R. HOE.

WEB SUPPLYING MECHANISM.

APPLICATION FILED MAR. 20, 1911.

1,085,907.

Patented Feb. 3, 1914.

3 SHEETS—SHEET 1.

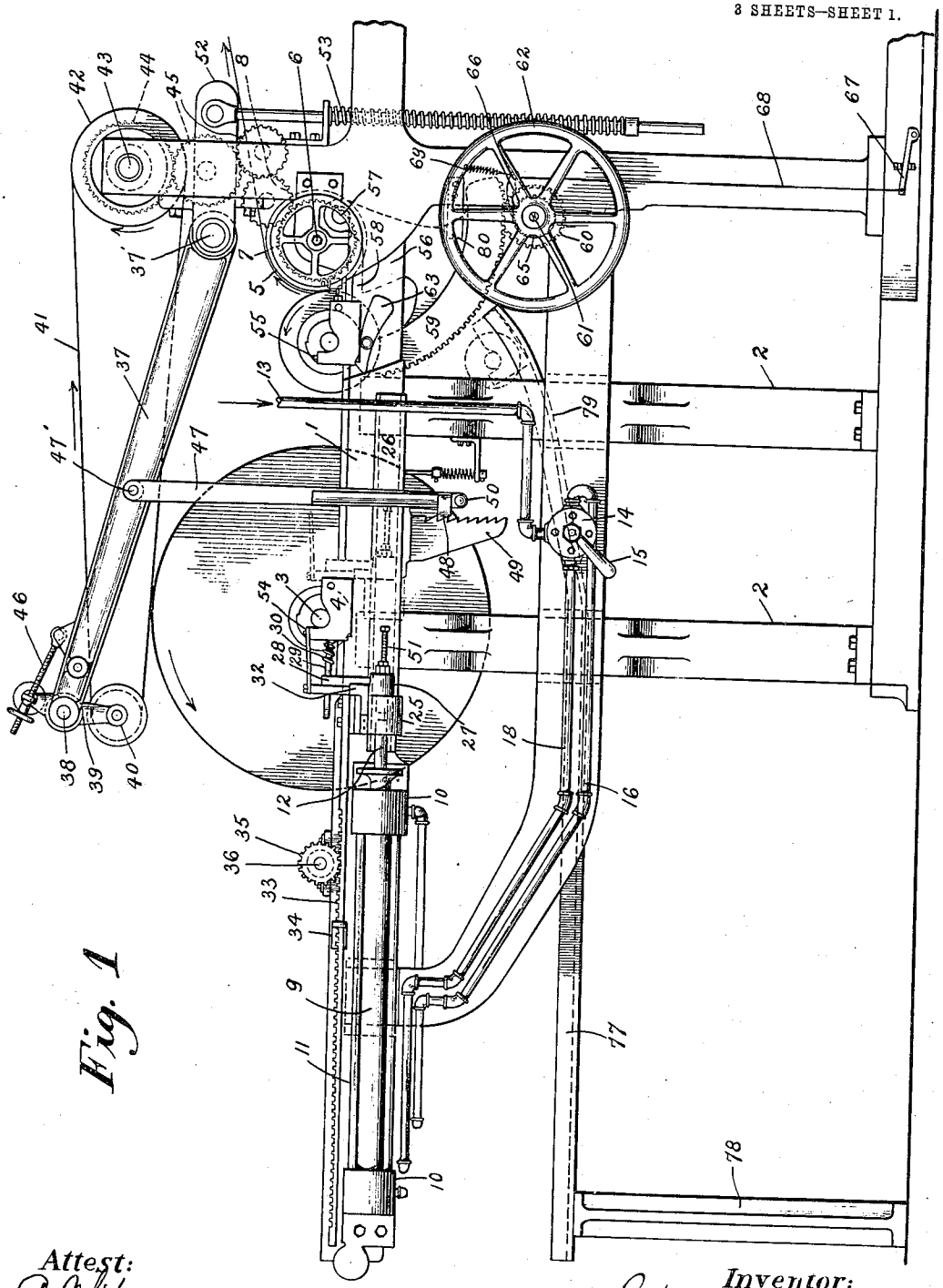


Fig. 1

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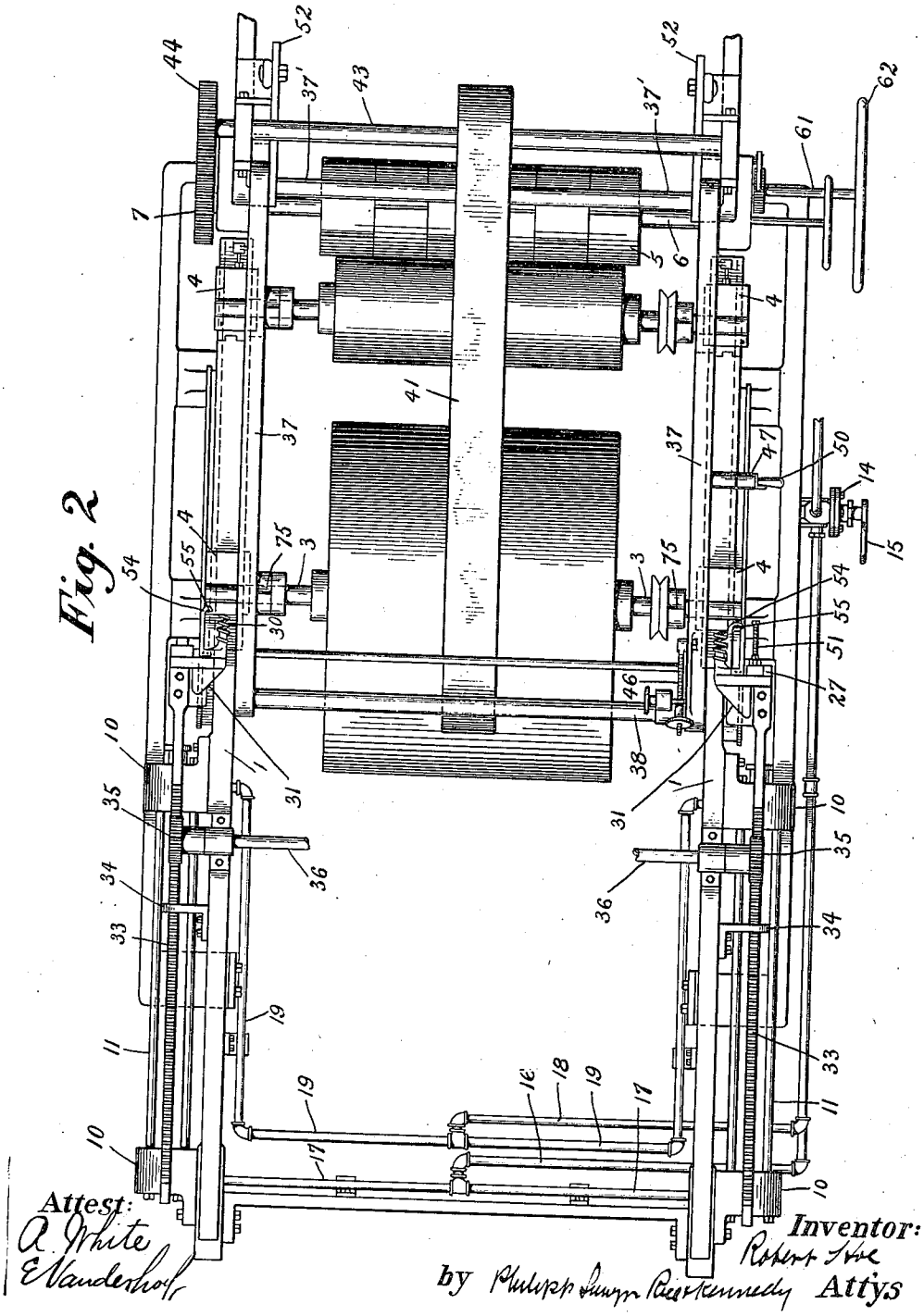
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3 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

Fig. 4

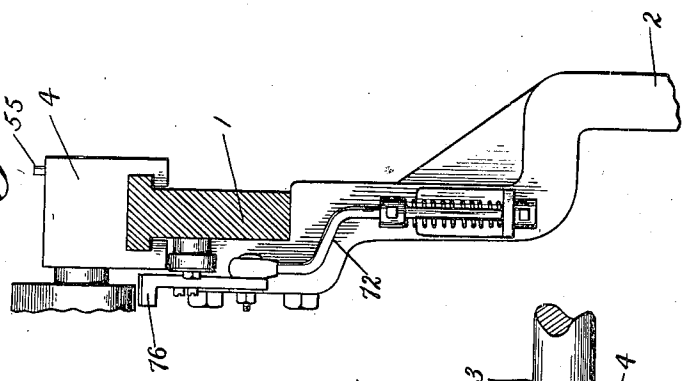


Fig. 5

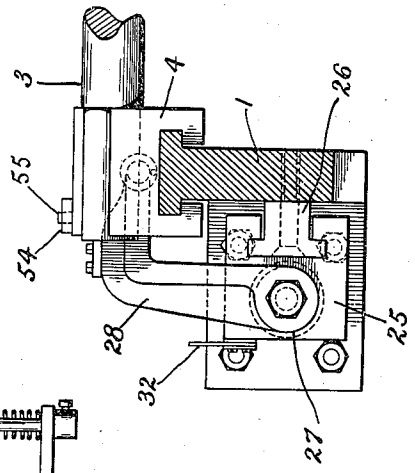
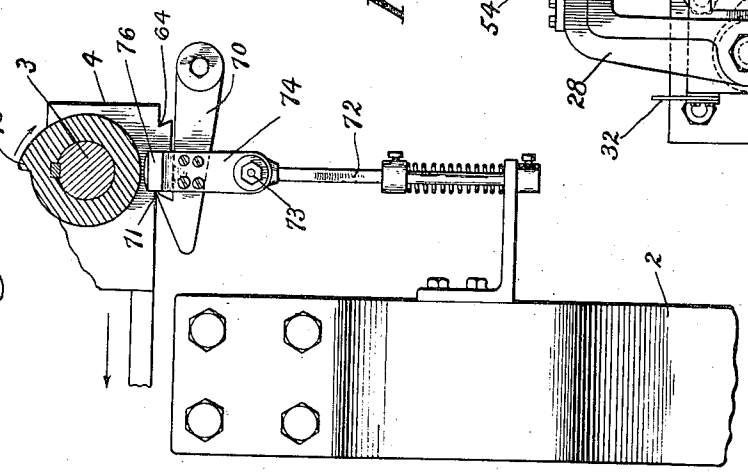


Fig. 3



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UNITED STATES PATENT OFFICE.

ROBERT HOE, OF NEW YORK, N. Y.

WEB-SUPPLYING MECHANISM.

1,085,907. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed March 20, 1911. Serial No. 615,541.

To all whom it may concern:

Be it known that I, ROBERT HOE, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Web-Supplying Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in web supplying mechanism for machines which derive their web supply from rolls, the mechanism being particularly adapted for use in fast running modern printing machines.

In high speed modern web printing machines which derive their web supply from rolls, the speed of the machine is so great as to require frequent replacement of the web rolls. While a number of devices have been designed which have in view a more or less automatic replacement of such web rolls, the usual practice at the present time is, when a roll is partially spent, to hoist another roll into position to be placed on the web supports and to apply paste to a portion of the web of this roll. When the roll which is supplying the machine is entirely spent, the machine is shut down, and its web is broken. The spent roll spindle is then removed from its bearings in the roll support, the new web roll is placed in these bearings, and the web from the spent roll is pasted to the web of the fresh roll. The machine is then gradually started up and run at slow speed until the new web is threaded through the machine. In some of the high speed machines this replacing operation has to be gone through with two or three times in an hour, and as these machines are capacitated to produce, say, six hundred papers and upward per minute, the loss of time in product represented by the stopping of the machine to replace the web roll is very considerable. This is a matter of considerable importance in view of the fact that every effort is made, particularly in newspaper printing offices, to shorten the time between the so-called closing of the forms and the distribution of the papers.

The present invention has for its object to produce an improved mechanism for effecting the re-supply of web to printing and similar machines by an improved automatic operating mechanism which will enable the web re-supplying operation to be effected without shutting down or materially reducing the speed of the machine.

The invention also has for its object to produce certain improved constructions novel in themselves by which the invention is carried into effect.

With these and other objects not specifically referred to in view, the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out.

Referring to the accompanying drawings Figure 1 is a side elevation of the improved automatic web supplying mechanism. Fig. 2 is a plan view of the construction illustrated in Fig. 1. Figs. 3 and 4 are detail views illustrating more particularly the construction of certain timing mechanism for controlling the advance of the web roll. Fig. 5 is a detail illustrating more particularly a construction of pusher employed for forwarding the rolls.

Referring to the drawings which illustrate one embodiment of the invention, constructions embodying the invention will include a web roll support. While the detail construction of this web roll support may be varied, in the particular construction illustrated, it comprises a pair of tracks 1 supported on suitable standards 2 forming a part of the machine frame. The construction by which the web rolls are supported on the tracks, so that they may be advanced along the same may be of any suitable character. In the particular construction illustrated, the web rolls are mounted, as usual, on spindles 3, supported in sliding boxes 4 arranged to engage the tops of the tracks, as clearly indicated in Fig. 4.

In constructions embodying the invention in its entirety, an abutment will be provided into contact with which the web rolls are advanced. This abutment will usually consist of a roll, and in constructions embodying the invention in its best form, this roll will not only act as an abutment but as a driver roll for the web roll. In the particular construction illustrated, this abutment comprises a roll 5 mounted on a shaft 6 suitably supported in bearings attached to the machine frame, the shaft 6 being provided with a driving gear 7 which is in mesh with a gear 8 forming a part of a train leading to a suitable shaft of the machine.

Machines embodying the invention in its

entirety will include means for positively advancing the web rolls along the tracks and against the driver roll before referred to. While the particular construction of these means may be varied within wide limits, as illustrated the machine is provided with a pair of fluid pressure cylinders 9 supported in collars 10 bolted or otherwise secured to the machine frame, these collars being connected by rods 11. The operative ends of the piston rods of these cylinders are indicated at 12. While the arrangement of piping by which fluid is supplied to these cylinders may be of any suitable character, in the construction illustrated the inflow pipe for the main supply conduit is indicated at 13, this pipe communicating with a valve casing 14 containing an ordinary four-way valve, the handle of which is marked 15. A pipe 16 leads from this valve casing and communicates by branches 17 with the rear ends of the cylinders. The casing 14 also has connected with it a pipe 18 communicating by means of branches 19 with the forward ends of the cylinders, so as to admit fluid in front of the pistons therein. With this construction when the valve is in one position fluid will be admitted to the rear end of the cylinders, that is, the end toward the left of the machine, as shown in Fig. 1, and the pistons will be driven forward. In another position of the valve, fluid will be admitted to the front end of the cylinders, that is, in front of the pistons, and the pistons will be driven in the opposite direction; and in a third position of the valve, the inlet 13 will be closed. It will be understood that when fluid is being admitted to either one or the other of the pipes 16, 18, the other is exhausting, and the exhaust fluid may be carried away from the valve casing in any suitable manner. The particular construction illustrated is designed for the employment of compressed air as the operating fluid, and the valve casing is provided with an opening (not shown) through which the exhausting air escapes. If a liquid be employed as the operating fluid, it will be understood, of course, that a suitable exhaust pipe will be connected to the valve casing.

When a fluid pressure operated advancing mechanism is employed, the connections by which the pistons are caused to advance the rolls may be of any suitable character. In the particular construction illustrated, the piston rods 12 carry cross-heads 25, these cross-heads working on guides 26 on the side frames, these guides being below the tracks of the roll support. The front ends of the cross-heads are provided with studs on which are mounted the hubs 27 of bent arms 28, the upper ends of these arms being bent inwardly and lying behind the boxes in which the roll spindles are mounted (see Fig. 5). These arms are provided with pins 29, the front ends of which are surrounded by springs 30 arranged to contact with the rear sides of the boxes for the spindles.

It is desirable that provision be made for allowing the pusher arms 28 to automatically get out of the way in order to return past the boxes of a fresh roll should there be one on the roll support. To effect this, the pusher arms are provided with cams 31. As the piston rods are retracted, these cams strike the sides of the boxes and rock the arms 28 outward so as to permit the ends of the arms to pass the boxes. Springs 32 may, if desired, be provided to assist in returning the arms to normal position.

In order to provide for a simultaneous movement of the two pistons in both directions, each cross-head may be provided with a rack 33 working through guide loops 34 on the side frames. These racks are engaged by pinions 35 on a shaft 36 extending across the machine from side to side, the shaft being mounted in suitable bearings on the frame.

In machines which embody the invention in its best form mechanism will be provided for starting the fresh web roll before it is brought into contact with the web from the expiring roll, so that this web may not have the duty imposed upon it of overcoming the inertia of the new roll. While this starting of the roll may be effected by various constructions, in the particular construction shown, there is provided a frame 37 the two side members of which are pivoted at 37′ to the frame of the machine. These side members are connected by a shaft 38 on which is supported hangers 39 serving to carry a belt roll 40. The belt 41 runs around this roll and also around a driven roll 42 mounted on a shaft 43 supported in suitable bearings in the frame of the machine, this shaft being provided with a gear 44 driven through intermediates 45 from the gear 8 before referred to.

If desired, screw rods 46 may be provided for controlling the position of the hangers 39 and through them the tension on the belt 41. The frame which supports the belt operating parts will, in the best constructions, be located as shown, that is, over the top of the web roll, and means will be provided for setting the frame at varying distances from the center of the roll so as to insure proper contact of the belt with rolls of varying diameters. In the particular construction illustrated, the frame pieces 37 are provided with a depending arm 47 pivoted to it at 47′. The lower end of this arm is provided with a tooth 48 which engages in a ratchet block 49 depending from one of the side frames. This arm 47 is also provided with a handle 50 by which it may be manipulated. It will be readily understood that when the web roll is in position, and it is desired to start it

rotating, the frame 37 may be pulled down until the belt 41 makes proper contact with the roll at which time, as the belt is driven, the roll will begin to rotate. It will be understood that the gearing by which the belt is driven will be so proportioned as to bring the roll up to the speed desired.

It will be understood that in carrying the invention into effect, paste will be applied to a certain portion of the fresh roll which is forwarded by the advancing means, and this pasted portion will be brought in contact with the web which is running from the nearly exhausted or spent roll.

In machines embodying the invention in its best form, the advancing mechanism will force the pasted web of the advancing web roll against the web from the expiring roll, and will, at the same time, force the expiring web against the abutment, which, in the machine shown, is the roll 5, so as to insure a good contact between the two webs for effecting the splice. In such machines, furthermore, the advancing mechanism will remain in such position as to hold the new roll against the abutment roll when this abutment roll is employed.

In machines embodying the invention in its best form, means will be employed for effecting the release of the roll from the starting mechanism before the pasted web of the fresh roll is brought into contact with the web running from the expiring roll. While this may be effected in various ways, in the particular construction illustrated, one of the cross-heads 25 is provided with a tappet screw 51 which at the proper time strikes the arm 47 and releases its tooth from the ratchet block 49. The rear ends of the frame members may be provided with extensions 52 to which are connected spring rods 53 of the ordinary type, these rods serving to effect the movement of the frame and the belt 41 away from the circumference of the web roll.

It may be desirable to arrest the forward movement of the roll under the impulse of the advancing mechanism, or, under some circumstances, even to retract it after its forward movement has begun. To effect this, the upper ends of the arms 28 may be provided with small hooks 54 which engage pins 55 on the top of the rear ends of the boxes 4. When the boxes 4 are lowered, these pins 55 simply withdraw from the hooks 54, releasing the boxes from the arms 28.

Machines embodying the invention should be provided with means for removing an expiring roll from the position it occupies at the time the major portion of the web it carries has been drawn therefrom. While these means may be varied, in machines embodying the invention in its best form, these removing means will be of such a character as to lower the roll with its box with respect to the support on which the advancing roll is being forwarded. While the particular mechanism by which this removal of the roll is effected may be varied, in the particular construction illustrated, there is employed a shifter comprising a pair of swinging blocks 56, one on each side of the machine, these blocks being pivoted to the frame at 57. As shown, each of these blocks is provided with track sections 58 which, when the blocks are in normal position, are in line with and form a part of the tracks 1. Each of the blocks 58, in the particular construction shown, is provided with a segment 59 and each of these segments is engaged by a pinion 60, one on each side of the machine, these pinions being mounted on a shaft 61. This shaft may be operated in various ways. As shown, it is provided with a hand-wheel 62. It may be remarked that the two sections of the shifter blocks are long enough so that when the web has nearly expired, the boxes in which the roll spindle is received, will be supported entirely by the track sections on the shifter blocks, as clearly indicated in Fig. 1.

When the web on the expiring roll is nearly exhausted and it is desired to attach the web from a new roll thereto, the shaft 61 is operated to lower the expiring roll. This lowering movement will be sufficient in extent to move the expiring web roll out of the path of the advancing roll. It will be understood, however, that the web from the expiring roll continues to run over the roll 5 without interruption, notwithstanding the fact that the expiring roll is in a lower position.

In order to retain the boxes of the expiring roll on the shifter, retaining means, such as pawls 63 may be provided, these pawls being arranged to engage notches 64 (see Fig. 3) at the lower rear corners of the boxes. To prevent the shaft 61 from being operated by the weight of the roll when it passes completely onto the tracks 58, this shaft may be provided with a ratchet 65 arranged to be engaged by a locking pawl 66 pivoted on the frame and operated from a treadle 67 through a connecting rod 68. If desired, a spring, as 69, may be employed for insuring the engagement of the pawl with the ratchet.

After the expiring roll has been lowered, the advancing mechanism is operated by admitting fluid to the cylinders to forward the fresh roll, the roll being also rotated by the starting mechanism before referred to. The fresh roll will, under the control of the advancing mechanism, be brought forward and the pasted portion of the web will be forced against the web running from the expiring roll which web, as before stated, at this time is running over the abutment roll 5. It will

be understood that the paste which is applied to the fresh roll is applied at the end of the web on that roll, and it is desirable that the contact between the fresh roll and the web running from the expiring roll be made before the time this pasted end strikes the expiring roll so as to assure the splice being made by the whole pasted surface. As, however, at this time the fresh roll is rotating because of the action of the starting mechanism, difficulty may be experienced in making the contact at the time desirable. In order to avoid this difficulty, machines which embody the invention in its best form will be provided with a timing mechanism which so controls the advance of the fresh roll as to make the contact between the webs at the proper time. The particular construction of this timing mechanism may be varied, but in the particular construction illustrated there is provided a lock which may consist of two pawls 70 one on each side of the machine, these pawls being pivoted on the inside of the frame. These pawls are arranged to engage notches 71 formed on the forward edges of the boxes and are controlled by bent spring rods 72 pivoted at 73 to plates 74 secured to the sides of the pawls. These pawls are normally held by the spring rods in such position as to engage with the notches as the boxes are forwarded by the advancing mechanism, and the pawls will, therefore, positively hold the boxes from advancing, notwithstanding the force which is exercised upon them by the advancing mechanism until such time as they are released.

The releasing mechanism employed may be varied and will vary, of course, according to the character of locks employed. In the particular construction illustrated, however, the spindles 3 are provided with cams 75 arranged to engage the ends of the plates 74, these plates having their ends enlarged slightly, as indicated at 76, to insure a good contact. As the locks are released, the advancing mechanism will push the boxes forward, thus bringing the circumference of the fresh roll against the web from the expiring roll, this web being forced against the abutment roll 5. The high parts of the cams are so arranged with respect to the position of the pasted end of the fresh roll that this contact will be made before the time the pasted end of the fresh roll is opposite the abutment roll so as to assure the splice being made by the whole pasted surface. As soon as the splice has been made, the hand wheel 62 is operated to still further drop the expiring roll, the web from this roll being broken by this further downward movement of the roll as explained hereafter. By thus delivering the spent roll spindle beneath the support room is economized, and, in addition to that, the spent roll can be moved out of the way of the advancing roll while its web is still running into the machine. The preliminary operations necessary to making the splice can, therefore, be effected without interfering with the operation of the printing machine, so that time is economized.

While the expiring roll spindle may be removed from the machine in any desired way, in the particular construction illustrated, there is provided a track 77 located in the support for the advancing rolls and supported on standards 78 and having an upwardly inclined end 79. When the expiring roll has been sufficiently dropped by the shifter, so that its boxes are opposite the inner upward ends of these tracks, the boxes are released and slide from the shifter onto the tracks. The incline of the inner ends of the tracks should be sufficient so that the force of gravity will carry the boxes well toward the end of the machine where they can be readily removed. In the particular construction illustrated, the pawls 63 are released to permit this discharge of the boxes and the roll spindle by stops 80 against which the tails of the pawls strike as the shifter reaches its delivery position. The stop 80 on one side of the press is preferably arranged so as to be struck by its pawl 63 slightly before the stop 80 on the opposite side of the frame is struck by its pawl 63, so as to release and drop one end of the box 4 with the expiring web before the other end, the expiring web thus being torn across and the expiring web thus discontinued.

It will be understood that changes and variations may be made in the construction by which the invention claimed is carried into effect. The invention claimed, therefore, is not to be confined to the particular construction herein described and illustrated in the accompanying drawings.

What is claimed is:—

1. In a web roll supplying mechanism, the combination with a roll support, of means for advancing successive web rolls along the support, and means for delivering the spent web roll spindle beneath the support and in a direction opposite to that in which the web rolls are advanced.

2. In a web roll supplying mechanism, the combination with a roll support, of means for advancing successive web rolls along said support, spent roll delivery means located beneath the support and arranged to move the spent roll toward the end of the support from which the web rolls are advanced, and means for transferring the spent roll spindle from the support to the delivery means.

3. In a web roll supplying mechanism, the combination with a roll support, of means for advancing successive web rolls along said support, a spent web roll guide

located beneath the support and arranged to direct the spent roll toward the end of the support from which the web rolls are advanced, and means for transferring the spent roll spindle from the support to the guide.

4. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a spent web roll delivery means located beneath the support and arranged to move the spent roll spindle toward the end of the support from which the web rolls are advanced, and a shifter for transferring the spent roll spindle from the support to the delivery means.

5. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a spent web roll delivery means located beneath the support, and a shifter normally in line with and forming a part of the support for transferring the spent web roll spindle from the support to the delivery means.

6. In a web roll supplying mechanism, the combination with a web roll support including a pair of tracks, of means for advancing successive web rolls along said support, a shifter comprising a pair of track sections which receive the web rolls from the support, a spent web roll delivery means, and means for moving the shifter from its roll receiving position to a delivery position with respect to the delivery means.

7. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a web roll guide having an inclined portion located beneath the support and inclined downward toward the end of the support from which the web rolls are advanced, and means for transferring the spent web roll from the support to the guide.

8. In a web roll supplying mechanism, the combination with a web roll support comprising a pair of tracks, of means for advancing successive web rolls along said support, a spent web roll guide comprising a pair of tracks located beneath the support, said guide having an inclined portion, a shifter for receiving the roll from the tracks, and means for moving the shifter from its roll receiving position to a delivery position with respect to the guides.

9. In a web roll supplying mechanism, the combination with a web roll support including a pair of tracks, a shifter also including a pair of tracks arranged to receive a web roll from the support, a web roll delivery means located beneath the support, and means for operating the shifter from its web roll receiving position to a delivery position with respect to the delivery means.

10. In a web roll supplying mechanism, the combination with means for advancing a web roll, of an abutment roll located in the path of the advancing web roll, and means for moving the preceding partially spent web roll out of the path of the advancing web roll to permit such advancing roll to be forced against the web running from the partially spent roll over the abutment roll.

11. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, an abutment roll located in the path of the advancing web roll, and means for moving the preceding partially spent web roll out of the path of the advancing web roll to permit such advancing roll to be forced against the web running from the partially spent roll over the abutment roll.

12. In a web roll supplying mechanism, the combination with a driver roll, of a web roll support, means for advancing successive web rolls along the support and into contact with the driver roll, and means for moving a partially spent preceding roll out of the path of a succeeding advancing web roll in order that the advancing web roll may be forced against the web running from the partially spent roll, the driver roll acting as an abutment.

13. In a web roll supplying mechanism, the combination with a driver roll, of a web roll support, a shifter coöperating therewith, means for advancing successive web rolls along the support, and means for operating the shifter to move a partially spent roll out of the path of an advancing web roll whereby the web of the advancing roll may be forced against the web running from the partially spent roll with the driver acting as an abutment.

14. In a web roll supplying mechanism, the combination with a driver roll, of a web roll support comprising a pair of tracks, a shifter including a pair of track sections, and means for operating the shifter to lower the partially spent roll whereby the web of the advancing roll may be forced against the web of the partially spent roll running over the driver roll.

15. In a web roll supplying mechanism, the combination with a driver roll, of a web roll support, means for advancing successive rolls along the support, said means operating to yieldingly hold the web rolls against the driver roll, and means for moving a partially spent roll out of the path of an advancing roll and into position where such advancing roll may contact with the web from the partially spent roll, thereby forcing it against the driver roll.

16. In a web roll supplying mechanism, the combination with a driver roll, of a web

roll support, means for advancing successive rolls along the support, said means operating to yieldingly hold such web rolls against the driver roll, a shifter, and means for operating the shifter to move the partially spent roll into position whereby the advancing roll may contact with its web and force it against the driver roll.

17. In a web roll supplying mechanism, the combination with a driver roll, of a web roll support comprising a pair of tracks, means including a fluid pressure operating mechanism for advancing successive rolls along the tracks, said means also operating to hold such rolls against the driver roll, a shifter including a pair of track sections, and means operating the shifter to lower a partially spent roll whereby the web of the advancing roll may be forced against the web of the partially spent roll.

18. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive rolls along the support, an abutment over which the spent web passes, and a timing mechanism for controlling the advance of the roll whereby said roll is forced against the abutment in a predetermined position.

19. In a web roll supplying mechanism, the combination with a support, of means for advancing successive web rolls along the support, a roll starting mechanism, an abutment over which the spent web passes, and a timing mechanism for controlling the advance of the roll whereby said roll is forced against the abutment in a predetermined position.

20. In a web roll supplying mechanism, the combination with a roll support, of means for advancing successive web rolls along the support, an abutment over which the spent web passes, a roll starting mechanism, a timing mechanism for controlling the advance of the roll, and a spent roll removing means.

21. In a web roll supplying mechanism, the combination with a roll support, of means for advancing successive web rolls along the support, an abutment roll, a roll starting mechanism, a timing mechanism, a spent roll guide located beneath the support, and means for transferring a spent roll from the support to the guide.

22. In a web roll supplying mechanism, the combination with an abutment roll, of a web roll support including a pair of tracks, means for advancing successive web rolls along the support, said means operating to yieldingly hold the roll against the abutment roll, a roll starting mechanism, a timing mechanism, a spent roll guide located beneath the support, and a shifter for transferring the spent roll from the support to the guide.

23. In a web roll supplying mechanism, the combination with a web roll support, of an abutment, means for advancing successive web rolls along the support, a spent roll removing mechanism, a lock for controlling the advance of the advancing rolls, a roll starting mechanism, and means operated by the advancing roll for releasing the lock.

24. In a web roll supplying mechanism, the combination with a web roll support, of an abutment roll, means for advancing successive web rolls along the support, a roll starting mechanism, a spent roll removing mechanism, a spring actuated lock for controlling the advance of the rolls, and means moving with the web roll spindle for releasing the lock.

25. In a web roll supplying mechanism, the combination with an abutment roll, of a web roll support, means for advancing successive web rolls along the support, a spent roll removing mechanism, a lock for controlling the advance of the rolls, and a lock releasing mechanism moving with the web roll spindle.

26. In a web roll supplying mechanism, the combination with a web roll support, of an abutment roll, means for advancing successive web rolls along the support and into contact with the abutment roll, spent roll removing means, a roll starting mechanism, and means for throwing the starting mechanism out of operation.

27. In a web roll supplying mechanism, the combination with a web roll support, of an abutment roll, means for advancing successive web rolls along the support and into contact with the abutment roll, spent roll removing means, a roll starting mechanism, and means controlled by the roll advancing means for automatically throwing the starting mechanism out of operation.

28. In a web roll supplying mechanism, the combination with a web roll support, of an abutment roll, means for advancing successive web rolls along the support and into contact with the abutment roll, a roll starting mechanism including a positively driven belt for engaging the surface of the roll, and means for automatically throwing the starting mechanism out of operation.

29. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a roll starting mechanism including a positively driven belt located above the path of the roll, and means for setting the starting mechanism at varying heights with respect to the center of an advancing roll.

30. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a roll starting mechanism including a positively driven belt located above the path of the roll, means for setting

the starting mechanism at varying heights with respect to the center of an advancing roll, and means whereby the advancing roll automatically releases the starting mechanism.

31. In a web roll supplying mechanism, the combination with a web roll support including a pair of tracks, of means for advancing successive web rolls along the support, a shifter for spent rolls forming a continuation of said tracks, and means for lowering the shifter to drop the spent rolls below the support.

32. In a web roll supplying mechanism, the combination with a web roll support including a pair of tracks, of means for advancing successive web rolls along the support, a shifter for spent rolls, and means including a curved segment for operating the shifter to drop the spent rolls below the support.

33. In a web roll supplying mechanism, the combination with a web roll support, of an abutment driver roll, means including fluid pressure mechanism for advancing successive rolls along the support and into contact with the abutment roll, a roll starting mechanism, means for automatically throwing the starting mechanism out of operation at a predetermined point in advance of the web roll, a timing mechanism for controlling the advance of the roll, and means for moving the spent rolls out of the path of the advancing rolls.

34. In a web roll supplying mechanism, the combination with a web roll support, of an abutment driver roll, means including fluid pressure mechanism for advancing successive rolls along the support and into contact with the abutment roll, a roll starting mechanism, means for automatically throwing the starting mechanism out of operation at a predetermined point in the advance of the web roll, a timing mechanism for controlling the advance of the roll, a spent roll guide located beneath the roll support, and a shifter for transferring the spent rolls to the guide.

35. In a web roll supplying mechanism, the combination with an abutment roll, of means for advancing a roll and yieldingly holding it against the abutment roll, and means for moving a partially spent roll out of the path of an advancing roll and into position to permit the advancing roll to be forced against the web running from the partially spent roll over the abutment roll.

36. In a web roll supplying mechanism, the combination with an abutment roll, of means for advancing a roll and yieldingly holding it against the abutment roll, a shifter, and means for operating the shifter to move the partially spent roll into position to permit the advancing roll to be forced against the web running from the partially spent roll over the abutment roll.

37. In a web roll supplying mechanism, the combination with an abutment roll, of means including a fluid pressure operating mechanism for advancing a roll and yieldingly holding it against the abutment roll, a shifter, and means for operating the shifter to move the partially spent roll into position to permit the advancing roll to be forced against the web running from the partially spent roll over the abutment roll.

38. In a web roll supplying mechanism, the combination with means for advancing a web roll, of a roll starting mechanism including a driver engaging the surface of the roll, and means for automatically throwing the starting mechanism out of operation.

39. In a web roll supplying mechanism, the combination with means for advancing a web roll, of a roll starting mechanism, and means controlled by the roll advancing mechanism for throwing the starting mechanism out of operation.

40. In a web roll supplying mechanism, the combination with a web roll support, of means for advancing successive web rolls along the support, a shifter in line with the support to which the web roll is transferred, hooks retaining the roll on the shifter, means for operating the shifter to transfer the expiring roll out of the path of the advancing roll, and means for moving the hooks to release the spent roll for its delivery from the shifter.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

ROBERT HOE.

Witnesses:
F. O. Cole,
J. Griffiths.