

W. A. PRINGLE.
 WEB FEEDING MECHANISM FOR PRINTING PRESSES.
 APPLICATION FILED AUG. 4, 1908.

989,871.

Patented Apr. 18, 1911.
 2 SHEETS—SHEET 1.

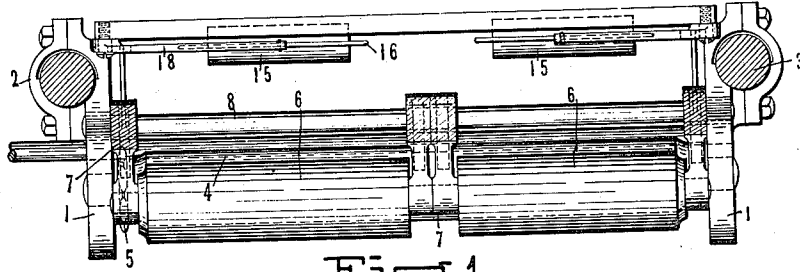


Fig-1-

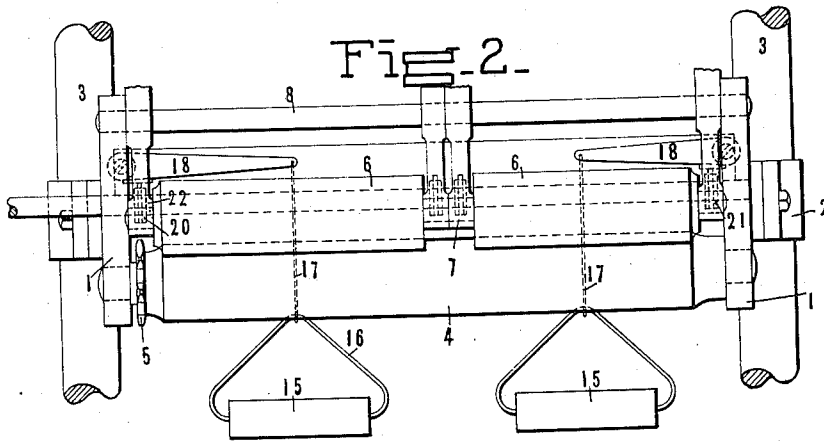


Fig-2-

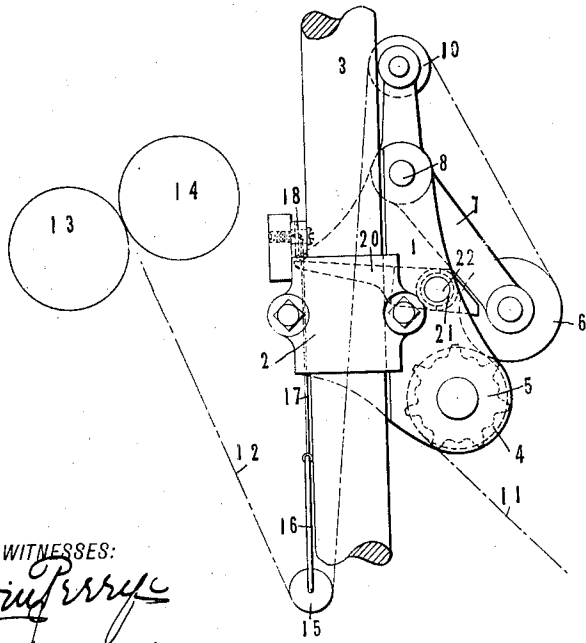


Fig-3-

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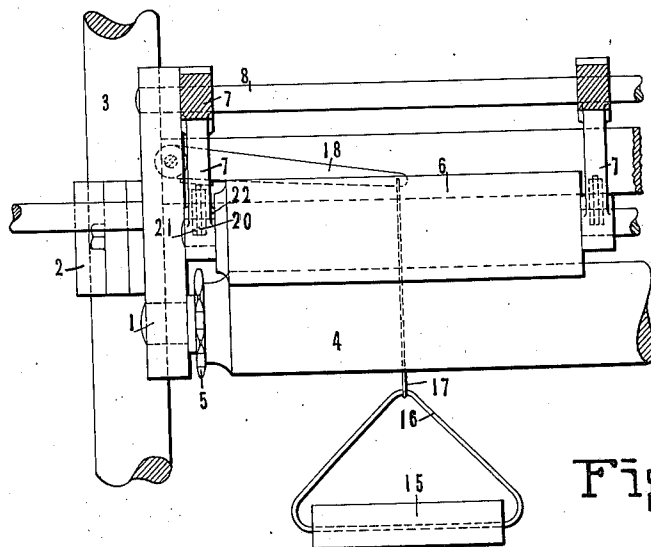


Fig. 4.

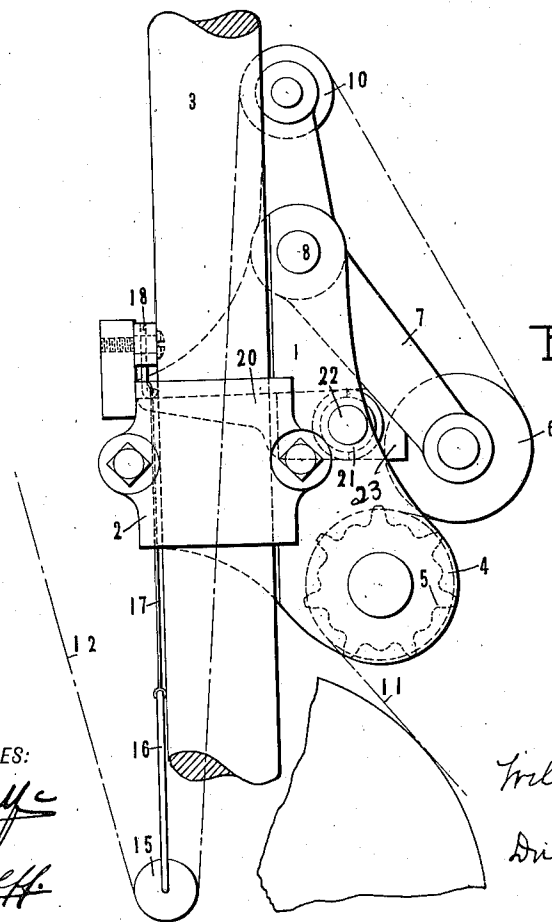


Fig. 5.

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UNITED STATES PATENT OFFICE.

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WEB-FEEDING MECHANISM FOR PRINTING-PRESSES.

989,871.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed August 4, 1908. Serial No. 446,838.

To all whom it may concern:

Be it known that I, WILLIAM A. PRINGLE, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Web-Feeding Mechanism for Printing-Presses, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to web-feeding mechanism, and more particularly to mechanism of this character adapted for use in printing presses.

One of the objects of the invention is to provide web-feeding mechanism such that the guiding of the webs through the press may be facilitated.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is illustrated one of the various possible embodiments of my invention, Figure 1 is a horizontal sectional view taken through a portion of the printing press, showing the mechanism constituting this embodiment of my invention in plan. Fig. 2 is a rear elevation of the mechanism shown in Fig. 1. Fig. 3 is a side elevation thereof. Fig. 4 is a rear elevation of a portion of the mechanism, the parts being shown in a different position and upon a larger scale. Fig. 5 is a view similar to Fig. 3 with the parts in a different position, the view being also drawn upon a larger scale.

Similar reference characters refer to similar parts throughout the several views of the drawings.

In order to render the objects of my invention clearer of understanding, it may here be noted that in order properly to guide paper through web presses it is necessary that a certain amount of slack be maintained in the web. This result is usually attained by driving the feed rolls that draw the web

from the supply roll a trifle faster than the web is fed into the press, thereby allowing slack to intervene in the web between the different pairs of feed rolls. In prior constructions it has been necessary to regulate this amount of slack by stopping the operation of certain of the feed rolls, this work being usually performed by the feed operator and necessitating constant watchfulness. By my invention the web is fed into the press in such manner that a predetermined amount of slack is always automatically maintained between the feed rolls.

Referring now to the drawings 1 denotes the side frame, clamped as by means of a box 2 to the upright shafts 3, which are adapted to rest upon the base of the press. Rotatably mounted in the frame is a feed roll 4 which is provided with a sprocket 5 adapted to be driven from the press by means of a chain (not shown). 6 is a rider or idler feed roll which rests upon feed roll 4 and is held in position thereon by arms 7 which are pivotally mounted at 8 in the frame.

A guide roll 10 is supported in the upper portion of the frame, and the web 11 after passing between rolls 4 and 6 passes over roll 10 to form a slack portion 12 between roll 10 and feed rolls which are shown diagrammatically at 13 and 14, said latter rollers being adapted to feed the web into the press. The slack portion 12 is formed in the web by driving roller 4, and therefore, roller 6, at a slightly greater peripheral velocity than the velocity at which rollers 13 and 14 are driven.

The means for maintaining a uniform amount of slack between the pairs of rolls 4 and 6, and 13 and 14 comprises a weight which rests in the slack portion 12, said weight in the present instance being comprised by a roller 15. This roller is rotatably supported upon a link 16 which in turn is connected as by means of a flexible member or cord 17 with the end of a lever 18 pivotally supported in the frame. Lever 18 intermediate its ends engages the end of a lever 20, which is fastened upon a sleeve 21 mounted upon a rod 22 and adapted to rock thereon. This sleeve has at each end a short arm 23

which is located immediately beneath one of the arms 7 which support the idler or rider roll 6.

Having thus described the construction of this embodiment of my invention, the operation thereof may now be understood.

When the slack portion 12 gets below a certain point the weight of the roller 15 is thrown on the lever 18, thereby, through lever 20, sleeve 21 and arms 23, lifting the upper feed roll 6 from feed roll 4, thus releasing the pressure on the web and retarding the feed thereof. When the loop of the slack portion rises above a predetermined point the weighted roller 15 is lifted, thereby allowing lever 18 to rise and the feed roll 6 to fall back upon roller 4 to increase the supply of slack. In practice the parts are so adjusted that the loop formed by the slack portion 12 is always automatically maintained at the same length.

In the drawings I have shown the mechanism as arranged for feeding two webs side by side, the slack of each being automatically controlled independently of the other. This mechanism can be utilized to feed a wide single web, a long weighted roller being attached to each end of the levers 18. It will accordingly be seen that I have provided mechanism well adapted to attain among others all the objects thereof in a simple yet efficient manner. By means of this construction a great amount of labor is saved, inasmuch as it is not necessary for the operator to periodically stop and start the press in order to provide the proper amount of slack. Another advantage attained by means of this construction is that since it is unnecessary to stop the press to regulate the slack in the web, a greater amount of printing is effected in a single press in the given time.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an apparatus of the class described, the combination of two pairs of feed rolls adapted to feed a web, one pair being arranged behind the other and normally

driven at a greater peripheral velocity, whereby slack is produced in the web, and means for varying the pressure exerted upon the web by one of said pairs of rolls, whereby a uniform amount of slack is maintained between said pairs of rolls.

2. In an apparatus of the class described, the combination of two pairs of feed rolls adapted to feed a web, one pair of said rolls being arranged behind the other and adapted to be driven at a greater peripheral velocity, whereby slack is produced between said pairs of rolls, and means for automatically varying the pressure exerted upon the web by the rearmost pair of said rolls, whereby a uniform amount of slack is maintained between said pairs of rolls.

3. In an apparatus of the class described, the combination of two pairs of feed rolls adapted to feed a web, one pair of rolls being disposed behind the other and adapted to be driven at a greater peripheral velocity, whereby slack is produced in the web between said pairs of rolls, and means controlled by the slack portion of the web for varying the pressure exerted upon said web by one of said pairs of rolls, whereby a uniform amount of slack is maintained.

4. In an apparatus of the class described, the combination with web-feeding means comprising two pairs of rolls, one pair thereof being disposed behind the other and driven at a higher peripheral velocity whereby slack is produced in the web between said pairs of rolls, and means controlled by the slack portion of the web for moving the rolls of the rearmost pair thereof relatively to each other, whereby the pressure upon the web may be varied and a uniform amount of slack maintained between said pairs of rolls.

5. In an apparatus of the class described, the combination with two pairs of rolls adapted to feed a web, one pair being arranged behind the other and adapted to be driven at a higher peripheral velocity, whereby slack is produced in the web between said pairs of rolls, and means controlled by the slack portion of the web for moving one of the rolls of the rearmost pair relatively to the other, to thereby vary the pressure upon the web, whereby any excess of slack will be taken up by the other pair of rolls.

6. In an apparatus of the class described, in combination, two sets of feed rolls adapted to feed a web, one set being disposed behind the other and running at a greater peripheral velocity, whereby slack is produced in the webs between said sets of rolls, one of the rolls of the rearmost set being movable toward and from the other thereof to vary the pressure on the web, and means engaging the slack portion of the web for moving the movable roll from engagement with the

other thereof when more than a predetermined amount of slack exists between said sets to allow some of the slack to be taken up by the foremost set of rolls.

7. In apparatus of the class described, the combination with the frame, of a feed roll carried by the frame, a second feed roll carried by the frame and movable toward and from said first mentioned feed roll, a second pair of feed rolls arranged in advance of said first named feed rolls, said first named feed rolls being adapted to be run at a greater peripheral velocity than the second mentioned thereof, whereby slack will be formed in the web, and means resting in the slack portion of the web adapted to vary the pressure exerted upon the web when passing between said first mentioned feed rolls, whereby a uniform amount of slack is maintained between said pairs of rolls.

8. In apparatus of the class described, the combination with the frame, of web-feeding means comprising a pair of rolls one of which is adapted to be driven at a greater peripheral velocity, pivotally mounted arms carrying other of said feed rolls, whereby the same is movable from the first mentioned roll, a pair of rolls arranged in advance of said first mentioned pair and adapted to be driven at a less peripheral velocity than the first mentioned pair, whereby slack is maintained in the web, a pivotally mounted lever engaging said arms, and a weight resting in the slack portion of the web between said pairs of rolls, said weight being connected with said lever and adapted to cause the same to swing said arms to carry the roll mounted thereon toward or from the other of said rolls to vary the pressure upon the web passing therebetween, whereby a uniform amount of slack is maintained between said rolls.

9. In apparatus of the class described, the combination with web-feeding means comprising two pairs of continuously rotating rolls, one pair thereof being disposed behind the other and being driven at a higher peripheral velocity, whereby slack is produced in the web between said pairs of rolls, and means acting upon one pair of said rolls adapted automatically to vary the feeding operation the speed of said rolls remaining constant whereby a uniform amount of slack is at all times maintained between said pairs of rolls.

10. In apparatus of the class described, the combination with the frame, of web-feeding means comprising a positively driven feed roll carried by the frame, an idler feed roll resting upon said first mentioned feed roll, pivotally mounted arms carrying said idler feed roll, a lever pivotally mounted upon the frame engaging said arms and adapted to swing the same, whereby said idler feed roll may be carried

toward or from said first mentioned feed roll, a pivotally mounted lever engaging said first mentioned lever and adapted to swing the same, a second pair of feed rolls engaging the web and adapted to feed the same and to be driven at a less peripheral velocity than that of the first mentioned rolls, whereby slack is produced in the web between said pairs of rolls, a weighted roller resting in the slack portion of said web, and means for connecting said roller with said second mentioned lever.

11. In apparatus of the class described, the combination with the frame, of web-feeding means comprising a positively driven feed roll carried by the frame, an idler feed roll resting upon said first mentioned feed roll, pivotally mounted arms carrying said idler feed roll, a lever pivotally mounted upon the frame engaging said arms and adapted to swing the same, whereby said idler feed roll may be carried toward or from said first mentioned feed roll, a pivotally mounted lever engaging said first mentioned lever and adapted to swing the same, a second pair of feed rolls engaging the web and adapted to feed the same and to be driven at a less peripheral velocity than that of the first mentioned rolls, whereby slack is produced in the web between said pairs of rolls, a weighted roller resting in the slack portion of said web, a member upon which said roller rotates and flexible means connecting said member with said second mentioned lever.

12. In apparatus of the class described, in combination, two pairs of continuously rotating feed rolls one pair thereof being spaced from the other and being driven at a higher peripheral velocity whereby slack is produced in the web between said pairs of rolls, said pairs of rolls being driven at a relatively constant rate of speed, and means for automatically maintaining the length of the slack portion of the web substantially uniform.

13. In apparatus of the class described, in combination, two pairs of continuously rotating feed rolls one pair thereof being spaced from the other and being driven at a higher peripheral velocity whereby slack is produced in the web between said pairs of rolls, said pairs of rolls being driven at a relatively constant rate of speed, and means controlled by the slack portion of the web for automatically maintaining the slack portion of the web substantially uniform.

14. In apparatus of the class described, in combination, a pair of continuously rotating feed rolls adapted to feed a web of paper between the same at a substantially uniform rate of speed, a second feed roll rotating at a constant and relatively higher rate of speed than said pair of rolls, an idler roll, supported by said second feed roll, and in-

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intermediate means between said second feed roll and said pair of feed rolls whereby the pressure exerted by the idler roll for feeding the web is decreased as the slack in the web is increased.

15 In apparatus of the class described, in combination, continuously driven web receiving means, means operating at a constant speed adapted to feed a web thereto,
10 and means controlled in accordance with the

tension upon the web for controlling the action of said feeding means whereby the web is fed at a substantially uniform rate of speed, as desired.

In testimony whereof I affix my signature, 15
in the presence of two witnesses.

WILLIAM A. PRINGLE.

Witnesses:

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