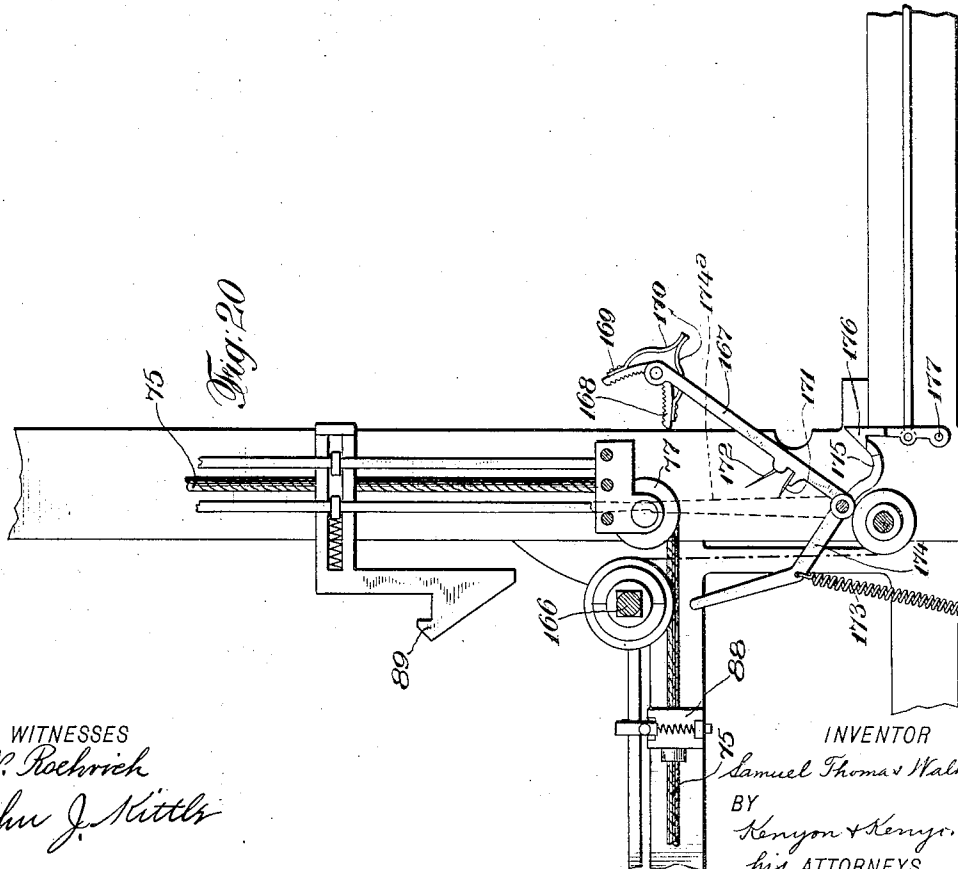
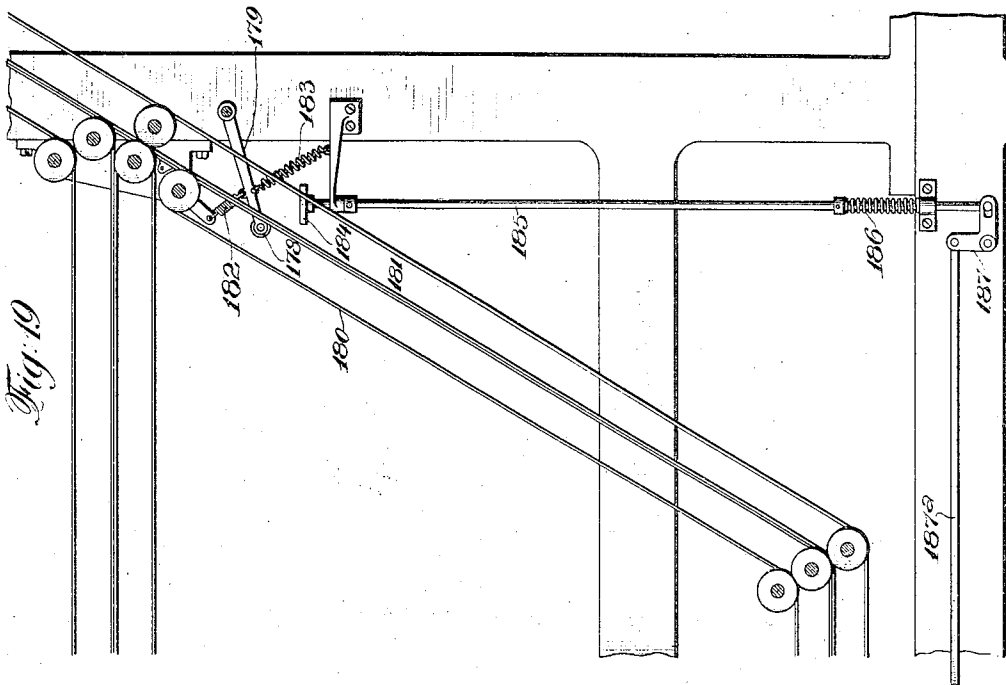
MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 13.



WITNESSES

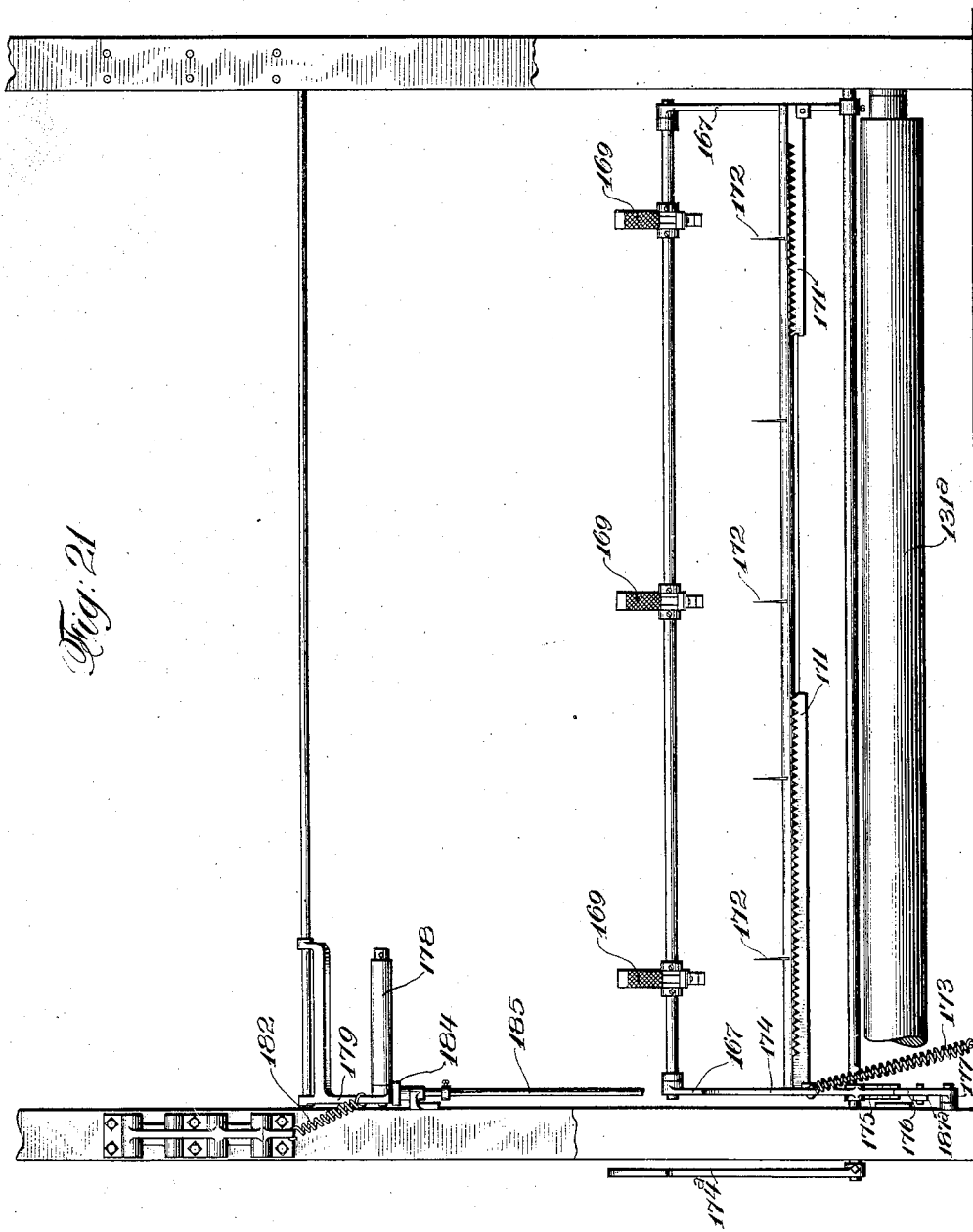
F. N. Roehrich

John J. Kittles

INVENTOR

Samuel Thomas Walkup

BY
Kenyon & Kenyon
his ATTORNEYS.



WITNESSES
F. N. Rockrich
John J. Kittles

INVENTOR
Samuel Thomas Walkup
 BY
Kenyon & Kenyon
 his ATTORNEYS.

S. T. WALKUP.

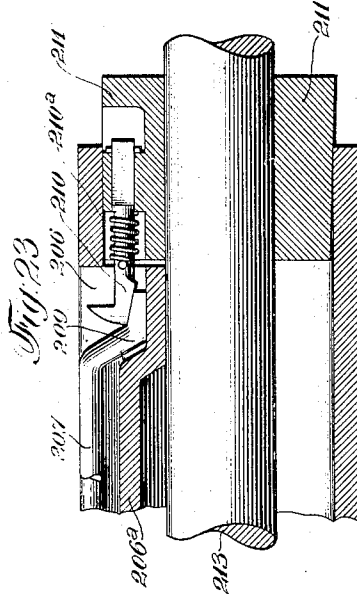
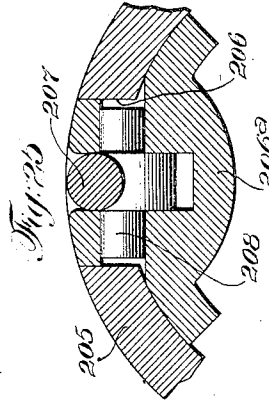
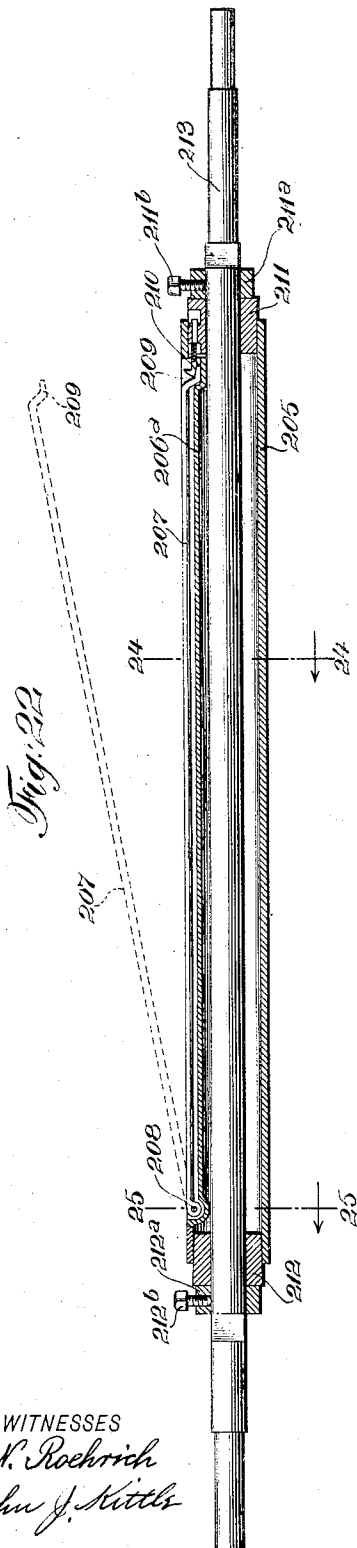
MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 15.

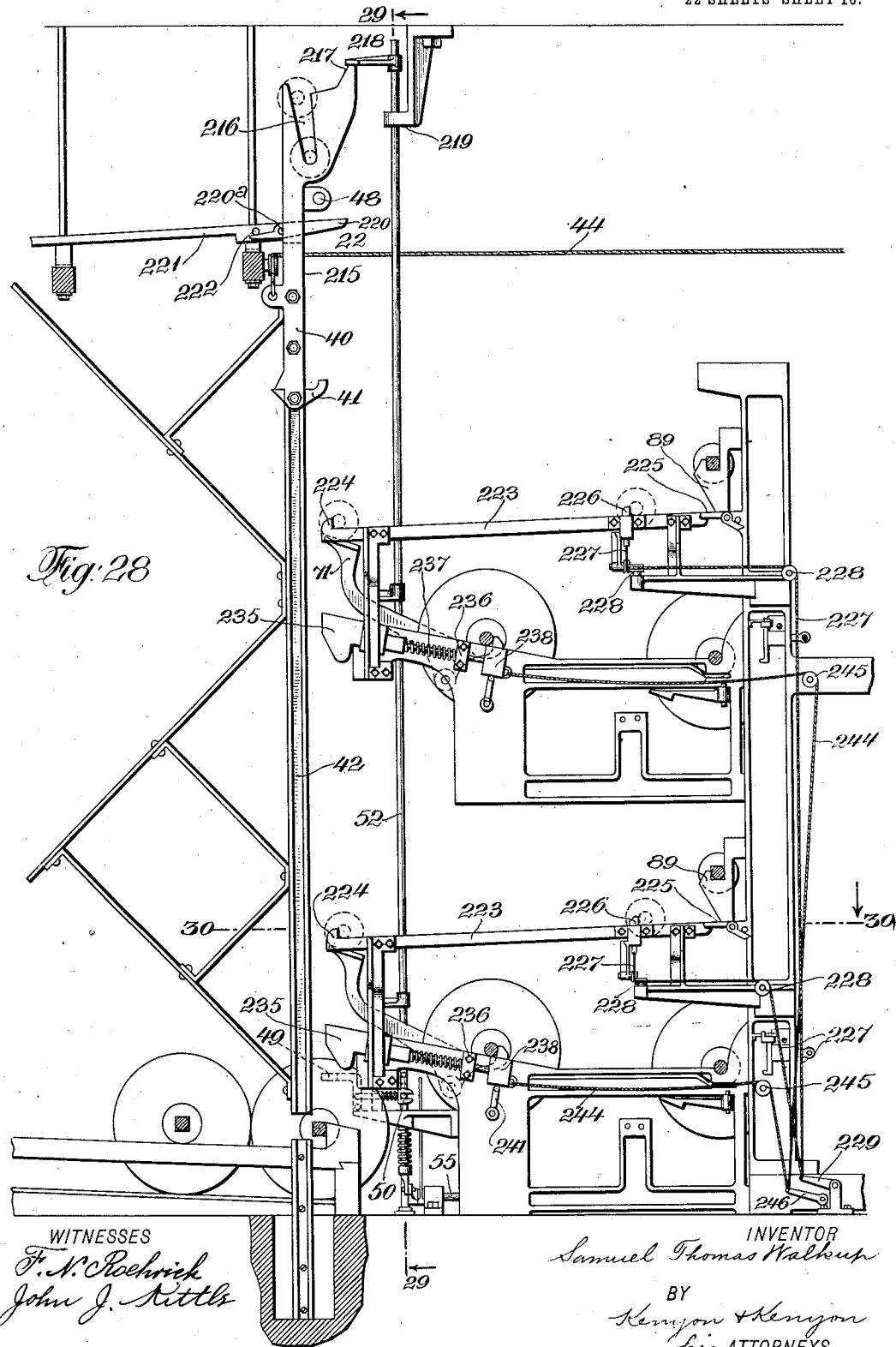
1,050,047.



S. T. WALKUP.
 MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.
 APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.
 22 SHEETS—SHEET 16.



S. T. WALKUP.

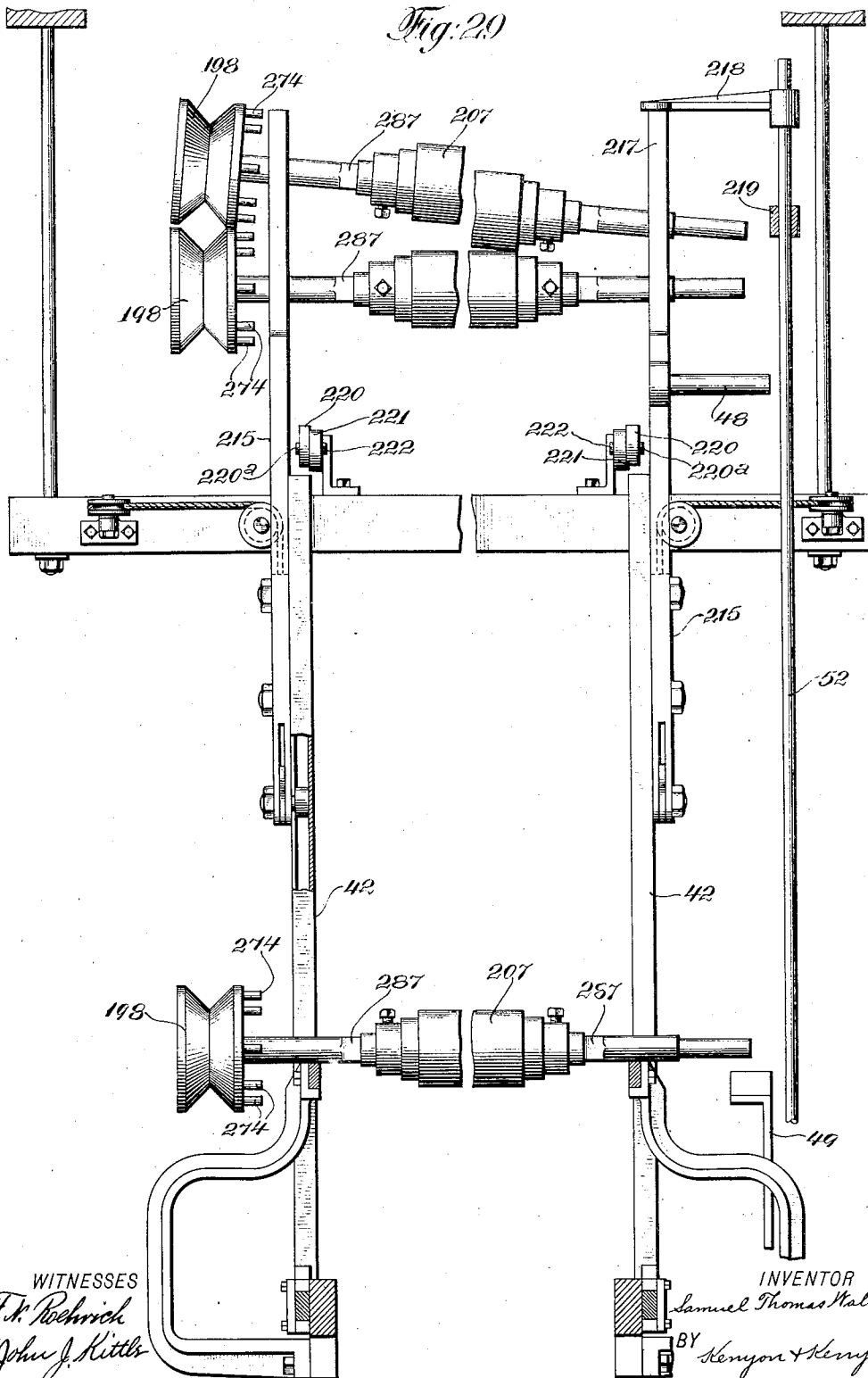
MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

1,050,047.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 17.



MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

Patented Jan. 7, 1913.

1,050,047.



F. W. Roehrich
John J. Kittles

INVENTOR
Samuel Thomas Walkeup

BY
Kenyon & Kenyon
his ATTORNEYS.

S. T. WALKUP.

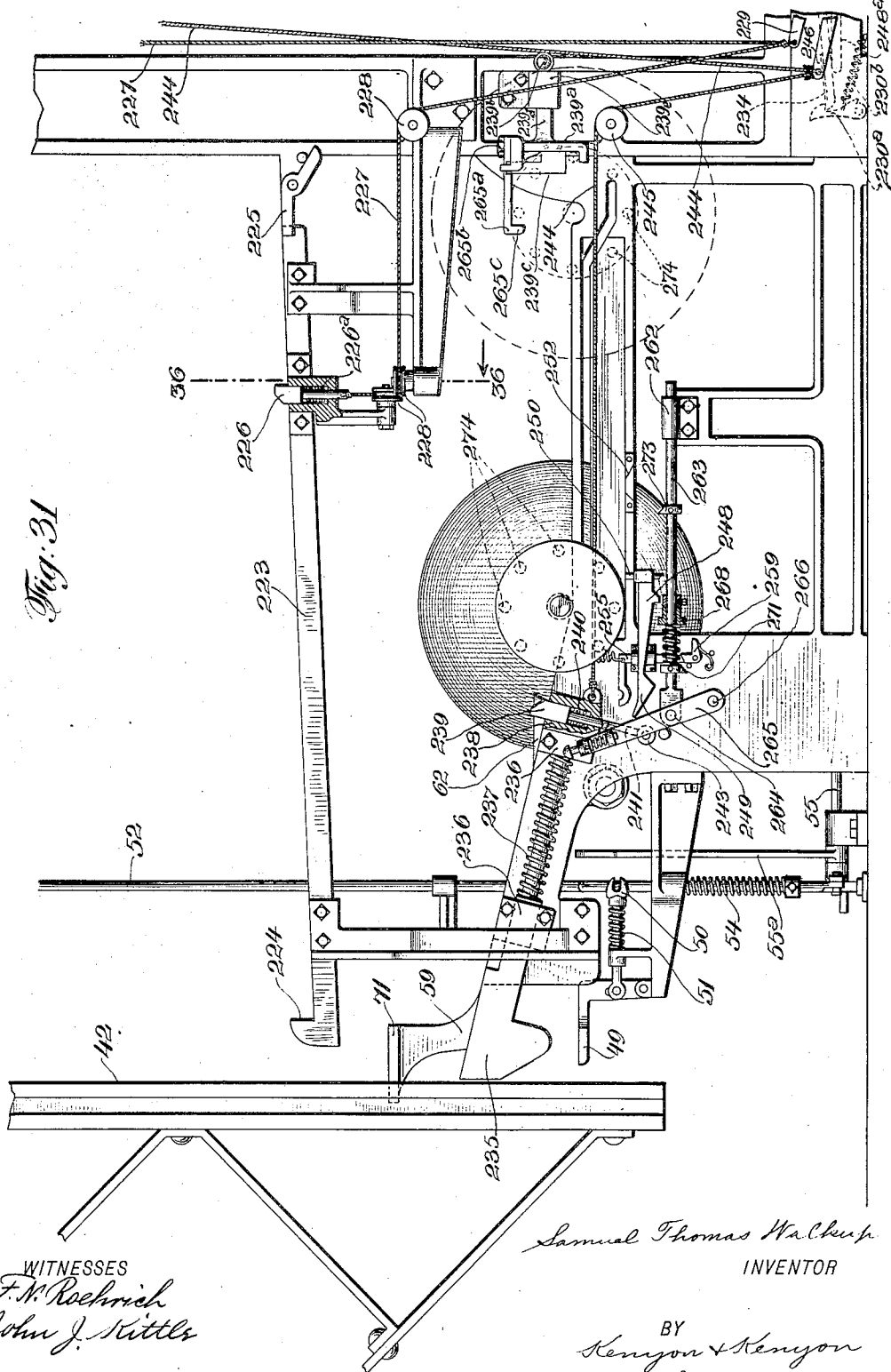
MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 19.

1,050,047.



S. T. WALKUP.

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

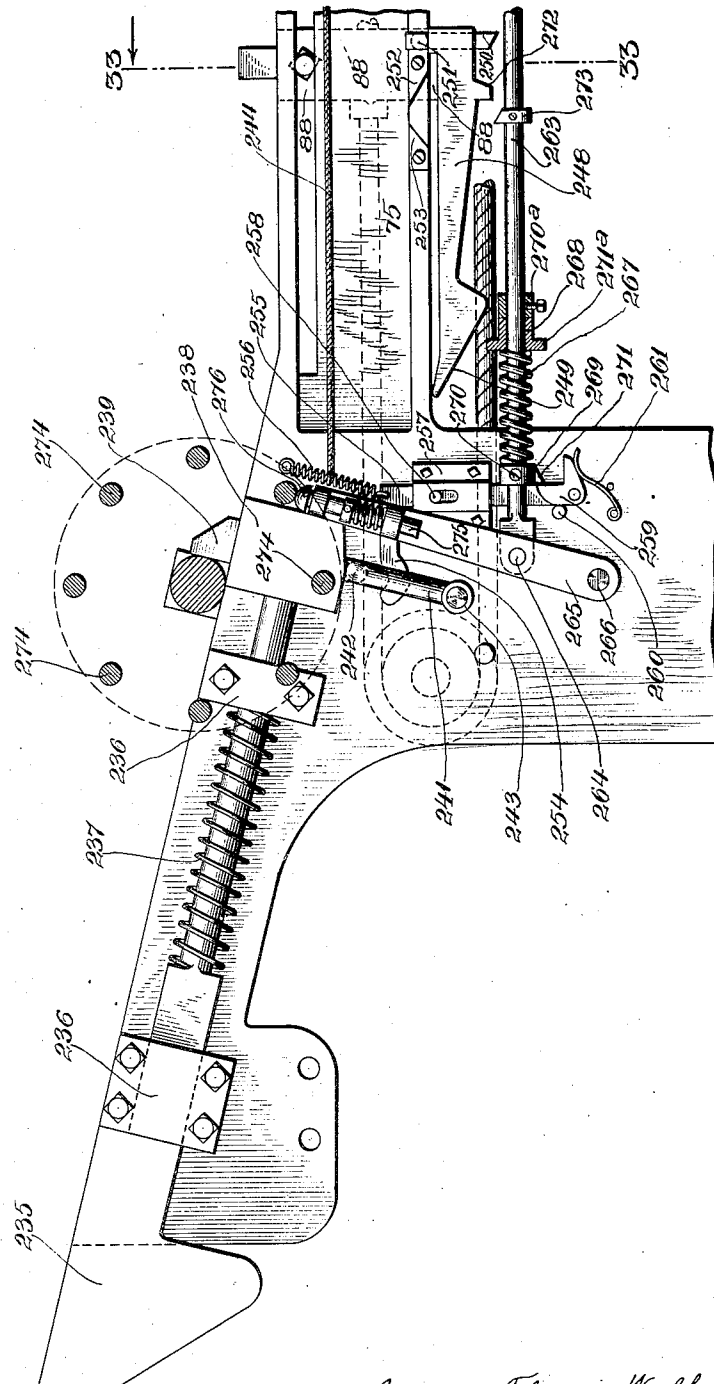
APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 20.

1,050,047.

Fig. 32



WITNESSES

F. M. Roehrich
John J. Kittle

Samuel Thomas Walkup
INVENTOR

BY
Kenyon & Kenyon
his ATTORNEYS.

S. T. WALKUP.

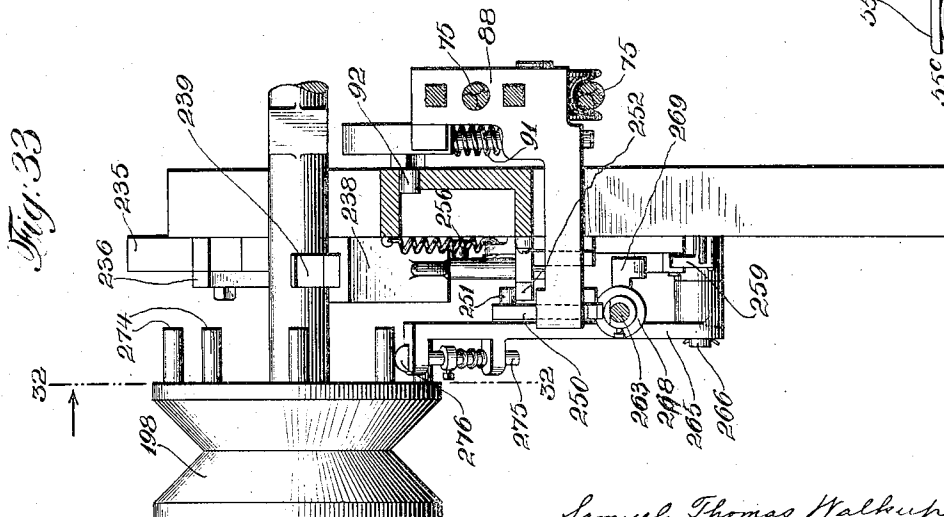
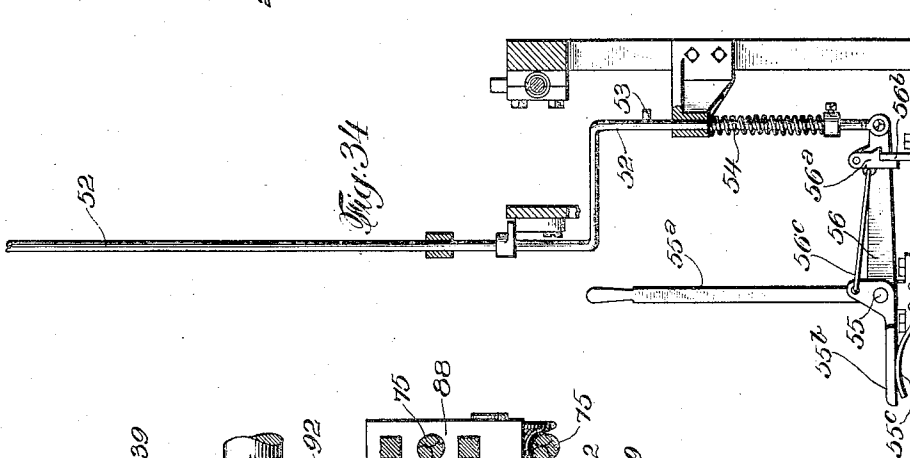
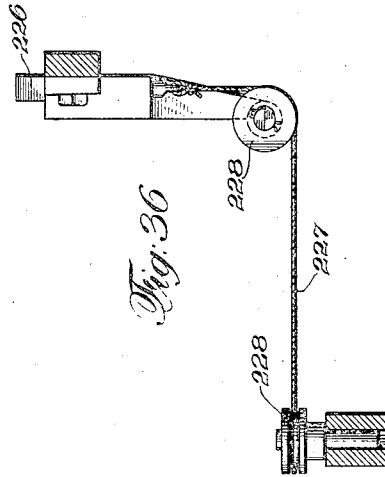
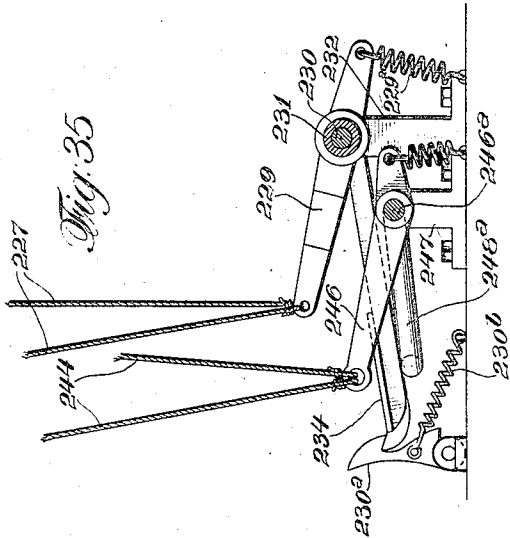
MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 21.

1,050,047.



WITNESSES
F. M. Roelrich
John J. Kittler

Samuel Thomas Walkup
INVENTOR

BY
Kenyon & Kenyon
his ATTORNEYS.

S. T. WALKUP.

MEANS FOR HANDLING WEB ROLLS AND WEBS FOR PRINTING PRESSES.

APPLICATION FILED DEC. 20, 1907.

Patented Jan. 7, 1913.

22 SHEETS—SHEET 22.

1,050,047.

Fig. 37

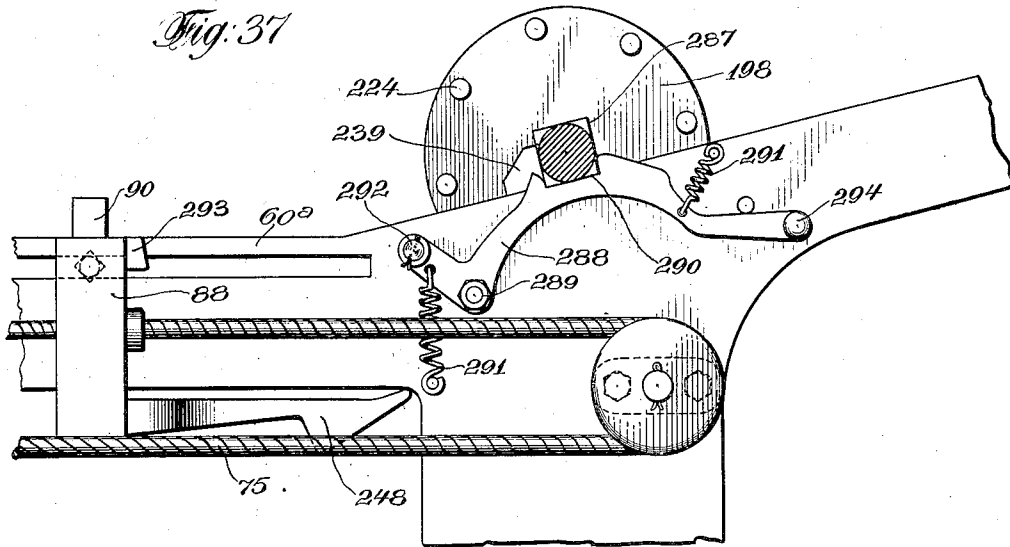
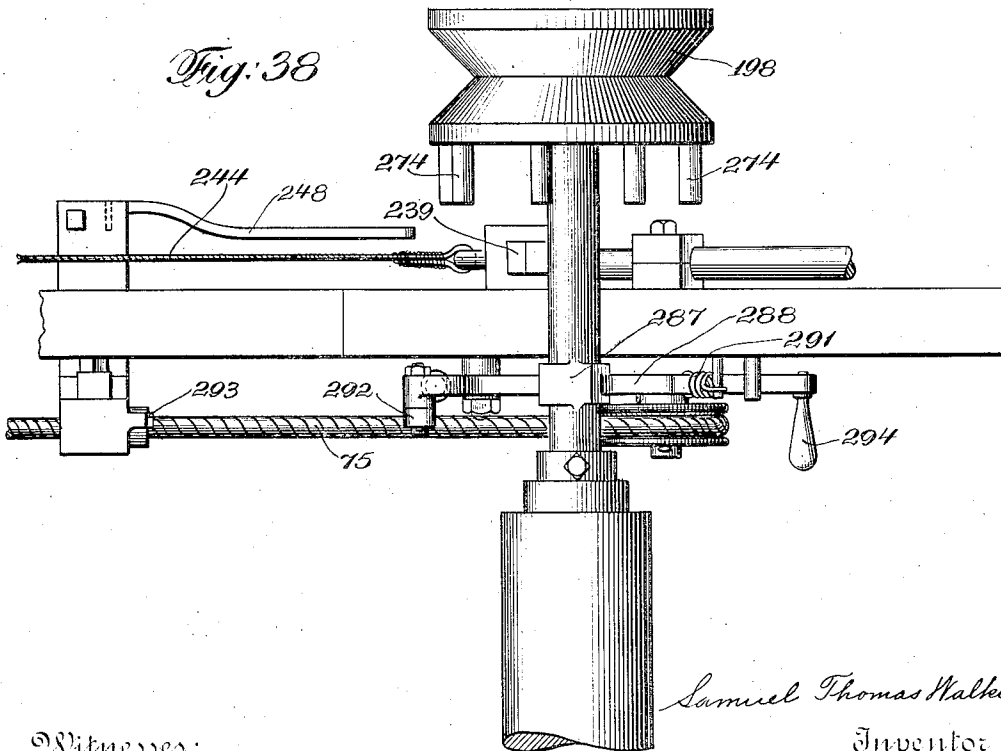


Fig. 38



Witnesses:
F. M. Roehrich
John J. Kittler

Samuel Thomas Walkup
Inventor

By his Attorneys
Kenyon & Kenyon

UNITED STATES PATENT OFFICE.

SAMUEL THOMAS WALKUP, OF NEW YORK, N. Y.

MEANS FOR HANDLING WEB-ROLLS AND WEBS FOR PRINTING-PRESSES.

1,050,047.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed December 20, 1907. Serial No. 407,345.

To all whom it may concern:

Be it known that I, SAMUEL THOMAS WALKUP, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Means for Handling Web-Rolls and Webs for Printing-Presses, of which the following is a specification.

My invention relates generally to mechanism for delivering paper web rolls for printing presses to the places where they may be used; to mechanism for removing exhausted web rolls or roll cores; to means for replacing an expiring web by a new web; means for holding the web on its core; and to means for threading the web through the press.

The principal objects of my invention are to provide means that will transfer the web rolls from their point of delivery at the building or plant to any part of the plant desired for use; to cause a new web to follow an expiring web without any tucking device and without any other means than the web feeding means; to cause a discontinuance of the expiring web without cutting the same; to retard the feeding of the new web until the expiring web is about to be withdrawn from use; to feed a web roll to its proper position for use, and to prevent its rotation or unwinding until the proper time for the web to be used; to start the rotation of the web roll at the beginning of the feeding movements of the roll and web; to provide improved means for guiding and regulating the movement of the roll to its operative bearings, to provide improved means for removing the core of the web roll from its operative bearings; to provide means for conveying the web core from the operative portion of the press; to regulate the unwinding of the web from its roll; to prevent twisting and straining of the web while being fed to the press; to provide means under the control of an operator, for preventing the unwinding of the roll until desired; to prevent "snowing up" of the web caused by any severing of the same, in the feeding or press mechanism; to permit the entire web from the roll to be fed to the press; to prevent the feeding of the roll to its operative position until the desired moment for such feeding.

My invention consists in the apparatus

hereinafter described, and shown in the accompanying drawings, and set forth in the claims.

The accompanying drawings illustrate an embodiment of my invention, in which—

Figures 1 and 2 (Fig. 2 being an extension of Fig. 1) illustrate a side elevation partly in vertical section of the greater part of the apparatus, my preferred form of delivery and regulating mechanism for the fresh web roll being shown, however, in Figs. 28, 31 and 32. Fig. 1^a is a section on the line 1^a of Fig. 1. Fig. 3 is a side elevation of the apparatus partly in vertical section, including an end of a printing press, but with some of the mechanism removed, to more clearly show other mechanism. Fig. 4 is a front elevation of the lower deck of my apparatus, showing an empty spindle in a position removed from the operative bearings of the roll. Fig. 5 is a vertical section on the line 5—5 of Fig. 6. Fig. 6 is a horizontal section on the line 6—6 of Figs. 2 and 4. Fig. 7 is a detail enlarged part of the apparatus for delivering the fresh web roll. Fig. 8 is an end view of the parts shown in Fig. 7, looking in the direction of the arrow. Fig. 9 is a vertical section on the line 9—9 of Fig. 4, including the parts shown in Fig. 7, and also showing the lower deck of the apparatus as shown in Figs. 1 and 2. Fig. 10 is an enlarged detail of the parts shown at the right end of Fig. 9, and a section taken on the line 10—10 of Fig. 4. Fig. 11 is an elevation in detail of the parts shown in the upper part of Fig. 10, looking in the direction of the arrow. Fig. 12 is a horizontal section, enlarged, taken on the lines 12—12 of Figs. 9 and 10. Fig. 13 is a detail, being a vertical section taken on line 13—13 of Fig. 10. Figs. 14, 15 and 16 are details enlarged, Fig. 15 being taken on the line 15—15 of Fig. 14. Fig. 17 is an elevation enlarged of the right end of the web-feeding devices, and adjacent parts of Fig. 3, and showing part of the means for preventing the "snowing up" of the press if the web should break on its way to or through the press. Fig. 18 is a sectional detail enlarged, taken on the line 18 of Fig. 17. Figs. 19 and 20 are details showing another and preferred form of apparatus for preventing the "snowing up" of the press. Fig. 21 is a front elevation partly broken away, of the parts shown in Fig. 20. Figs.

22 to 27 inclusive, are detail views of my improved core and spindle, Figs. 24 and 25 being sections greatly enlarged on the lines 24—24 and 25—25 respectively, of Fig. 22, and Fig. 27 showing a slightly different form of latch for the end of the holding rod. Fig. 28 is a side elevation showing my preferred construction of delivery and regulating means. Fig. 29 is a vertical section of some of the parts of Fig. 28, as taken on the line 29—29 of said figure. Fig. 30 is a plan and part horizontal section, taken on the line 30—30 of Fig. 28. Fig. 31 is an enlarged detail of the apparatus forming a single deck shown in Fig. 28. Fig. 32 is an enlarged detail of the roll delivery and regulating means shown in Fig. 31, and also being a section on line 32—32 of Fig. 33, looking in the direction of the arrow. Fig. 33 is a section on the line 33—33 of Fig. 32. Fig. 34 is a section on the line 34—34 of Fig. 30. Fig. 35 is a section on the line 35—35 of Fig. 30. Fig. 36 is a section on the line 36—36 of Figs. 30 and 31. Figs. 37 and 38 are a detail elevation and plan respectively of the parts shown in Fig. 32, and also showing some additional parts.

Similar characters represent like parts in all the figures.

The rolls of paper 1 are preferably taken from the street level, where they rest on removable supports 2, (see Fig. 1) by means of an endless carrier consisting of a sprocket chain 3, provided with hooks 4. The carrier passes around sprocket wheels 5 and 7, the sprocket wheel 5 being secured to a suitable shaft 6, and the sprocket wheel 7 to a shaft 8. The shaft 8 may be driven either by the power of the press or by a suitable motor, which is preferably an electric motor, by means of any intermediate driving mechanism, as sprocket wheel 9 and chain 10. Suitable means are provided whereby the carrier 3 may be driven in one direction or the other from the driving chain. (See Figs. 1, 3 and 4.) I prefer to make use of a reversing clutch between the driving mechanism and the carrier 3, for this purpose. A hand wheel (11) is detachably connected with the rod 13 at 12, the said rod being provided with a worm 14 which engages with a worm on the shaft 15. The shaft 15 carries an arm 16 which, when turned, moves the clutch member 17 in the manner which will fully appear by reference to Fig. 1^a.

18 is a bevel gear adapted for engagement with the clutch 17 on the end of rod 16, 19 is a gear engaging with gear 18 and also with a gear 20 secured to wheel 9 and adapted for engagement with clutch 17. When the sprocket wheel 9, which is loose on the shaft 8 rotates, the gear wheel 20 will also rotate, and will in turn drive the bevel gears 19, 18, so that gear 18 is driven in the re-

verse direction from the gear 20. By turning the hand wheel 11 in one direction or the other, the shaft 8 may be connected with either the gear 18 or the gear 20, through the double clutch 17. This will drive the carrier 3 in one direction or the other, as desired. The attendant standing at the hand wheel 11 may thus raise the roll 1 slightly from the supports 2, then remove the supports, and then allow the roll 1 to pass downwardly toward the level of the printing press mechanism or storage room. Brake 21 is connected to a series of levers 22 (see Fig. 1^a) and a rod 22^a secured to the shaft 15 so as to arrest the movement of the carrier 3 and control its operation, while the clutch 17 is thrown out of engagement by turning the hand wheel 11.

The means whereby either the printing press or the auxiliary motor may be used for driving the mechanism for supplying new web rolls to the printing press may be widely varied. As shown in the drawings (Fig. 4), an electric motor 23 may be used as an auxiliary motor to drive the shaft 24. A hand lever 25 is provided so as to throw in a friction clutch 26 (see Fig. 6), whereby the shaft 24 may be operatively connected to the shaft 24^a of the motor 23, and so it can drive the shaft 24. The shaft 24 may also be driven from the power of the printing press by means of the gear 27. The gear 27 when moved into the dotted line position shown in Fig. 6, is disconnected from the operative mechanism of the press, so that the means for guiding and regulating the movement of the new web rolls to the rear end of the printing press, may be driven by the electric motor, without it being necessary to simultaneously drive the press. The shaft 24 is provided with a gear 28 which meshes with the gear 29, mounted on the shaft 30, which carries a sprocket wheel 31, over which passes the sprocket chain 32. The chain 32 drives the sprocket 33 mounted on a sleeve 34, loose on the shaft 35. A sprocket 36 over which passes the chain 10 is secured to the sleeve 34. It will thus be seen that when the shaft 24 is driven, the chain 10 is also driven and that the chain 10 can be driven either by the electric motor or through the gear 27, according to whether the hand lever 25 is thrown toward the motor or in the opposite direction.

Suitable means are provided for hoisting a fresh web roll into any desired deck of the press and controlling the operation of the hoisting mechanism. The shaft 24 by means of the chain 37 drives one-half of the friction clutch 38 in one direction (see Fig. 6). The other half 39 of the friction clutch is driven in the opposite direction by the chain 32. Suitable means are provided which, in the best embodiment of the invention, operate automatically, to throw in the clutch

38 or 39, so as to drive the shaft 35 in opposite directions.

Referring now to Figs. 1, 3 and 7, the hoisting means includes two similar hoisting devices, 40, one on either side of the machine, each of which is provided with a pivotally mounted hook 41. These hoisting devices are guided in their vertical movement by guide rods 42, which are braced by tie rods 43. The hook 41 is free to turn upward, but prevented from turning downward by the abutments 41^a. (See Fig. 7.) As the hoisting devices 40 descend, the hooks 41 will strike against the spindle of the foremost roll on the tracks 23^a, and will yield and pass underneath said spindle, and when the device rises the hook 41 will engage the spindle, and carry it upward. The hoisting devices 40 are reciprocated in their movements through the flexible connections or ropes 44, which pass over pulleys 45 and 46, (see Figs. 1, 2, 3, 6 and 7) the other end of the ropes winding around the drums 47, on the shaft 35. It will be observed that by the rotation of the shaft 35 in opposite directions, the ropes 44 will alternately be paid out by the drums 47, and wound upon the drums 47, thus reciprocating the hoisting devices 40.

The means for controlling the reciprocation of the hoisting device may be widely varied. As shown in the drawings (see Figs. 1, 4, 7 and 8) each hoisting device 40 is provided with a pin 48, which pin, as the carrier lowers, strikes the pivoted arm 49, which in turn withdraws a latch 50, pressed in one direction by the spring 51. The latch 50 holds the rod 52 against the tension of the spring 54 by engaging with a stud 53 on the rod 52. When the hoisting device is carried to nearly its lowest position, the pin 48 striking the arm 49, releases the rod 52, and its spring 54 forces down said rod, and acts to turn the shaft 55 with which the rod 52 is connected by means of the crank arm 56. As will be seen by reference to Fig. 6, the rotation of the shaft 55 in opposite directions will, by means of the bifurcated arm 57, operate the friction clutches 38 and 39, respectively. By the above described means, when the hook 41 reaches its lowermost position, the hoisting device 40 will be automatically started in the reverse direction, so that the hooks 41 under the spindle of the foremost web roll will raise it from the tracks 23^a. It is often found desirable, however, to operate the rod 52 and its operatively connected clutch by hand, and also to leave the said clutch in an inoperative position by holding the rod 52 intermediate its extreme positions. To operate these devices by hand, a hand lever 55^a is secured to the rod 55. (See Figs. 30 and 34.) In order that this mechanism may be stopped in its intermediate position, I

provide the lever arm 56 with a pivoted dog 56^a (Fig. 34) adapted to engage a lug 56^b on the framework at such a time as to cause the clutch to remain in an inoperative position. When it is desired to oscillate the dog 56^a from its operative position, a treadle 55^b is depressed, this treadle having operative connection with the dog 56^a by means of a link 56^c. The treadle is held raised in its normal position by means of a spring 55^c.

Suitable means are provided for arresting the upward movement of the hoisting devices 40, and delivering the roll from the hoisting device onto the desired deck for use on the press. In the best embodiment of the invention, these means depend for their operation on the presence or absence of a web roll on the deck. If a web roll is in its operative position on the deck, the hoisting device will not supply a fresh roll to this deck. If, however, a web roll is absent from its deck, the hoisting device supplies a new web roll to the deck. With the parts as shown in Fig. 1, a web roll is in place on the lowermost deck, but the second and third decks are unprovided with rolls. The hoisting devices 40 having descended and taken up a fresh roll from the tracks 23^a, have started upwardly and passed by the roll delivering mechanism for the lowermost deck, and are about to cooperate with the roll delivering mechanism of the second deck. The means for delivering a web roll from the hoisting devices 40 to its position in the press may be widely varied. In the form of the invention as illustrated in Figs. 1, 7, 8 and 9, the roll delivering means comprises an adjustable supporting frame extension 58 and levers 59, both pivoted at 60, in the main supporting frames 60^a of the machine. The said frame extension 58 is provided with an arm 61, and the lever 59 is provided with an arm 62, so that when a web roll is in position, as at 63, to be delivered to its operative position for use with the press, as shown on lower deck in Figs. 1 and 7, the weight of the roll will keep the frame extension 58 and lever 59 out of the path of the hoisting device 40. Should the web roll be absent from the place indicated at 63 in Figs. 1 and 7, the extension 58 and lever 59 will be at their lowest positions, as shown on the two upper decks in Fig. 1, and the lugs 64 and 65, mounted on the extension 58 and lever 59, respectively, will bear upon the side of the supporting frame 60^a.

When the hoisting devices 40 carrying a full web roll in the hooks 41 have reached a position a little above that indicated in Fig. 1, the end of the roll spindle resting on the hooks 41 will strike the inclined surfaces 66, thus raising the long arms of the extensions 58 into the position shown in Fig. 9 (and also as shown in the lower deck of Fig. 130

1). A further upward movement of the hoisting device 40 permits the extensions 58 to drop underneath of the spindle of the web roll that is resting on the hooks 41, and a still further upward movement of the hoisting devices 40, operates through the agency of the lever 59, as hereinafter described, to reverse the movement of the hoisting devices 40 and start them downwardly. The means for securing the reversal of the hoisting devices 40 may be widely varied. As illustrated in the drawings, the lever 59 carries a pawl 67, pivoted at 68. A stop 69 limits the movement of the pawl 67 in one direction.

The normal position of the parts when a new web roll is about to be supplied to a deck for use with the press, is shown in Fig. 1, on the second deck. With the parts in this position, the pawl 67 rests beneath the block 70 on the rod 52. The web spindle in rising will cause the long arm of lever 59 to rise by contact with projection 71, the pawl 67 will raise the rod 52 by means of the block 70, and at the same time turn the shaft 55 by means of the arm 56, thus causing the carriers 40 to reverse their movement and descend in the manner above described. By this time the pawl 67 has passed beyond the block 70, and the pin 53 on rod 52 drawn into engagement with the latch 50. The descending movement of the carriers 40 will cause the hooks 41 to drop below the spindle of a fresh web roll on tracks 23^a, and then the pin 48 comes against and operates the lever 49 to release the latch 50 from the pin 53. The resistance on the spring 54 now being removed, it will force the rod 52 downward, and cause the shaft 55 to turn, and thus reverse the movement of the carriers 40, so that they will rise again. On the descent of the carriers 40, the ends of the roll spindle also descend below the projection 71, and permit lever 59 to descend to its original position, said spindle then drops upon and runs along the supporting extensions 58 until it reaches the arms 61 at the ends of said extensions. The carriers then continue their downward movement as above described. After the different decks have been supplied with web rolls, the reciprocation of the carriers 40 can be stopped by keeping the clutch 38, 39 in the central inoperative position. As illustrated in Figs. 4, 7 and 8, this is accomplished by means of a pivoted dog 72, mounted on the arm 56, on the shaft 55. When the dog 72 is turned so that its free end rests on the floor as shown in Fig. 4, the clutch assumes its central position. Or it may be accomplished by means of the mechanism shown in Figs. 30 and 34 as above described.

Suitable means are provided for transferring a fresh web roll from the position where it has been left by the hoisting mecha-

nism to its normal position for use in the press, and means are also provided for removing the core from said normal position. In the embodiment of my invention, illustrated in the drawings, (see Figs. 9 to 16), I make use of an endless carrier cable 75 which passes around the pulleys 76, 77, 78 and drum 79, which forms part of the mechanism for accomplishing these results. The drum 79 is mounted upon the shaft 80. A duplicate cable passes around a similar series of pulleys and the drum 81 on the shaft 80. (See Figs. 4 and 6.) The shaft 80 may be rotated in opposite directions by the following means. A chain 82, which is driven from the sleeve 34, (see Fig. 6), drives a beveled gear 83, (see Figs. 6 and 12) which is loose on the shaft 80. Another beveled gear 84 is likewise loosely mounted on the shaft 80, and an intermediate beveled gear 85, (see Figs. 9, 10 and 12) serves to rotate the shaft 80 in reverse directions according to whether it is in engagement with the beveled gears 84 or 83. The clutch 86 (see Figs. 6 and 12) is reciprocated and thrown into engagement with the gears 83 and 84, respectively, by suitable means which will now be described. These means are preferably controlled by the diameter or thickness of the web roll when in its normal position in front of the press. With the parts as shown in Fig. 10 the fresh web roll has been brought into its normal position in the press with its spindle resting in the bearings 87. Each carrier cable 75 is provided with a reciprocating block 88 and carrier 89, the former moving horizontally and the latter vertically. The block 88 slides on the track 97^a and is provided with a spring pressed plunger 90 pressed upwardly by the spring 91. The plunger 90 is provided with a lateral pin 92 (Figs. 9, 10 and 13), which runs in ways 93 on the frame of the machine. The forward ends of the ways are downwardly inclined at 94, (Fig. 10). By this means the plunger 92, when at the outer limit of its movement at the left in Fig. 9, rests in front of the spindle of the new web roll, and when it has reached its inward movement it will pass underneath of the spindle of the web roll into the position shown in Fig. 10. The blocks 88 do not positively feed the web roll but move progressively in front of the web roll spindle, the roll being drawn forward by the feeding mechanism of the press drawing on the web of the roll, and said spindle bearing upon the back of the plunger 90, and the forward movement of the spindle of the web roll being regulated by the forward movement of said block.

A friction brake for controlling the tension of the web is indicated at 197. See Figs. 2, 3 and 4. This brake is adapted to engage a circular grooved cylinder or disk

198 placed upon the end of the web roll spindle and the lower jaw 281 of the brake is adapted to engage the underside of the grooved disk 198 and together with plunger 90 and the supporting frames 60^a serves to control the tension of the web while in its operative position. A separate frame-work 277 is arranged on the side of the machine. (See Fig. 4.) Pivoted to this frame-work is a lever 279 carrying the upper jaw 280 of the brake 197 while the lower jaw of the brake is shown at 281. These brake jaws or shoes can be forced together or adjusted relatively to each other, by means of a hand wheel, and screw 282 bearing on lever 279 to adjust the tension of the web.

It is desirable that means be provided for adjusting the web roll longitudinally while it is being conveyed to its operative position, and after its operative position has been reached. For this purpose I provide a hand wheel 283 rotatably secured to the separate frame-work or brake mechanism and provided with a screw 284 (see Fig. 4) working in the main frame. Thus, while the grooved disk 198 lies upon the brake shoe 281, which extends to the rear end of the supporting frames 60^a and there rests upon roller bearings on track 278, or, while said head is being clutched by the brake, the hand wheel 283 may be turned to adjust the web roll longitudinally as desired, the brake frame and roll moving together and the brake firmly clutching the roll, when in operative position by lying in the groove, of the disk 198, and the brake frame with its lower jaw 281 sliding on the track 278.

285 represents a projection by which the upper brake shoe is thrown backward by the empty spindle head when the core is being removed. When the spindle head has passed this projection the upper brake shoe falls by gravity upon the spindle head of the new roll which has in the meantime been brought into operative position. Before this operation takes place, however, the hand wheel 282 is tilted back, so that the arm 279 may pass downward, and to provide for such tilting the journal of the hand wheel is pivoted at 286.

The carrier 89 is mounted on a frame which is pressed outward by the spring 95. As the carrier 89 descends the cam portion 96 of the carrier engages the spindle of the exhausted web roll and the carrier is forced by it laterally against the tension of the spring 95, until the carrier passes beneath the spindle, when the tension of said spring being removed, the parts assume the position shown in Fig. 9. With the carrier 89 in this position, it will, when it ascends, carry the web roll spindle with it. The carrier 88 is also provided with an arm 97, (Figs. 9, 10 and 12), the front portion 98 of which will with the parts in the position

shown in Fig. 10, strike the pivoted spring latch 99, and thus release the roll 100 which controls the operation of the clutch operating cam. The roll 100 is mounted in a sliding frame 101 (Fig. 12) which by means of the rod 102 is connected, as hereinafter described, with a cam roller 103 engaging the clutch operating groove cam 104. The spring 105 acts on rod 102 thereby normally forcing roller 100 against the web roll. The cam 104 is provided with a suitable pivoted switch 105^a for guiding the roller 103 along the track of the cam. This switch falls by gravity to its normal position, shown in Fig. 6 and in full lines in Fig. 12. The cam 104 is connected by means of a bell crank lever 106 (pivoted at 107 to a fixed bracket) to the clutch 86. This clutch engages alternately with the gears 83 and 84. When the latch 99 is in engagement with the shaft of the roll 100 the parts are in the position shown in Fig. 12, with the cam roller 103 at the extreme end of cam 104. The clutch disk 85 is now in engagement with the gear 83, and the shaft 80 therefore turns in a direction which will cause the cables 75 to move the block 88 toward the bearings 87. As soon as the free end 98 of the arm 97 strikes the latch 99, which it does when the block 88 has almost reached its extreme inward position, the latch 99 will be thrown up the frame 101, 102 will be released and will be acted upon by spring 105, and the roller 103 will travel to the left along the face 108, and the cam 104 will be thrown into the position shown in Fig. 6. In this position both clutches 85 and 86 are out of engagement with their corresponding beveled gears, and the shaft 80 is not rotated. This operation also causes the roll 100 to bear against the freshly applied web roll under the tension of the spring 105. During this condition of the machine, the shaft 80 is not rotated, and the endless cable carrier 75 remains at rest, with the two carriers in their extreme inner and upper positions respectively, as shown in Fig. 10.

As the web roll becomes exhausted, the spring 105 gradually expands, thus forcing the rod 102 to the left, and causing the roller 103 to travel in the same direction on top of the switch 105^a, and along the cam track 109. When the roller 103 reaches the part 110 of the cam 104, it will move said cam so as to throw the lever 106, still farther and with it the clutch 86, so that the latter is thrown into engagement with the beveled gear 84. As the latter gear is being driven in the opposite direction from that of gear 83, the shaft 80 will now be rotated in the reverse direction, and the vertical carrier 89 and horizontally moving block 88 will start to move; the vertical carrier moving downwardly toward the

bearings 87, and the horizontally moving block outwardly away from the bearings 87. After the carrier 89 has almost reached the downward limit of its movement, a cam surface 111 (Figs. 10 and 11) on the carrier 89 strikes the roller 112 on the frame 101 which pushes back the frame against the force of the spring 105. The cam roller 103 thus runs to the right along the track 113 of the cam 104 (Fig. 12). During this portion of the movement of the roller 103, the clutch 86 remains in engagement with the bevel gear 84, and the shaft 80 continues to rotate as before.

Suitable means are provided so that during the final downward movement of the cam surface 111, the roller 103 will be forced to its original position at the right hand end of the cam 104, and the lever 106 will be thrown so as to bring the clutch 86 into engagement with the beveled gear 83, whereby the shaft 80 has its direction of rotation reversed. To accomplish this result I provide a spring 300 surrounding the rod 102, which spring is compressed as the roller 112 and rod 102 is forced backward, and which, when released, will force the cam roller 103 from a point at the right end of the track 113 to its original position at the right end of the cam 104. (See Fig. 12.) To accomplish this result, instead of mounting the arm 301 carrying the roller 103 rigidly on the rod 102, I provide a sliding block 302, which is secured to the rod 102, and both of which slide in a track on the fixed frame 303. On the movement of the roller 103 from right to left in Fig. 12, the spring 300 is not compressed, but rests between the arm 301 and the collar 304 secured to the rod 102. On the top of the frame 303, I provide a stop 305 for coöperating with a stop 306 on the arm 301. The stop 305 is secured to a rock shaft 307, the said shaft being provided with an arm 308, beveled on the under side of its free angular end, which arm is pressed toward the rod 102 by the spring 309. The stop 305, is also beveled on its under side so that the stop 306 will pass the stop 305 in moving from right to left and will be prevented from passing the stop 305 on its return. On the movement of the roller 103 toward the right, the stop 306 is arrested by the stop 305, and further movement of the rod 102 compresses the spring 300 between the collar 304 and arm 301, until the collar 304 strikes the arm 308, thus raising it and turning the shaft 307, and raising the stop 305 out of engagement with the stop 306. The spring 300 then expands rapidly, and throws the roller 103 on the arm 301 from a position at the right end of the cam track 113, through track 108, to its extreme position at the right, as shown in Fig. 12, this movement of said roller forcing the switch 105^a to the position shown in

dotted lines, so as to properly guide roller 103. By this action the lever 106 is thrown over, thus bringing the friction clutch 85 into engagement with the gear 83, so that the shaft 80 has its direction of rotation again reversed. The vertical carrier 89 will then rise and the horizontally moving block 88 return to its innermost position in the machine. This final movement of the roller 103, also throws the latch 99 into engagement with the frame 101 so as to hold the parts in the position shown in Fig. 12. The switch 105^a is held in the proper position for guiding the roller 103 to the track 109 by a spring 105^b. (See Fig. 16.) The spring is connected to the switch 105^a by means of a pin 105^c extending through a slot 105^d in the cam 104. The clutch 86 may also be operated by hand so that the movement of the carriers 88 and 89 can be changed immediately whenever desired, and the automatic mechanism for operating the lever 106 be operatively disconnected from said lever. To accomplish this the two arms of lever 106 are operatively separable, each arm being journaled upon the pivot 107. Rigidly connected or cast with the inner arm 106^a is an outwardly extending handle 106^b, and also rigid or cast with said arm is a lug 106^c. A removable pin 106^d passes through holes in the lug 106^c, and rigidly connects it with the arm of lever 106. If said pin be not removed, any movement of the operating arm of lever 106 will operate the inner arm 106^a, and also the clutch 86, but if said pin 106^d be removed, the two arms of said lever will be disconnected, and any movements of cam 104 will not affect the clutch 86. Said clutch, however, may be at any time moved by the handle 106^b, as will be obvious.

A similar mechanism to that just described is provided for each deck of the press. Thus each deck has a separate carrier, clutch and operative connections. The means for transmitting power to these mechanisms on the other decks will be hereinafter described.

The means for supplying the fresh web roll to the block 88, are as follows: A finger 114 (Figs. 9, 10, 14, 15) is secured to the cable 75, which finger is adapted to strike a stud 115 on the inner end of supports 58. As the finger 114 moves outwardly, it will ride over said stud, depress the short arm of the supports 58, and the stops 61 below the incline 116 (see full lines on Fig. 9) and allow the web roll to rush down the incline 116. This incline starts the fresh roll in rotation. As will be observed by examining Fig. 9, the spindle of the fresh roll will come in contact with the plunger 90 on the block 88. The finger 114 will keep the support 58 in its lifted position until said finger leaves the stud 115, and the fresh web roll has gotten out of the way. This

prevents supplying an additional roll by the hoisting device, if there is already a roll present in front of the plunger 90. The carrier 89 is provided with a pivoted clamp 117, with points 117^a the tail end of which, 118, is operated by the pivoted trigger 119 provided with a projecting arm 120. (See Figs. 10 and 11). When the carrier 89 starts to rise, carrying the core with it, the spindle of said core contacts with the arm 120 which will throw down the clamp 117 against the core, and holds the spindle with its square ends firmly in the squared sockets 120^a of the carriers 89. In order to insure that the squared ends of the core spindle shall be held firmly in the corresponding sockets 120^a of carriers 89, and thus prevent the core or web roll from revolving, I supply a simple means for locking the clamp 117 when it is bearing upon the core or web roll. Said means consists of a pin 117^b passing loosely through the upper part of the carrier 89, and which should be inserted back of the tail piece 118 when the clamp 117 is clamping the core, as shown in dotted lines in Fig. 11. This pin may be held in a normal position by a spring 117^c.

If it be desirable to remove a web roll from operative position, on account of defective paper or otherwise, the clutch 86 is thrown in by hand, and carrier 89 removes the web roll in the same manner as an empty core. The web may be broken as soon as the web roll is clamped and tension caused on the web, by an attendant striking the tense web beyond the roll with a stick. Endless tapes 121 and 122 provide suitable means for supporting a web end and threading a printing press with such web band. Means are provided for holding the front end of the fresh web in position, so that when released the threading and printing mechanism will rapidly forward the web end through the press. The tapes 121 pass around the guide rolls 123, 124, 125, 126, 127, 128, 129 and 130, and the tapes 122 pass around the rolls 131, 132, 133 and 134. (See Figs. 2, 3 and 9). The front end of the fresh web first being squared, can rest on the upper surface of the tapes 121 and remain in this position until ready for use in the press, the roller 124 preventing the tapes from sagging. The front stops 135 (Fig. 9) prevent the tapes 121 from carrying into the press the web end or any loose paper which may accidentally fall upon these tapes.

Suitable means are provided for operating the front stops 135. In the form shown upon the drawings, they are operated by a part of the machine. (See Fig. 9). The front stops 135 are pivoted at 136, and are connected by means of the crank levers 137, 138 with a roller 139. A spring 140 holds the stops 135 in their normal position above

the plane of the upper series of tapes 121. When the vertical carrier descends, the cam surface 96 on the carrier, strikes the roller 139, and forces it outward, and this action depresses the front stops 135, and allows the front end of the fresh web to become free. The stops 135 may, however, be operated by hand by means of a handle 135^a secured at 136. (See dotted lines, Fig. 9). This handle may be locked in position by a ratchet mechanism 136^a. When it is desirable to start the printing of a web, stops 135, by said means, are thrown down below the upper plane of the forward ends of tapes 121, and said stops may be locked in this position during the entire run.

Further means for positioning the front end of the web and releasing it for threading the press, are shown in Figs. 3, 9, 37 and 38. At the rear of and on the inside of the supporting frames 60^a (Figs. 37 and 38), is a locking device 288 in which there is a square recess 290 which is adapted to hold and lock the squared portion 287 of the spindle. This locking device is thrown out of engagement with the spindle by throwing down the handle 294, and turning the device about its pivot 289. This device is held in its normal position by springs 291. The web end of the roll at the rear end of the supporting frame 60^a is positioned by an attendant throwing down the stop 135 (Fig. 9) which allows the web end to be conveyed toward the printing mechanism and grasped between the tapes 121 and 122. Then the locking device is thrown out of engagement by means of the handle 294, the attendant holding it down by one hand, while he starts unwinding the roll with the other hand, allowing the web end to be brought near the first cylinders of the press. The attendant then releases his hand from the locking device and it returns to its normal position and again locks the spindle of the web roll with its web end near the first cylinders of the press. When it is desired to thread the press or succeed an expired roll by a new web, the block 88 with its projection 293 will strike the under surface of pin 292 thereby throwing the locking device out of engagement with the spindle. This operation takes place when the block 88 has been brought approximately to the extreme rear end of the supporting frames 60^a. The web roll now starts along the supporting frames, 60^a, toward its operative position, and the web end reaches the printing couple and is guided through the machine by means of guide plates 140, 141, 142 and tapes 143, 144, 145, 146, (see Fig. 3). The tapes 147, 148, 149, 150, 193 and 194, (Figs. 3, 17 and 18) carry the web over to the folding mechanism and delivery 151. It is thus unnecessary to paste the fresh web to the expiring web, or to connect it to the expiring web in any manner.

Additional means for positioning the web end and releasing it are shown in Figs. 30 and 31. When I use these means for such purposes, the first web roll to be used when the press starts, is at the front end of the frames 60^a with its spindle in the bearings 87. The web end from said roll is squared, and is dropped on the supporting tapes 121; and when it is desired to use the web, the front stops 135 are thrown down and the web end is fed along until it is brought near the first cylinder of the press as hereinbefore described. The web roll is then locked by the attendant sliding into position the arms 239^a and 265^a by means of a handle 239^b. This will cause the arms 239^a and 265^a to come into contact with the projections 274 on the inside of the spindle head 198, thereby locking the web roll, and holding the web end until it is ready for use near the feeding cylinders to be fed by the same. The arm 265^a is pivoted at 265^b so that the attendant can swing it out of the way of the projections 274 as said projections are brought into locking position. A spring 239^c brings the arm 265^a back to its normal position for locking the web roll. Both of the arms 265^a and 239^a are carried by a bar 239^d, which slides in a guideway, and upon the other end of which is carried the handle 239^b. When ready for printing upon the web, the attendant pulls the handle 239^b in a direction away from the web roll, thereby releasing the roll from its locked position. As this is done, a projection 265^c on the arm 265^a comes in contact with the projection 274 on the spindle head and starts the rotation of the web roll, while the tapes 121 and 122 carry the web end into the printing couple as before described, and the web roll is unwound, as the web is being drawn into the press. This web roll locking device now remains out of operation until it is desired to lock a new web roll when in its operative position in the bearings 87, and to start the unwinding of said roll. Although the arm 265^a is an additional locking feature to the arm 239^a, said latter arm will lock the roll against unwinding without any additional help, the principal object of the arm 265^a being to start the rotation of the roll to unwind it.

Suitable means are provided for driving the different decks of the press. Referring to Fig. 3, the upper deck of the press is provided with two series of tapes 188 and 189 for forwarding the web to the first printing couple. The first printing couple is provided with the usual gears 190 and 191, the latter through sprocket-wheels and chain 192 driving the tapes 188 and 189. Tapes 146, 147, 149, 150, 193 and 194 carry the printed web to the folding and delivery mechanism as above described. These tapes are preferably driven by a chain which passes

around a sprocket wheel 196, the wheel being mounted on a shaft of one of the tape pulleys.

The second deck of the press need not be specifically described, as its construction and operation will be clear by an explanation of the structure of the other decks. A shaft 199 (Figs. 2, 3, 5 and 9) which is secured to the bevel-gear 85, transmits the motion of the bevel-gear to the bevel-gear 200 (Fig. 5). The bevel-gear 200 rotates the bevel gear 201, which in turn rotates the bevel gear 202. The shaft 203 attached to the beveled gear 202 communicates the motion from the said bevel gear to the bevel gears on the third deck of the press, as will be readily understood. The clutch lever 204 is, in operation and construction, like the clutch lever 106 on the lowermost deck of the press. A similar clutch and lever is also used on the third deck of the press.

Figs. 22 to 27 show a detail construction of my improved core for the web rolls. Referring to these figures, 205 represents a hollow core having a longitudinal recess 206. Within and below this slot is placed a seat or grooved bar 206^a for holding the bar or rod 207. The rod 207 is pivoted in the seat 206^a at 208, and at its opposite end it is bent downward and outward to form a locking end 209 for engagement with a latch 210, which is held in locking position by a spring 210^a. The latch 210 slides in a collar 211, which is placed over the spindle 213 and inserted in the end of the core 205. Similar collars 212 are affixed to the opposite ends of the spindle and inserted in the opposite ends of the core, to properly position the core relatively to the spindle. These collars 211 and 212 may be slightly frusto-conical, and are held in place by collars 211^a and 212^a secured to the spindle by screws 211^b, 212^b. By this construction the web may be started upon the core by sliding its end under the rod 207 while it is in the position shown in dotted lines in Fig. 22, then locking the end 209 under the latch 210 and winding the web back upon itself as shown in Fig. 24. When it is desired, as is usual, to use all of the web on the core this arrangement is used because the web will release itself after the last turn of the core, as will be apparent from consideration of Fig. 24. It is thus unnecessary to cut, sever, or discontinue an expiring web, and it is plain that I save a great deal of paper that is otherwise wasted, and obviate the necessity of web-severing mechanism. In Fig. 27, I show a slightly modified construction in which the latch 214, instead of sliding in the collar 211 is mounted to slide in the end of the seat or grooved bar 206^a.

The means for removing the empty cores from the carriers 89, and away from the press and press room may be operated by

hand if so desired. In Figs. 28 to 31, however, I have shown automatic means for accomplishing this. In Figs. 28 and 29, I have shown these means as applied to two
 5 decks, in which the carrier 40 is provided with an extension 215 (Fig. 28) having in its upper end a slot 216 and a protruding arm 217 extending above the slot. The end of this arm is adapted to contact with an
 10 arm 218 secured to the rod 52, and thereby forces the rod upward to reverse the direction of movement of the winding drums, 44, as previously described. The rod 52 slides in a slot in an arm 219 fastened to the
 15 frame of the machine. Pivoted to bars 221 on the frame of the machine, at 220^a are dogs 220, arranged to swing on their pivots so that they will allow the spindles lying in the slots 216 to pass by in their upward
 20 movement, but locked by a pin 222 extending from the bar 221, when the spindles are dropped upon it as the carrier 40 descends. The carrier 40 descending, leaves the spindle or spindles resting upon the dogs 220, and
 25 the incline thereof and of the bars 221, causes the spindles to roll off onto any suitable floor.

In order to get the empty spindles from the carriers 89 to such a position that they
 30 may be taken up by the carriers 40, I provide a series of inclined bars 223 for each deck. These bars have upon their outer ends protruding shoulders 224 to limit the movement of the empty spindles in their
 35 travel down the incline. Pivoted to the frame near the other end of the bars 223, are dogs 225, which operate in a similar manner to the dogs 220 by allowing the spindles carried by the carriers 89, to pass by the
 40 dogs in their upward movement, but preventing them from passing by said dogs as the carriers 89 move downward. Thus as the carriers 89 move downward, as previously described, they will leave the empty
 45 spindles resting upon the dogs 225, and the incline of said dogs and bars 223 will cause the spindles to roll down to the other end of the bars against the shoulders 224. Since it might prove disadvantageous to
 50 have more than one empty spindle at the lower end of the inclines of bars 223 at a time, I provide means for holding the empty spindles upon said bars until the operator shall see fit to allow them to roll against
 55 the shoulders 224. These means consist of sliding dogs or catches 226. These dogs or catches 226 are held in normal position by springs 226^a, and are operated by means of cables 227 passing over idle pulleys 228 to
 60 the lever arms 229. (See also Figs. 35, 36). These lever arms are connected independently to solid and hollow shafts 230 and 231 respectively, (see Fig. 30) said shafts being rotatable in bearings 232 fixed to the

framework of the machine. Fastened to 65 the shaft 230 is a treadle 233 and to the shaft 231 a treadle 234. Thus the retaining catches or dogs 226 on either of the decks may be operated independently according to which one of the treadles 233 or 70 234 is depressed. These treadles are held in normal position by springs 229^a, and may be locked in their lower position by catches 230^a held in normal position by springs 230^b. (See Fig. 35). Thus when carriers 75 89 rise, they carry the empty spindles by the dogs 225; and in returning, leave the spindles upon the dogs. The spindles then roll down the incline until they strike the catches 226, where they are held until the operator 80 sees that the bars 223 have no spindles at their lower ends, when the catch or catches 226 are depressed and the spindle or spindles allowed to roll down the incline to the shoulder 224. They remain in this position 85 until the carrier 40 in rising, causes the inner side of arm 217 to engage with said spindles, and to roll down into the slot 216, and then be carried upward by the carrier 40 to be delivered to the bars 221, as previously described. In connection with these 90 means for removing the empty spindles, I have shown a modified means for delivering the new web rolls to the different decks. (See Figs. 28, 31, 32). It will be noticed 95 that in taking the new web roll from the hoisting device, pivoted extension supports 58 have been described. In my modified form I use sliding arms instead of said pivoted extensions. These sliding arms 235 100 slide through guiding blocks 236, and are held in a normal outward position by springs 237. Upon the end of each sliding arm 235 is a head 238 containing a spring pressed dog or catch 239. This dog is held 105 in an upward normal position by a spring 240. (See Fig. 31). Extending from the bottom of the dog 239 is an arm 241 carrying a pin 242 (see Fig. 32) midway its length, and at its lower end another pin or 110 roller 243. Attached to the rear lower ends of the heads 238, are cables 244. These cables pass over pulleys 245 and are attached to the lever arms 246, (see Figs. 28 and 31) which are journaled in the bearings 247 and 115 connected by means of the rod 246^a. This lever arm is operated by an arm 248^a extending from the rod 246^a and beneath the treadles 233 and 234. Thus when either of the treadles is depressed, the arm 248^a is 120 depressed and, acting through the lever arms 246 and cables 244, will withdraw the sliding bars 235 and arms 59 (see Fig. 30) from out of the path of the ascending web roll carrier 40. The arm 59 is connected to 125 cable 244 by means of cable 244^a and pin 59^a. This is to prevent said web roll carrier from depositing a fresh web roll upon the

decks when it is only desired to allow the empty spindles to run down the inclined bars 223.

The mechanism for withdrawing stop or catch 239 is shown in Figs. 31, 32 and 33. Carried by the block 88 (see Fig. 32) in its reciprocating movement is a bar 248 having a cam face 249 on one end, and a vertically sliding latch 250 in its other end, (Fig. 32). This latch has projecting from it a pin 251 which is adapted to ride over the cam faces 252 and 253 on the framework and thereby draw the latch upward. As the bar 248 nears the end of its travel in the direction of the head 238, the cam face 249 strikes the roller 243 and pulls the latch 239 downward, thus releasing a fresh web roll as an empty core is about to be removed. The spring 237 is made of such strength that the weight of the fresh web roll, bearing against the catch 239 and arm 62 will keep the bar 235 and arm 62 depressed, and prevent more than one web roll being deposited thereon and against the catch 239 at a time. As the catch 239 is depressed, the pin 242 carried by the arm 241 will strike the end 254 of a sliding latch 255 and carry it downward. This latch is held in its upper and normal position by means of a spring 256, and is adapted to slide vertically in the guiding plate 257, being limited in its movement by a pin 258 running in a slot in the guide-plate 257. On the lower end of this latch is carried a pivoted dog 259 limited in its movement in one direction by a pin 260, and normally forced against said pin by a spring 261. Sliding in the framework at 262 (Fig. 31) is a rod 263 pivoted at 264 to a rocking arm 265, said rocking arm being pivoted at 266. This rocking arm is provided to give the fresh web roll a movement forward along the supporting frames, and a partial turn in order that its web end may move forward with the gripping tapes, and be guided into the printing couple and forwarding mechanism of the press; to give the rocking arm 265 such a movement, the rod 263 is provided with a spring 267 adapted to be compressed between two collars 268 and 269, the collar 269 being held by set screw 270, while the collar 268 is loose on the rod 263, but is prevented from moving to the right by an adjustable collar 270^a. The collar 269, (see Fig. 32), carries projections 271 for engagement with the dog 259, and the collar 268 carries a projection 271^a for engagement with the projection 272 on the bar 248. The rod 263 also carries a projecting collar 273 for engagement with the catch 250 when the bar 248 is moving in a direction to the right. As the bar 248 moves in toward the head 238, the projection 272 engages the collar 268, and compresses the spring 267, the collar 269 being held fast by engagement with the dog 259. But as the bar 248 con-

tinues still farther, the cam face 249 strikes the roller 243, drawing down the bar 241 and causing the pin 242 to engage the arm 254 on sliding bar 255, forcing the same downward. This action forces the dog 259 downward, releasing the collar 269, and allowing the spring 267 to impart a quick movement to the rocking arm 265. The upper end of this arm strikes against pins 274 which project from a grooved head on the spindle of the web roll. This sudden movement starts the roll toward its operative bearings in the press and gives it a partial turn unwinding the paper of the roll. After the roll has been liberated from the catch 239, the bar 248 starts on its reverse movement, and in so doing the catch 250 engages the collar 273, pulling back the rod 263 and arm 265 to their initial positions. Immediately the collar 269 has passed the dog 259 and there locked it against a reverse movement, the latch 250 is drawn out of contact with the collar 273 by the pin 251 which rides up over the cam face 253. A slightly further movement of the bar 248 places the mechanism in its initial position. It might happen that the arm 265 would strike one of the pins 274 at such an angle as to move the roll in neither direction. To prevent this I provide the end of the bar 265 with a spring pressed sliding pin 275 having a hemispherical head 276. If now the head 276 should strike one of the pins 274 at such an angle as to tend to lock them, the head 276 will be forced downward against the spring and allow the arm 265 to pass under that pin and engage with the next succeeding pin.

In my improved apparatus I provide means for preventing the snowing up of the press, when the web breaks. In carrying this feature of my invention into effect, a cutting or tearing mechanism is employed, which will sever the incoming web before it enters the tapes leading to the printing couple. This cutting mechanism is controlled by means thrown into operation when the web breaks. A lever knife 152 is pivoted at 153 in the frame of the machine (see Fig. 10), and the knife arm of said lever is normally pulled by the spring 154 against the stop 155, as shown in dotted lines. The other arm 156 of said lever is provided with a slot 157 which engages with a pin 158 on the rod 159, the rod being pivotally connected with a lever 160, which is pivoted at 161 in the frame of the machine. (See Figs. 3 and 17.) The lever 160 carries a series of rollers 162 (Figs. 17 and 18), the rollers resting between the tapes on the web of paper. A spring 163 moves the lever 160 in one direction against the web. Should the paper or web tear, the rollers 162 are forced beyond the web by the spring 163, and the rod 159 is moved to throw the

knife 152 against the front stop 155^a, (see Fig. 10) at the same time severing the web, which is being supplied to the printing press. An arm 164, extending from the knife lever 152 may be provided for detaining the front edge of the web. This arm is rocked into position when the cutter acts to cut off the web. A bridge-plate 165 may also be provided for closing the gap between the rolls 131 and 131^a, so that the front end of the web, after the knife 152 has severed it, cannot enter between the rolls 131 and 131^a and clog the machine.

I have illustrated in Figs. 19, 20 and 21 another embodiment of the invention in which the web is cut off before it enters the press, if the web breaks in the press, and in which at the same time, the rotation of the web roll is checked, after the web has been severed. The web roll is provided with the spindle above described, 166. Below the bearings of the web roll is mounted a pivoted lever 167 carrying at its ends a plurality of pivoted jaws 168 and 169, pressed together by the springs 170. A cutter 171 is provided for severing the web and pins 172 may also be provided for impaling the front end of the web, after the web has been cut. A spring 173 tends to pull the cutter toward the web coming from the web roll, and an arm 174 secured to fulcrum of lever 167 may be used to restore the cutter to its normal position, after it has done its work, as hereinafter described. A handle 174^a may also be employed to move the cutter to cut the web, whenever it may be so desired for any purpose, as for using a different kind of paper in the press, or when the web on its edge or elsewhere is defective or torn.

The cutter is normally held out of engagement with the web by means of an arm 175 that rests under the latch 176 pivoted at 177 to the frame of the machine. The latch is operated when the web breaks by the following means: A roll 178 mounted on an arm 179 rests on the web which passes between the tapes 180 and 181; a spring 182 under compression and a spring 183 under tension tends to throw the roll 178 in a direction across the path of travel of the web. If the web breaks the roll 178 will strike a plate 184 on top of the rod 185 which is normally raised by the spring 186. The downward movement of the rod 185, through the bell crank lever 187 and connecting link 187^a, will withdraw the latch 176 from the arm 175, when the spring 173 will force the cutter 171 to cut the web before it enters the press, and at the same time, by reason of the jaws 168 coming into contact with the periphery of the roll, the rotation of the roll will be stopped. The pins 172 impaling themselves in the web and attached to the web roll, will prevent the web end from dropping down on any of the mechanism

beneath it. Instead of using the handle 174^a to force the arm 175 under the latch 176, this may be done automatically when a new roll is fed forward, by the carrier 88, for said carrier will contact with and push forward the lever 174 until the arm 175 is caught by the latch 176.

From the above it will be understood that a fresh web roll can be carried below the street level at 2 by the carrier 3, and allowed to reach the stops at 24 at the end of the track devices for conveying the web rolls to the rear end of the press. A number of rolls may be stored on these tracks until ready for use. The hoisting devices 40, 44, will take the foremost web roll and supply it to the deck of the press where it is needed. If this web roll is the first in the press, it is fed along the frames 60^a until its spindle rests in the bearings 87. The locking devices 265^a and 239^a and the stops 135 are then operated when it is desired to thread the web through the press. If the web roll deposited on a deck is to succeed a previous one which has been used up, it is operated upon by the locking devices 288 and its web started into the tapes, so that when the previous roll becomes empty this web may immediately succeed it without causing any lapse in the feeding of the paper. The empty core is automatically raised out of its bearings 87 by the vertical carriers 89, deposited upon the tracks 223, and finally taken up by carrier 40, 215 and deposited upon the bars 221 where it rolls away. It will be noticed, however, that after the whole mechanism is once in operation, the web rolls succeed each other automatically and very little attention of the attendant is required. Should the web break at any part of the press where the controlling device is located the web will be immediately severed near the web roll before it enters the printing couples, and thereby prevent snowing up of the press.

I do not limit myself to the precise construction herein described and shown in the accompanying drawings, as many changes may be made therein without departing from the spirit of my invention or sacrificing its principal advantages.

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

1. In combination with a printing press, a vertically movable endless carrier for web rolls or spindles, and means for causing said rolls or spindles to be delivered at different levels.

2. In combination with a printing press, a vertically movable endless carrier for web rolls or spindles, and means for causing said rolls or spindles to be delivered at different levels, and means for stopping the movement of said carrier where desired.

3. In combination with a printing press,

a vertically movable endless carrier for web rolls or spindles, and means for causing said rolls or spindles to be delivered at different levels, and means under the control of an operator for stopping the movement of said carrier where desired.

4. In combination with a vertically movable device for taking up and carrying web rolls or spindles and means operated by the operative mechanism of the press for giving vertical movements in both directions to said device.

5. In combination with a hoisting device for the fresh web rolls, and means for giving vertical movements in both directions to said hoisting device, means adapted to be operated by a roll spindle on the hoisting device to cause the same to reverse its movement when it has reached a certain height, and means connected with the said device to cause the same to reverse its movement, when it is in a position to lift a fresh web roll.

6. In combination with the hoisting device for the fresh web rolls, and means for giving vertical movements in both directions to said hoisting device, a clutch for causing the change of movement of said device, means adapted to be operated by a roll spindle on the hoisting device to operate the clutch to cause said device to reverse its movement when it has reached a certain height, and means connected with said device to operate the clutch to cause said device to reverse its movement when it has reached the bottom of its course.

7. In combination with a printing press, a hoisting device for the fresh web rolls, means for positively raising and lowering the hoisting device, a clutch for throwing said means in and out of operation, means for operating said clutch, a latch for holding said means in its normal position, and means mounted on the hoisting device for releasing said latch at the bottom of the course of said device.

8. In combination with a printing press, a hoisting device for the fresh web rolls, delivering mechanism for delivering the roll from the hoisting device to the deck from which it is to be used, and means whereby the operation of the delivery device to so deliver the roll is made to depend on the absence of a web roll from its deck.

9. In combination with a printing press, a hoisting device for fresh web rolls, delivering mechanism for delivering the roll from the hoisting device to the deck from which it is to be used, means connected with said delivery device to support a web roll, and the weight of the roll when so supported, causing the delivering mechanism to be out of operation for delivering a roll to the deck.

10. In combination with a printing press, a hoisting device for fresh web rolls, a roll

delivering mechanism for delivering the roll from the hoisting device to the deck from which it is to be used, said delivering mechanism including a sliding frame, and means whereby the absence of the web roll from its position on the deck will cause said frame to be in a position for delivery of a web roll to the same from the hoisting device, and when said frame is supporting a web roll, the frame will be out of position for delivery upon it.

11. In combination with a printing press, a hoisting device for fresh web rolls, a roll delivering mechanism for delivering the roll from the hoisting device to the deck from which it is to be used, said delivering mechanism including a sliding frame, means connected with said sliding frame to support a web roll, and the weight of the roll when so supported, causing the delivering mechanism to be out of operation for delivering a roll.

12. In combination with a printing press, a hoisting device for the fresh web rolls, a sliding frame for delivering the web roll from the hoisting device to the deck from which it is to be used, a device with which a web roll is adapted to cooperate in its movements above said frame, and the operation of said device by means of the web roll, causing the return or lowering movement of the web roll hoisting device, to permit the web roll to drop upon said frame.

13. In combination with a printing press, a hoisting device for the fresh web rolls, a delivery device between the hoisting device and the deck of the press, a web roll transferring mechanism for transferring a web roll from the delivery device to its bearings in the press, and an inclined track between the delivering device and the transferring mechanism for starting the web roll.

14. In combination with a printing press, a hoisting device for the fresh web rolls, a delivering mechanism for delivering the roll from the hoisting device to a deck in the press, a web roll transferring mechanism for transferring the roll from the delivering mechanism to its bearings in the press, and means for operating the delivering mechanism to supply a fresh web roll to the transferring mechanism.

15. In combination with a printing press, a hoisting device for the fresh web rolls, a delivering mechanism for delivering the roll from the hoisting device to a deck in the press, a web roll transferring mechanism for transferring the roll from the delivering mechanism to its bearings in the press, and means for operating the delivering device to release a roll from the delivering device and to transfer it to the action of the transferring mechanism at the proper time.

16. In combination with a printing press, a hoisting device for the fresh web rolls, a

delivering mechanism for delivering the roll from the hoisting device to a deck in the press, a stop for the roll forming part of said mechanism, a web roll transferring mechanism for transferring the roll from the delivering mechanism to its bearings in the press, and means for moving said stop to permit the roll to be transferred to the transferring mechanism.

17. In combination with a printing press, a hoisting device for the fresh web rolls, a delivering mechanism for delivering the roll from the hoisting device to a deck in the press, a stop for the roll forming part of said mechanism, a web roll transferring mechanism for transferring the roll from the delivering mechanism to its bearings in the press, and means for moving said stop to permit the roll to be transferred to the transferring mechanism, just before said mechanism begins its feeding movement to the roll bearings.

18. In combination with a printing press, a hoisting device for the fresh web rolls, a delivering mechanism for delivering the roll from the hoisting device to a deck in the press, a web roll transferring mechanism for transferring the roll from the delivering mechanism to its bearings in the press, means for operating the delivering device to release a roll from the delivering device and to transfer it to the action of the transferring mechanism at the proper time, and means for automatically starting the rotation of the roll about the time the roll is transferred.

19. In combination with a printing press, means for regulating the movement of the web roll to its bearings in the press, a cable for operating said regulating means, a device for operating said cable, and means for reversing the movement of said cable.

20. In combination with the operative bearings of a web roll of a printing press, means for conveying a web roll to said bearings, a vertically moving cable, and a carrier attached to said cable for removing the core of the expired or expiring web from said bearings.

21. In combination with the operative bearings of a web roll of a printing press, means for conveying a web roll to said bearings, a vertically moving cable, and a carrier attached to said cable for removing the core of the expired or expiring web from said bearings, means for reversing the movement of said cable, and the carrier adapted to be withdrawn by the cable from said bearings when a new web roll is moved toward said bearings.

22. In combination with a printing press, means for regulating the movement of the web roll to its bearings in the press, a carrier for removing the web core from said bearings, a cable connecting said regulating means and carrier and for operating the

same, a device for operating said cable, means for reversing the movement of the cable, and the carrier adapted to withdraw from the web roll bearings when the regulating means moves toward said bearings, and to move toward said bearings when the regulating means moves away from the same.

23. In combination with a printing press, a horizontally reciprocating device for regulating the movement of a web roll toward its bearings in the press, means for reciprocating said regulating device, said means including a reversing clutch, and means for operating said clutch, said means being adapted to be thrown into operation by the movement of the regulating device.

24. In combination with a printing press, a lever provided with a socket for normally supporting and holding the spindle of a web roll away from its operative position for its web to be drawn into the press, means for preventing the rotation of the roll while in such position until the lever is withdrawn from said roll.

25. In combination with a printing press, a lever for normally supporting and holding a web roll away from its operative position for its web to be drawn into the press, means for preventing the rotation of the roll while in such position until the lever is withdrawn from said roll, and means for traveling with and guiding a web roll to said operative position.

26. In combination with a printing press, a lever for normally supporting and holding a web roll away from its operative position for its web to be drawn into the press, means for preventing the rotation of the roll while in such position until the lever is withdrawn from said roll, and means for guiding a web roll to said operative position, and for withdrawing said lever from said roll.

27. In combination with a printing press, a lever for normally supporting and holding a web roll away from its operative position for its web to be drawn into the press, means for preventing the rotation of the roll while in such position until the lever is withdrawn from said roll, and means for guiding a web roll to said operative position, and for withdrawing said lever from said roll when said means are at the beginning of their guiding movement.

28. In combination with a printing press, a carrier for withdrawing an expiring web roll, and means for preventing the rotation of the roll on said carrier by the action of the carrier in withdrawing the roll, whereby extreme tension on the web will be caused between the roll and the press.

29. In combination with a printing press, a carrier for withdrawing an expiring web roll, and means connected with said carrier

for preventing the rotation of the roll on said carrier by the action of the carrier in withdrawing the roll, whereby extreme tension on the web will be caused between the roll and the press.

30. In combination with a printing press, a carrier for withdrawing an expiring web roll, and means for automatically preventing the rotation of the roll on said carrier by its withdrawal of the roll, whereby extreme tension on the web will be caused between the roll and the press.

31. In combination with a printing press, a carrier for withdrawing an expiring web roll, and provided with angular bearings for angular portions of the spindle of said roll that will prevent rotation of the same.

32. In combination with a printing press, a carrier for withdrawing an expiring web roll, and provided with angular bearings for angular portions of the spindle of said roll, and means for retaining said spindle in said bearings that will prevent rotation of the same.

33. In combination with a printing press, a carrier for withdrawing an expiring web roll, and provided with angular bearings for angular portions of the spindle of said roll, and means for automatically retaining said spindle in said bearings during the withdrawal movement of the carrier that will prevent rotation of the same.

34. In a printing press, the combination with a carrier for withdrawing an expiring web roll or core from its operative position in the press, and means for removing said roll or core from said carrier.

35. In a printing press, the combination with a carrier for withdrawing an expiring web roll or core from its operative position in the press, means for removing said roll or core from said carrier, and means for conveying the roll or core away from the removing means.

36. In a printing press, the combination with a carrier for withdrawing an expiring web roll from its operative position in the press, and means for automatically removing said roll or core from said carrier.

37. In a printing press, the combination with a carrier for withdrawing an expiring web roll or core from its operative position in the press, means for removing said roll or core from said carrier, and means for conveying and depositing the roll or core away from the removing means.

38. In a printing press, the combination with a carrier for withdrawing an expiring web roll or core from its operative position in the press, and means for removing said roll or core from said carrier on its return movement for the removal of another roll or core.

39. In combination with a printing press,

a carrier for withdrawing an expiring web roll, and provided with bearings for the spindle of said roll that will prevent rotation of the same.

40. In a printing press, the combination with a vertically reciprocating carrier for lifting an expiring web roll or core away from its operative position in the press, and means for removing said roll or core from the carrier on the downward movement of the same.

41. In a printing press, the combination with a vertically reciprocating carrier for lifting an expiring web roll or core away from its operative position in the press, means for removing said roll or core from the carrier on the downward movement of the same, and means for conveying said roll or core away from the carrier.

42. In combination with a printing press, means for conveying an expiring web roll or core away from the press, and means for removing said roll or core from said conveying means.

43. In combination with a printing press, means for conveying an expiring web roll or core away from the press, and means for positively removing said roll or core away from said conveying means.

44. In combination with a printing press, means for conveying an expiring web roll or core away from the press, and means for removing said roll or core from said conveying means and then depositing it.

45. In combination with a printing press, means for conveying an expiring web roll or core away from its operative position, and means for lifting said roll or core from said conveying means and then depositing it.

46. In combination with a printing press, means for conveying an expiring web roll or core away from its operative position, a vertically reciprocating carrier for lifting said roll or core from said conveying means on its upward movement, and for depositing said roll or core on the downward movement of the carrier.

47. In combination with a printing press, means for conveying an expiring web roll or core away from its operative position, a vertically reciprocating carrier for lifting said roll or core from said conveying means on its upward movement, and for depositing said roll or core on the downward movement of the carrier, and means for receiving and conveying said roll or core away from said carrier on its downward movement.

48. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a cable having a movement substantially parallel with said support and toward said bearings, and

said cable provided with a lateral extension or block extending over the course of said roll.

49. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a cable having a movement substantially parallel with said support and toward said bearings, and said cable provided with a lateral extension or block extending over the course of the spindle of said roll.

50. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a cable having a reciprocating movement substantially parallel with said support and toward and away from said bearings, and said cable provided with a lateral extension or block extending over the course of said roll.

51. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a carrier for removing the web core from said bearings, a cable having a movement substantially parallel with said support and with the course of the carrier, and said cable provided with a lateral extension or block, means for reversing the movement of the cable, and the carrier adapted to withdraw from the web roll bearings when the extension or block moves toward said bearings, and to move toward said bearings when the extension or block moves away from the same.

52. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a carrier for removing the web core from said bearings, a cable having a reciprocating movement substantially parallel with said support, and with the course of the carrier, and said cable provided with a lateral extension or block, means for reversing the movement of the cable, and the carrier adapted to withdraw from the web roll bearings when the extension or block moves toward said bearings, and to move toward said bearings, when the extension or block moves away from the same.

53. In combination with a roll support of a printing press, means for causing tension on a web while it is being unwound from a web roll, said means consisting of brake jaws, one of which extends to the rear end of said support.

54. In combination with a roll support of a printing press, means for causing tension on a web while it is being unwound from a web roll, said means consisting of brake jaws loosely connected together, one of said jaws carried by a lever, means for adjusting said lever, rollers resting on a portion of the machine frame, and the other jaw supported on said rollers, and

means for adjusting said jaws in a direction longitudinally with the roll spindle.

55. In combination with web roll spindle and spindle-supports, a frame provided with brake jaws for a spindle head, and traction rollers, a support for said frame on which said rollers rest, and means for adjusting said frame with its jaws on said support longitudinally with the spindle.

56. In combination with a web roll holder of a printing press, means for striking against a part of said holder transversely, so as to start its rotation.

57. In combination with a printing press, means for locking and unlocking a web roll from rotation while in its operative position, and means for starting the rotation of the roll and unwinding of the web, and said starting means also acting as locking means.

58. In combination with a printing press, a web roll core provided with an eccentric projection, and a device capable of a reciprocating movement transversely to the core, and adapted to be drawn against and withdrawn from said projection, all as and for the purposes set forth.

59. In combination with a printing press, a web roll core provided with a plurality of projections, one of which is eccentric to the core, and a device capable of a reciprocating movement transversely to the core and provided with two arms one of which is adapted to strike against the eccentric projection to start the rotation of the roll and the unwinding of the same, and the other arm adapted to be drawn against and withdrawn from a projection to lock and unlock said roll from rotation.

60. In combination with a printing press, a web roll core provided with an eccentric projection, and a device capable of a reciprocating movement transversely to the core, and adapted to strike against said projection, and said device adapted to be moved in a different direction to said transverse movement, whereby the rotation of the web roll while in its operative position may be started.

61. In combination with a printing press, means for conveying the end of a web roll to the feeding mechanism, and a movable stop for said end situated in front of said mechanism, whereby said end may be prevented from being conveyed to said mechanism.

62. In combination with a printing press, means for conveying the end of a web roll to the feeding mechanism, and a device movable transversely of said conveying means in front of said mechanism, for stopping the conveying of said end to said mechanism.

63. In combination with a printing press, means for conveying the end of a web roll to the feeding mechanism, and a movable stop for said end, whereby said end may be prevented from being or allowed to be conveyed to said mechanism, a carrier for removing a web core or expiring web roll from its operative bearings, and having movements to and away from said bearings, and the carrier adapted to remove said stop from the course of said web end about the time of removal of the core or expiring roll.

64. In combination with a printing press, means for conveying the end of a web roll to the feeding mechanism, and a movable stop for said end, whereby said end may be prevented from being or allowed to be conveyed to said mechanism, a carrier for removing a web core or expiring web roll from its operative bearings, and having movements to and away from said bearings, and the carrier adapted to remove said stop from the course of said web end before it begins to remove the core or expiring roll.

65. In combination with a printing press, means for conveying the end of a web roll to the feeding mechanism, and a movable stop for said end, whereby said end may be prevented from being or allowed to be conveyed to said mechanism, a carrier for removing a web core or expiring web roll from its operative bearings, and having movements to and away from said bearings, and the carrier adapted to remove said stop from the course of said web end before it begins to remove the core or expiring roll, and near the end of its course toward said bearings.

66. In a printing press, the combination of cutting mechanism arranged between the web roll and the beginning of the feeding mechanism of the press, and means controlled by the breakage or severing of the web in the machine beyond the beginning of the feeding mechanism, for operating said cutting mechanism when the web breaks to cut the web before entering the feeding mechanism.

67. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism and in a direction transverse to the web, means connected with said device for operating the same, and the breakage of the web beyond the beginning of the feeding means serving to cause said means to operate the device to sever the web before the feeding mechanism.

68. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism and in a direction transverse to the web, means connected with said device for oper-

ating the same, and adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said sets of feeding devices, and to operate to sever the web before the feeding mechanism.

69. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism, means for normally keeping said device away from the web while being fed to the press, means adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said two sets, and to overcome the restraining means for said device, whereby the device will operate to sever the web before the feeding mechanism.

70. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism, means for normally keeping said device away from the web while being fed to the press, means adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said two sets, and to release the device from its restraining means, whereby the device will operate to sever the web before the feeding mechanism.

71. In a printing press, the combination with the feeding mechanism of cutting and brake mechanism arranged between the web roll and the beginning of the feeding mechanism, and means controlled by the breakage or severing of the web in the machine beyond the beginning of the feeding mechanism, for operating said cutting and brake mechanism when the web breaks to cut the web and to check the rotation of the web roll before the web enters the feeding mechanism.

72. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism, means for normally keeping said device away from the web while being fed to the press, means adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said two sets, and to release the device from its restraining means, whereby the device will operate to sever the web before the feeding mechanism, and means for bearing upon the web roll to brake the same when the web is severed.

73. In combination with a printing press, means for feeding the web of a web roll to

the press, a severing device situated near the beginning of the web feeding mechanism, means for normally keeping said severing device away from the web while being fed to the press, means adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said two sets, and to release the severing device from its restraining means, whereby said device will operate to sever the web before the feeding mechanism, and means connected with said device for bearing upon the web roll to brake the same when the web is severed.

74. In a printing press, the combination of a cutter for severing the web before it enters the press, pins for impaling the front edge of the web, a brake for checking the movement of the web roll, and means for actuating said cutter, pins and brake, when the web breaks in the press.

75. In combination with a printing press, means for feeding the web of a web roll to the press, a severing device situated near the beginning of the web feeding mechanism, means for normally keeping said severing device away from the web while being fed to the press, means adapted to bear upon a part of the web extending between two sets of feeding devices, and said means adapted to be released by the severing of the web between said two sets, and to release the severing device from its restraining means, whereby the severing device will operate to sever the web before the feeding mechanism, and puncturing means connected with said knife for puncturing and holding the web before the feeding mechanism when the web is severed.

76. In a printing press, the combination of cutting mechanism arranged between the web roll and the feeding mechanism of the press, tapes for feeding the web through the press, and a roller adjacent to said tapes for operating said cutting mechanism when the web breaks.

77. In combination with a printing press, a support for a web roll, an eccentric projection extending from the end of the roll core, and means for automatically pushing said projection and thus feeding the roll at the proper time.

78. In combination with a printing press, a support for a web roll, a plurality of pins or projections extending from the end of the roll core, and means for automatically pushing said projections and thus feeding the roll at the proper time.

79. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, and means for automatically starting the rota-

tion of the roll, at the desired movement for feeding the same on its support.

80. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, the roll core provided with an eccentric projection, and means for automatically pushing said projection at the desired moment for feeding the roll on its support, whereby at said moment the rotation and feeding of the roll will be automatically started.

81. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, the roll core provided with an eccentric projection, and means for automatically striking and pushing said projection at the desired moment for feeding the roll on its support, whereby at said moment the rotation and feeding of the roll will be automatically started.

82. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, and a web core having a plurality of pins or projections extending eccentrically from said core, and means for automatically pushing a projection at the desired moment for feeding the roll on its support, whereby at said moment the rotation and feeding of the roll will be automatically started.

83. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, means for catching and retaining said roll as it reaches said stop, and means for releasing said catching and retaining means from its operative position.

84. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, means for catching and retaining said roll as it reaches said stop, and means for automatically releasing said catching and retaining means from its operative position when said stop is withdrawn from the roll.

85. In combination with a printing press, a support for a web roll leading to the operative bearings for said roll, a movable stop for preventing and permitting the feeding movement of the roll on said support, a lever having an angular notch for catching and retaining said roll by engaging with an angular portion of the roll spindle.

86. In combination with a printing press,
a support for a web roll leading to the
operative bearings for said roll, a movable
stop for preventing and permitting the feed-
5 ing movement of the roll on said support, a
lever having an angular notch for catching
and retaining said roll by engaging with an
angular portion of the roll spindle, and
means for automatically operating said le-
10 ver to release the spindle when said stop is
withdrawn from the roll.

87. In combination with a printing press,
a support for a web roll leading to the op-
erative bearings for said roll, a movable
15 stop for preventing and permitting the feed-

ing movement of the roll on said support,
a lever having an angular notch for catch-
ing and retaining said roll by engaging
with an angular portion of the roll spindle,
and means connected with the feeding 20
mechanism of the roll for automatically op-
erating said lever to release the spindle when
said stop is withdrawn from the roll.

In testimony whereof, I have signed my
name to this specification, in the presence of 25
two subscribing witnesses.

SAMUEL THOMAS WALKUP.

Witnesses:

GORHAM CROSBY,
EDWIN SEGER.