(No Model.)

J. A. DEAR.

FEEDING PAPER TO PRINTING PRESSES, FOLDING MACHINES, &c.

No. 452,024. Patented May 12, 1891.

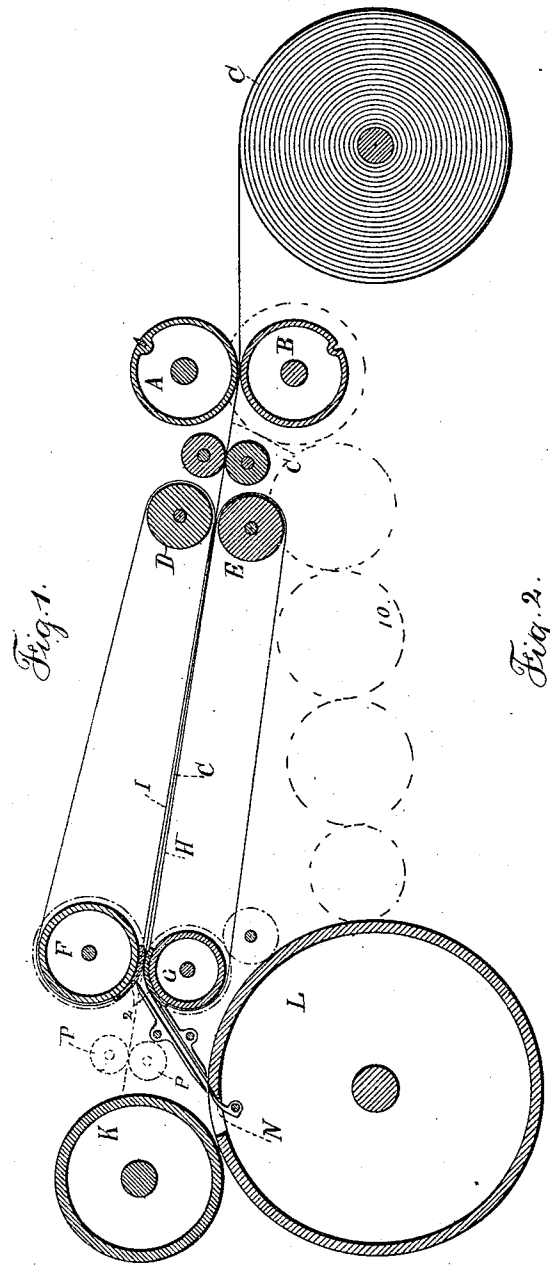

Fig. 1.

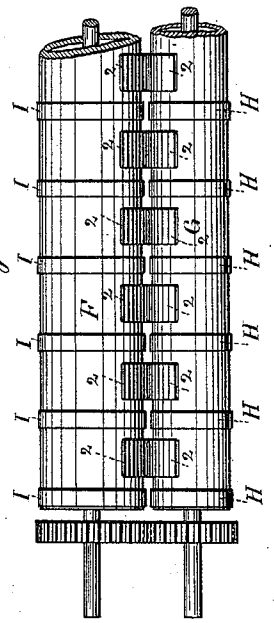

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOSEPH A. DEAR, OF JERSEY CITY, NEW JERSEY.

FEEDING PAPER TO PRINTING-PRESSES, FOLDING-MACHINES, &c.

SPECIFICATION forming part of Letters Patent No. 452,024, dated May 12, 1891.

Application filed March 25, 1889. Serial No. 304,621. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. DEAR, of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Feeding Paper to Printing-Presses, Folding-Machines, &c., of which the following is a specification.

In printing-presses the paper is frequently fed in from a web, and it is perforated by revolving cutters, and the advancing sheet is pulled off with an accelerated movement and passed into the press. This is especially the case in printing-presses known as "perfecting-presses." Difficulty, however, is experienced in passing in the advancing end of the sheet at exactly the right time and with the proper speed for the grippers to seize such sheet and draw it in unobstructedly to the press.

The object of my present invention is to communicate to the paper a motion corresponding, or nearly so, to the movement of the grippers, so that the sheet may be seized and moved forward with the advancing edge in exactly the proper position for the grippers to seize the same, thereby avoiding difficulties which have heretofore been experienced in consequence of the belts and forwarding-rollers exerting an unequal tension and wrinkling the sheet or slipping upon the paper and causing the momentary detention in the separating of the sheet and the forwarding of the same, so that the gripping device does not properly grasp the sheet.

Although my improvements are especially adapted to perfecting printing-presses they are available for feeding paper into folding or cutting machines, where accuracy in the movement of the paper is of importance.

In the drawings, Figure 1 is a diagram illustrating the position and action of my improvements with reference to the cutting and printing mechanism of a press, and Fig. 2 is an elevation of the forwarding-rollers near one end of the same.

The cutting-cylinders A B are of any usual character, and the cutter acts to perforate the sheet or web C to the proper extent, but not to entirely separate one sheet from the other, so that after the perforations have been made the web C passes on between the rollers D E, that forward the same to the point of delivery, and F G are my improved nipping and forwarding rolls. The distance between the rolls D E and F G is to be greater than the length of one sheet, so that after the web has been perforated and the sheet passed between the rollers D E the advancing end thereof will not receive the impulse from the nipping and forwarding rolls F G until the perforations have passed the rolls D E, so that such rolls D E may continue to forward the web of paper; but the rolls F G are free to pull the sheet from the web, separating the same in the line of the perforations.

Between the rolls D E and F G there are belts or tapes H I, or there may be bars, upon which the sheet of paper slides, such bars being the known equivalents of the tapes. The printing-cylinder is indicated at K and the impression-cylinder at L, and N are the grippers for seizing the advancing end of the sheet. These are of any known or desired character.

The peculiarity in the nipping and forwarding rolls F G consists in the forwarding-pads 2 2, applied upon the surfaces of one or both of said rolls and in a line parallel with the axes, and I usually make the rolls F and G of different diameter, for a purpose hereinafter named.

It is now to be understood that the advancing end of the sheet passes along and between the forwarding-rolls F G freely and at the same speed with which the rolls D E are traveling; but the forwarding-rolls F G are to be traveling at the same surface speed, or nearly so, as the impression-cylinder L and grippers N, and when the belts or tapes H I are made use of they will move at the same speed, or nearly so, and slip against the sheet; but when the forwarding-pads 2 come in contact with the sheet they nip the same and firmly hold it and impart to it the same speed of movement as the grippers, and this is the case whether the forwarding-pads are upon both the rollers F G or only upon one roller, the parts being adjusted so that the forwarding-pads on one roll press intimately into contact with the other roll in cases where the forwarding-pads are only on one roll; but it is preferable to have the forwarding-pads

on both rolls, so that the paper will not be acted upon except when the forwarding-pads coincide. As soon as the forwarding-pads act upon the sheet of paper and accelerate its movement, giving to the same a speed corresponding to the motion of the grippers, the forward end of the sheet will pass to the grippers and the grippers have ample time to swing and grasp the sheet before the forwarding-pads cease their hold upon the same, and thereafter the sheet is free to be drawn through between the forwarding rolls F and G after the pads cease their hold upon the sheet. In cases where the speed of the web of paper approximates the speed of the grippers the forwarding-rolls F G may be of the same size, and the advancing end of the sheet of paper can pass freely through between such rolls F and G and will be in position for the forwarding-pads to nip the same and accelerate the speed of the paper, separating the sheet from the web and forwarding the paper into the grippers, and no injury will result from the forwarding-pads nipping the sheet two or more times in the revolution of the rolls F and G as the sheet passes through between them, because the forwarding-pads are moving at the same speed as the paper; but under many circumstances it is advisable to prevent the forwarding-pads from acting on the sheet of paper oftener than on the one occasion when the paper is forwarded into the grippers; and with this object in view I make the forwarding-rolls F and G of different diameters, so that while the gearing by which they are actuated causes them to travel at the same surface speeds the forwarding-pads on the two rolls will only coincide every given number of revolutions of the respective rolls. For instance, if the roll F is one-quarter larger than the roll G, the pads will coincide every four revolutions of the roll F and five revolutions of the roll G. Thereby the nipping action will take place only once for each four revolutions of the roll F, care being taken to make the nipping-pads less than one-quarter the length of the periphery of the roll G, and so on. The proportions of these two rolls may vary so that the nipping-pads will only coincide after any given number of revolutions of the roll F or G, and this roll F or G is to bear such a proportion to the size of the impression-cylinder L that the nipping-pads will only operate when each set of grippers upon such impression-cylinder comes to the position for receiving the sheet, and in this manner the movements of the forwarding rolls and pads can be adapted to the press, whether there is only one range of grippers upon the impression-cylinder or whether there may be two or more ranges of such grippers, and the same conditions are available where this feeding apparatus is made use of in supplying paper to a folding or other machine, in which instance the paper may pass over suitable bridges to a pair of forwarding-rolls, (shown by dotted lines at P,) and the parts are to be timed in such a way that the nipping-pads will act upon the sheet of paper and pass the advancing end thereof in between such rolls P at the proper moment.

I claim as my invention—

1. The forwarding-rolls F G, of different diameters and having pads partially surrounding them, in combination with the connecting-gearing and paper-supplying apparatus, substantially as specified.

2. The combination, with the cutting mechanism for perforating the web of paper and the rolls for forwarding such paper, of the rolls F G, of different diameters, and the ranges of forwarding-pads 2 upon and partially surrounding each roll, and gearing for connecting the rolls F and G, so as to cause them to travel at the same surface speed, whereby the nipping-pads will only operate when they coincide after two or more revolutions of either roller F or G, substantially as set forth.

3. The combination, with the impression-cylinder L and grippers M, of the forwarding-rolls F G and forwarding-pads 2 upon and partially surrounding such rolls for nipping the paper and imparting to the same a speed corresponding to the movement of the grippers, or nearly so, substantially as set forth.

Signed by me this 18th day of March, 1889.

JOSEPH A. DEAR.

Witnesses:
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