

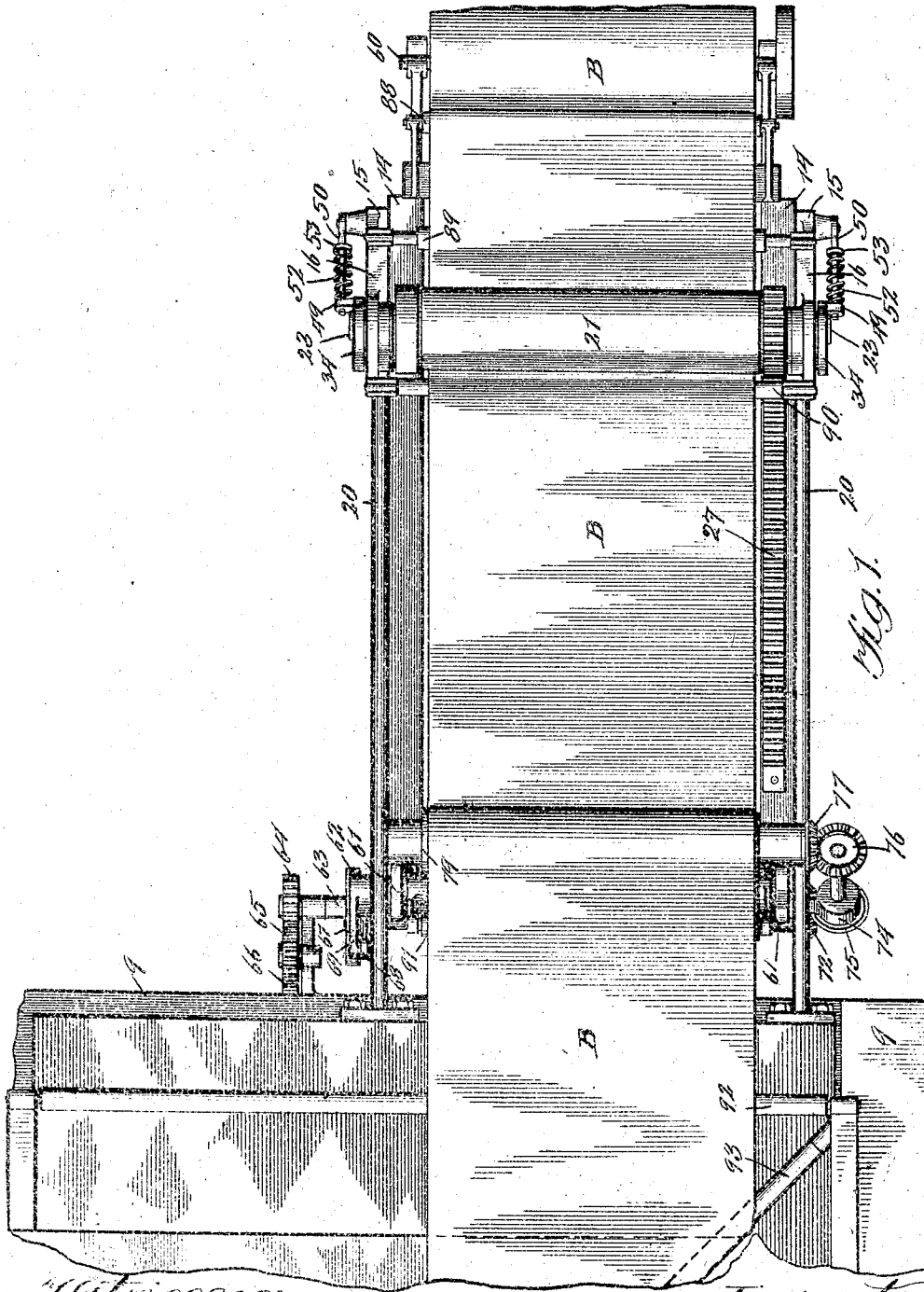
P. F. COX.
PRINTING PRESS.

APPLICATION FILED OCT. 22, 1910.

1,027,526.

Patented May 28, 1912.

5 SHEETS—SHEET 1.



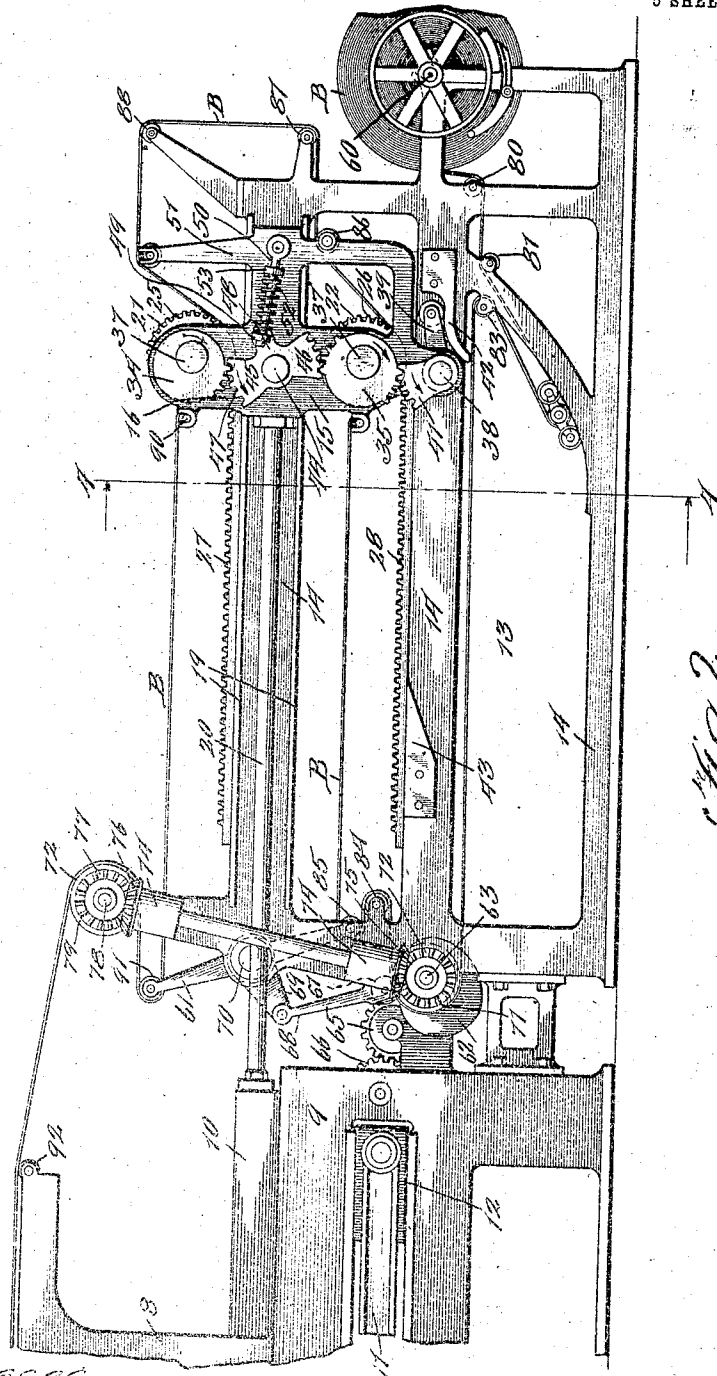
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5 SHEETS—SHEET 2.



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5 SHEETS-SHEET 3.

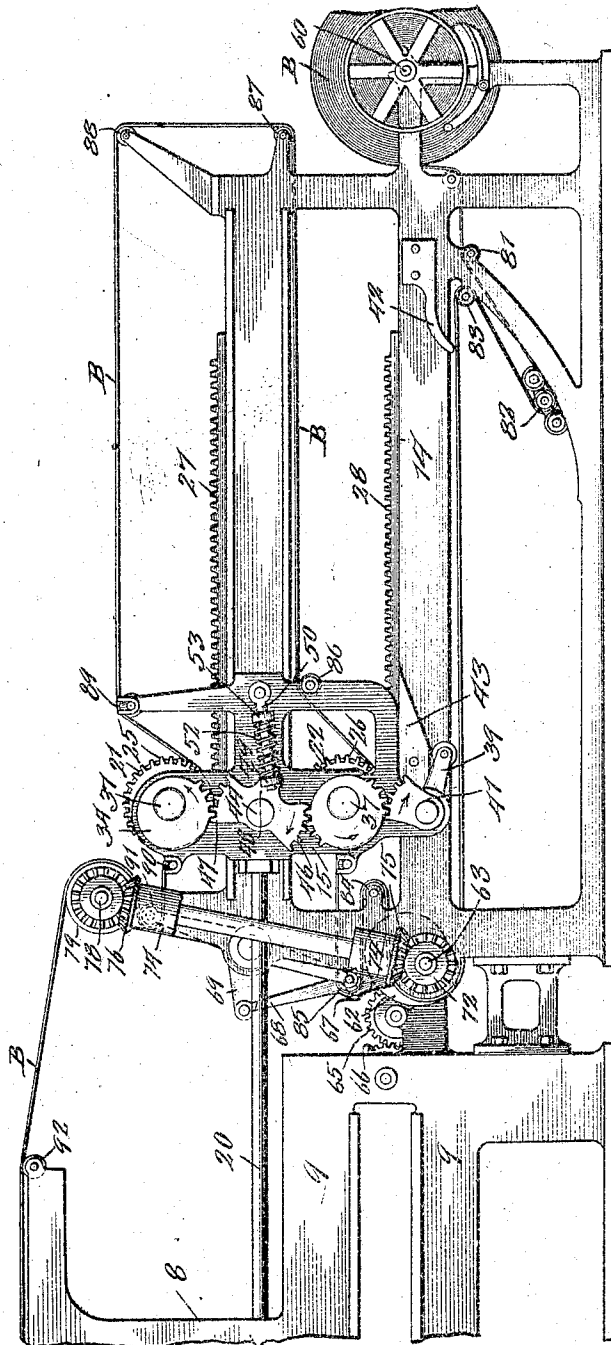


Fig. 3.

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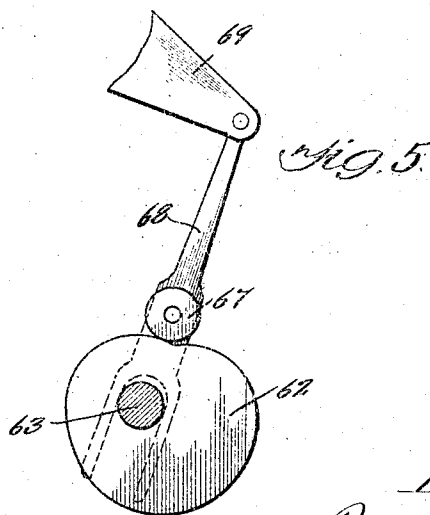
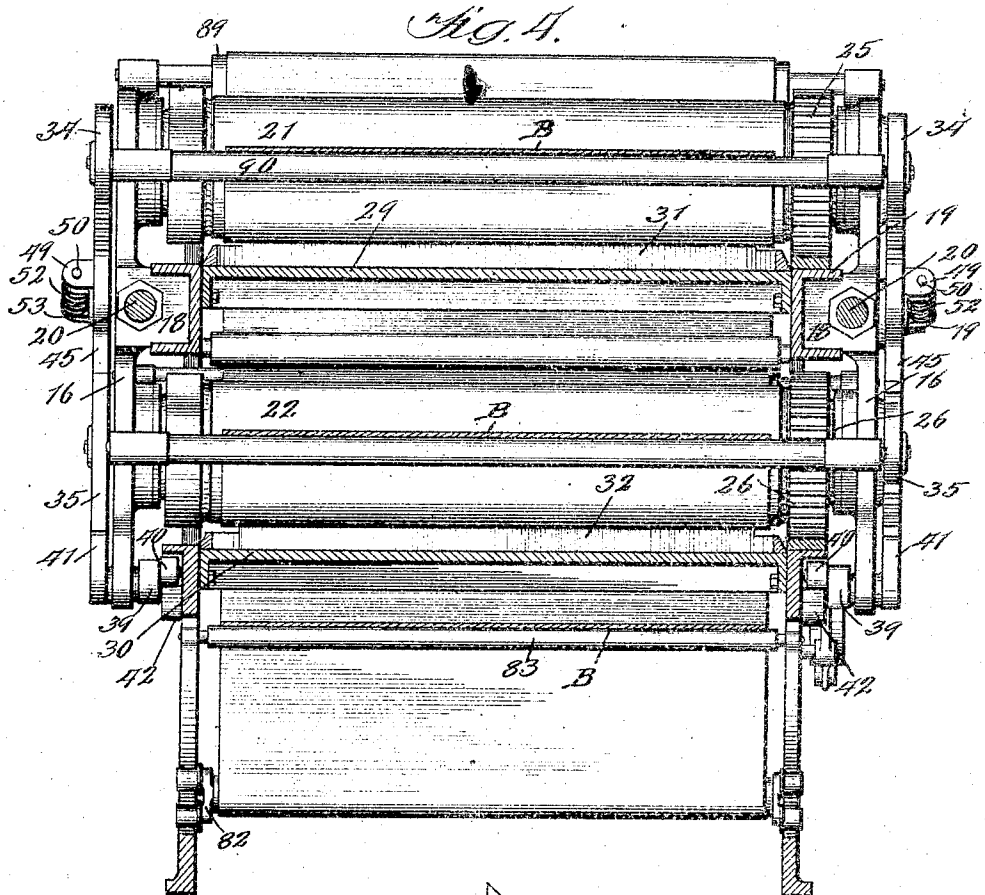
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5 SHEETS-SHEET 5.

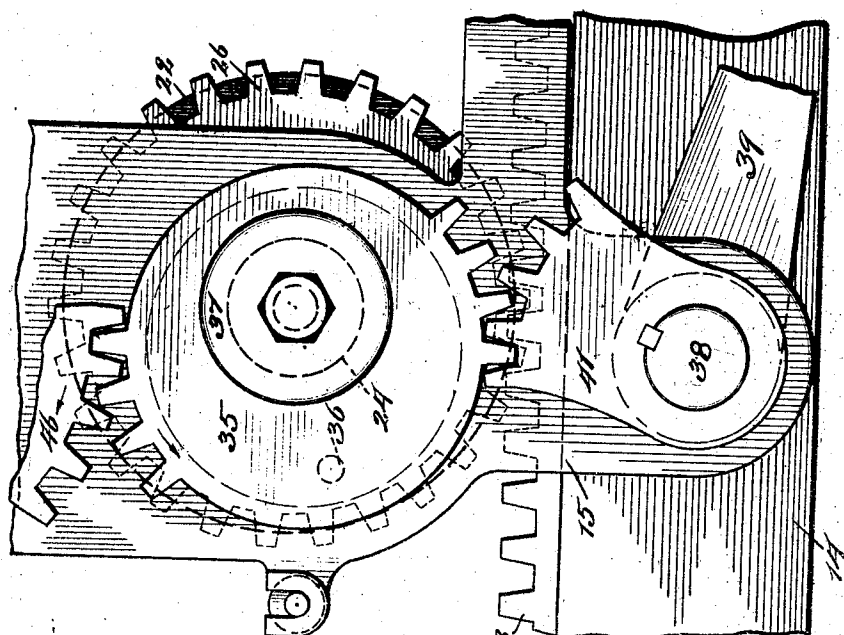


Fig. 6.

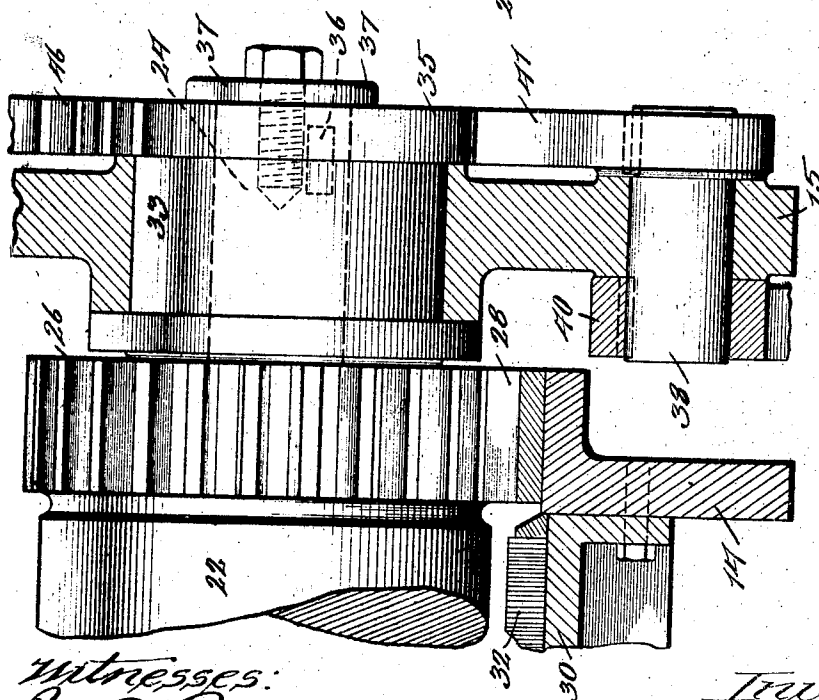


Fig. 7.

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UNITED STATES PATENT OFFICE.

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PRINTING-PRESS.

1,027,526.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed October 22, 1910. Serial No. 588,510.

To all whom it may concern:

Be it known that I, PAUL F. COX, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Printing Presses, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to printing presses and particularly to the type of printing presses known as flat-bed presses, and one of its objects is to provide a new and improved combination between a press of what is known as the traveling-bed type, adapted for printing the main web, and a supplement-press of what is known as the traveling impression-cylinder type, whereby the movement of the traveling-bed of the main press is utilized for the reciprocating of the traveling cylinders of the supplement press and the two united in such a way that the product of the supplement press may be brought to unite with the product of the main press to form a single product.

Other objects of my invention are to provide new and improved mechanism for raising and lowering the impression-cylinders as they reciprocate back and forth over the stationary bed of the traveling cylinder press so as to lower them into operative relation with the type on said bed for the printing movement and raise them therefrom at the end of the printing movement for their return movement.

My invention also contemplates new and improved automatic mechanism which locks the cylinders in both their raised and lowered positions and operates automatically at the end of each stroke.

My invention contemplates also further improvements in such printing mechanism hereinafter described.

In the drawings:—Figure 1 is a top or plan view; Fig. 2 is a side elevation showing the traveling cylinders at the beginning of the printing stroke and in lowered position; Fig. 3 is a side view of the same parts as Fig. 2 showing the cylinders at the end of their impression stroke and in their raised position; Fig. 4 is a transverse section on line 4—4 of Fig. 2; Fig. 5 is an enlarged view of the operating cam which operates the loopers on the traveling cylinder

press; Fig. 6 is an enlarged detail being an end view of the lower portion of one side of the carriage in which the traveling cylinders are mounted and showing in detail the mechanism by which they are raised or lowered; and Fig. 7 is an elevation of the same parts shown in Fig. 6 viewed from the left of said figure.

8 indicates a portion of the main press having framework 9.

10 indicates a traveling type-bed mounted in the framework of said press and reciprocated back and forth in any well-known and understood manner, as by driving-rod 11, pivoted at one end to slide-block 12, on which said traveling-bed is mounted, and driven in any appropriate manner not shown.

As the main press 8 may be of any well-known type of traveling-bed web-printing presses operating in any well-known manner to perfect a web passing through the same, only a portion of said press is shown, showing the form in which I have embodied my invention, in order not to encumber the drawings with useless illustrations of parts which are perfectly familiar to those skilled in the art and will be readily understood.

13 indicates a supplement press located adjacent to and in suitable registry with the main press 8 and having a framework 14.

15 indicates a carriage having side-bars 16. This carriage 15, by means of slide blocks 18, preferably formed integral with the side-bars 16, is slidingly mounted in ways or guides 19 in the framework of the press so as to reciprocate back and forth in said guides longitudinally of the press.

20 indicates rods secured at one end to the outer end of the traveling bed 10 of the main press 8 and at the other end to the carriage 15, whereby, as the traveling bed 10 is reciprocated back and forth on its press, the carriage 15 is correspondingly reciprocated in the supplement press 13.

21—22 indicate impression-cylinders provided, respectively, with shafts 23—24 at each end and carried by the carriage 15 in the manner hereinafter described.

25—26 indicate gears which are secured at one end of the cylinders 21—22, respectively, and which are adapted to mesh, re-

spectively, with racks 27—28 mounted on the framework 14 of the supplement press 13 whereby as said carriage reciprocates the impression-cylinders are rotated over the type-beds.

29—30 indicate stationary type-beds, mounted upon the framework 14, adapted to contain forms 31—32 which coact with the impression-cylinders 21—22, respectively, to print the paper passing between them.

Referring particularly to Figs. 6 and 7, where these parts are best shown, 33 indicates eccentrics which are journaled in suitable bearings in the side-bar 16, of the carriage 15, upon each side of the press and at each end of the respective cylinders. The drawings Figs. 6 and 7 illustrate in detail the eccentric upon only one cylinder and at one end of the press but it will be understood that all the eccentrics are alike. The shafts 23—24 of the impression cylinders 21—22 are journaled eccentrically in the eccentrics 33 so that by the turning of said eccentrics in their journal bearings in the carriage the cylinders are raised and lowered.

34—35 indicate gears, which are mutilated gears as shown in the figures, secured to the outer surface of the eccentrics 33 in any appropriate manner, as by pin 36. The cylinder-shafts 23—24 pass through the gears 34—35 so as to rotate therein.

37 indicates protecting caps which are secured to the ends of the shafts 23—24.

38 indicates rock-shafts which are journaled in the lower ends of the side-bars 16, of carriage 15, upon each side of the press.

39 indicates rock-arms keyed or otherwise secured to the inner ends of the rock-shafts 38 and carrying at each end a roller 40.

41 indicates segmental rock-arms which are keyed or otherwise secured to the outer ends of the rock-shafts 38 and are provided at their outer ends with teeth which mesh with the teeth on the gear 35.

It will be obvious that by rocking the rock-shaft 38 the gears 35 will be rotated in the one direction or the other causing the rotation of the lower eccentric 33 in its journal bearing in the carriage and thus causing the raising or lowering of the lower cylinder 22 which, as has been said, is eccentrically journaled therein.

42 indicates cams which are secured upon each side of the framework of the press near the feed end thereof and in register with the rollers 40 on rock-arms 39 whereby, when the carriage is reciprocated backward after its printing operation and has reached nearly the end of its movement in this direction, the rollers 40 riding up cams 42 will rock the rock-shafts 38 in a counter-clockwise direction, that is to say in the direction indicated by the arrow in Fig. 2, thus partially rotating the eccentric 35 in

the opposite direction, that is to say in the direction indicated by the arrow in Fig. 2, and thus lowering the cylinder 22 into printing position.

43 indicates cams located upon each side of the framework 14 near the opposite end of the type-bed from the cams 42 and in register with the rollers 40 whereby, when said carriage is reciprocated in its printing movement, that is from right to left in Figs. 1 and 2, as it reaches the end of the impression, the roller 40 coming in contact with the cam 43 will ride down its cam surface rocking the rock-shafts 38 and rock-arms 41 in the opposite direction from their previous movement thereby partially rotating the cam 35 in the direction indicated by the arrow in Fig. 3 thus raising the impression cylinder 22 for its return movement.

44 indicates rock-shafts journaled in side-bars 16 of the carriage 15 upon each side thereof and midway between the cylinders 21—22.

45 indicates rocking-members secured midway of their length upon the outer ends of the shafts 44 and carrying at each end gear-teeth 46—47. The gear-teeth 46, upon the lower ends of the rocking-members 45, are adapted to mesh with the gear 35 and the gear-teeth 47 upon the upper end of said arms 45, mesh with the gears 34.

48 indicates projections upon the rock arms 45 extending out from the middle portion thereof radially of the shafts 44.

49 indicates lugs which are pivotally mounted at their inner ends near the outer ends of projections 48, and are perforated to slidably receive one end of rods 50, the other end of which is pivoted to brackets 51, on the carriage 15, in line with the center of shafts 44.

52 indicates spiral-springs surrounding the rods 50 and bearing at one end against the lugs 49 and at the other end against collars 53 secured on the rods 50.

It will be obvious from the above description that, as the rock-arms 45 rock in one direction or the other as hereinafter described, the spring-seated rods 50 will pass centers and by the resilience of springs 52 will prevent the rock-arms from being rocked except as constrained by force greater than the spring and will thus automatically tend to lock the rock-shafts 44, and consequently the impression-cylinders, in either their raised or lowered position as hereinafter described. From the above description it will be seen that as the reciprocating carriage approaches the position shown in Fig. 2 near the end of its backward movement, after the printing movement, as above described, the rollers 40 rolling up cams 42, rock the rock-shafts 38 and gears 35, and partially rotate the eccentrics so as to lower the cylinder 22 into printing

position. The rocking of the gears 35 in the direction shown by the arrow in Fig. 2 will rock the rocking-members 45 in the direction indicated by the arrow thereon in Fig. 2 thus rocking the gears 34 in the direction indicated by the arrow thereon in Fig. 2, that is to say in the same direction as gears 35, thus lowering the cylinder 21 in the same manner as cylinder 34 so as to be in operative relation with the upper type-bed in the forward or printing movement of the carriage. This same movement will swing the projections 48 upward into the position shown in Fig. 2 causing the rods 50 to pass centers, as above described, in which position the resilience of the springs prevents the rocking of the members 45 in the opposite direction during the printing movement of the cylinders and thereby automatically locking the cylinders in their lowered or printing position until raised by the stronger force of the cams 43 acting upon rollers 40, as above described. It will also be readily understood that when at the end of the printing movement the parts are brought into the position shown in Fig. 3 and the rock arms 41 and gears 35 are rocked in the direction of the arrow shown in Fig. 3 by the action of cams 43 on rollers 40, as above described, the rock-arms 45 will be rocked in the direction indicated by the arrow thereon in Fig. 3, partially rotating the gears 34 in the direction indicated by the arrow thereon in Fig. 3, partially rotating the eccentrics 33 in which the upper cylinder 21 is mounted, thereby lifting the cylinder 21 for its return movement at the same time with the lifting of cylinder 22, as above described. By this movement the rods 50 will be rocked downward and caused to pass centers causing the springs to automatically lock the cylinders in raised position until lowered at the end of their return movement for their impression movement, above described.

B indicates the web of paper which is printed upon the supplement press 13. The roll of paper is mounted upon the usual spindle 60 journaled in the frame 14 in the usual manner.

61 indicates looping mechanism swingingly journaled in the framework 14 near the inner part of the press 13. This looping mechanism may be of any well-known form and character and is operated by cam 62 mounted on one end of drive-shaft 63 driven by gears 64—65—66. The cam 62 bears upon roller 67 carried on forked-rod 68 which forked-rod is pivotally connected at its upper end with rock-arm 69 on shaft 70 on which the looping device is carried, the roller being held in contact with the surface of the cam by a suitable spring of the usual character (not shown). As was said the looping mechanism may be of any well-known character and operates in the well-

known manner. It is believed, therefore, that it is not necessary to describe its operation here.

71 indicates a forwarding roll mounted on shaft 63 and carrying at one end bevel-gear 72.

73 indicates a shaft journaled at each end in suitable bearings as 74 and carrying at the ends beveled-gears 75—76. The beveled-gear 76 meshes with a beveled-gear 77 secured to one end of the shaft 78 suitably journaled in the framework 14 and carrying a forwarding roller 79 mounted thereon.

The web B, passing from the roller, passes around suitable rollers as 80—81, into a governor 82 of any well-known type, thence around suitable rollers as 83, around forwarding roll 71, over suitable roller as 84, and thence over roller 85 in the lower end of the looper. From thence it passes under and partially around impression cylinder 22, thence over suitable rollers as 86—87—88—89, under and partially around impression cylinder 21, thence over suitable rollers as 90, around roller 91 carried on the upper end of the looping device, partially around forwarding roller 72, over suitable roller as 92 on press 8 to angle-bars 93 where it is turned at right angles, and in the well-known manner and by any suitable mechanism brought into register and association with the main web printed on the main press 8.

It will be understood, of course, that the two presses are driven so as to be suitably timed with one another so that the webs may be brought into proper registry and be associated together to form a single product. It will be also understood that the supplement press 13 is, of course, provided with suitable inking mechanism which may be of any well-known character and which, in order not to encumber the drawings with useless illustration, is omitted.

The operation of the machine will be understood from the above devices. The reciprocation of the traveling-bed 10 on the main press reciprocates the traveling impression-cylinder carriage 15 of the supplement press at the same time, in the same direction and to the same extent. The parts being in the position shown in Fig. 2 with the impression-cylinders lowered into co-operative relation with the type-beds the movement toward the left, in said figure, of the movable type-bed 10 causes the movement in the same direction of the carriage 15 with its cylinders which print upon each side of the web B during this movement, the stoppage of the web during the printing movement being taken care of by the looping mechanism in the well-known manner. At the end of the printing movement of the traveling-cylinders 21—22 they are lifted as above described. The return movement

of the movable type-bed 10 reciprocates the carriage, the cylinders being lifted, as above described, and brings it again into position to again begin its printing movement, the 5 loopers operating in the well-known manner.

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

1. In a traveling-cylinder web-perfecting press, in combination, a carriage slidably 10 mounted in said press, means for reciprocating the same, a pair of eccentrics journaled in said carriage, an impression-cylinder journaled at each end in said eccentrics, means operated by the reciprocation of said 15 carriage to partially rotate said eccentrics in their bearings and thereby raise and lower said cylinder, a second pair of eccentrics journaled in said carriage, a second impression-cylinder journaled at each end 20 in said eccentrics, and a rocking member pivotally mounted at its center on said carriage between said eccentrics and geared at each end with the eccentrics in which said cylinders respectively are mounted and 25 thereby adapted to cause the eccentrics in which said two cylinders are mounted to partially rotate simultaneously in the same direction.

2. In a traveling-cylinder web-perfecting 30 press, in combination, a carriage mounted on said press and adapted to be reciprocated therein, means for reciprocating said carriage, eccentrics journaled in said carriage on each side of said press, a pair of impres- 35 sion-cylinders eccentrically journaled at each end in said eccentrics, rock-shafts, means for automatically rocking said rock-shafts near the end of the reciprocatory movement of said carriage, gearing between 40 said rock-shafts and the eccentrics at each end of one of said cylinders and adapted by the rocking of said shafts to partially rotate said eccentrics, and gearing between said last-named eccentrics and the eccentrics on 45 the other cylinder adapted, as said first-named eccentrics are partially rotated, to rotate the eccentrics in which said second cylinder is journaled whereby said cylinders are lowered for their impression move- 50 ment and raised for their return movement.

3. In a traveling-cylinder web-perfecting press, in combination, a sliding carriage 55 mounted in said press, means for reciprocating the same, a pair of eccentrics journaled opposite each other on each side of the press on the lower portion of said carriage, an impression-cylinder journaled in said eccentrics, a pair of eccentrics jour- 60 naled in the upper portion of said carriage one upon each side of the press, an upper impression-cylinder journaled in said upper eccentrics, rock-shafts journaled in said car-

riage, rock-arms mounted on said rock-shafts, fixed cams on said press adapted to engage said rock-arms near the end of each 65 impression and each return movement of said carriage and thereby rock said rock-shafts, gearing between said rock-shafts and said first-named eccentrics adapted to partially rotate the same as said rock-arms 70 rock, and gearing between said lower eccentrics and said upper eccentrics adapted as said lower eccentrics are rotated in one direction or the other to rotate the upper eccentrics in the same direction. 75

4. In a traveling-cylinder web-perfecting press, in combination a reciprocating carriage, means for reciprocating the same, eccentrics journaled in said carriage, an im- 80 pression-cylinder journaled in said eccentrics, means operated by the reciprocation of said carriage to partially rotate said eccentrics first in one direction and then in the other to raise and lower said cylinder, 85 a rocking member operated by said eccentrics, and a spring-seated rod pivotally connected at one end with the carriage and at the other end with said rocking member to one side of the center thereof and adapted 90 to pass centers as said rocking member rocks and yieldingly hold said cylinder in raised or lowered position.

5. In a traveling-cylinder web-perfecting press, in combination, a carriage slidably 95 mounted in said press, means for reciprocating the same, a pair of eccentrics journaled in said carriage, an impression-cylinder journaled at each end in said eccentrics, means operated by the reciprocation of said carriage to partially rotate said eccentrics 100 in their bearings and thereby raise and lower said cylinder, a second pair of eccentrics journaled in said carriage, a second impression-cylinder journaled at each end in said eccentrics, a rocking member mount- 105 ed on said carriage and geared at each end with the eccentrics in which said cylinders respectively are mounted and thereby adapted to cause the eccentrics in which said two cylinders are mounted to partially 110 rotate simultaneously in the same direction, and a spring-seated rod pivotally connected at one end to said carriage and at the other end to said rocking member to one side of the center thereof and adapted as said rock- 115 ing member rocks to pass centers and yieldingly maintain said cylinders in their raised or lowered position until moved in the other position by the said reciprocation of the carriage.

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