

H. A. W. WOOD.
 INKING DEVICE FOR PRINTING PRESSES.
 APPLICATION FILED OCT. 11, 1910.

1,207,259.

Patented Dec. 5, 1916.

2 SHEETS—SHEET 1.

Fig. 3

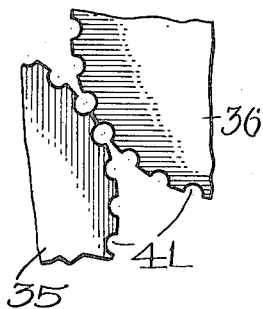


Fig. 4

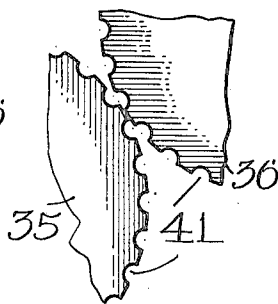


Fig. 5

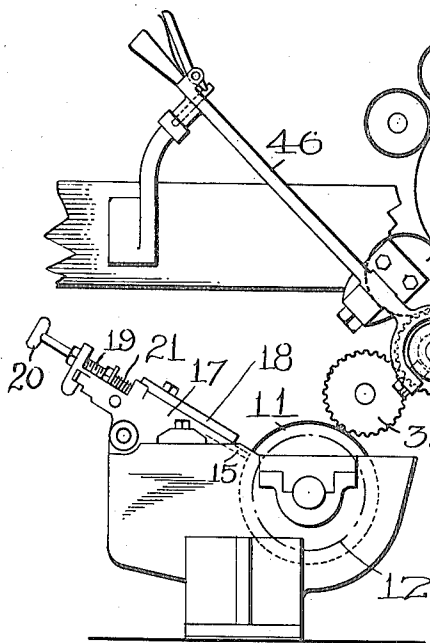
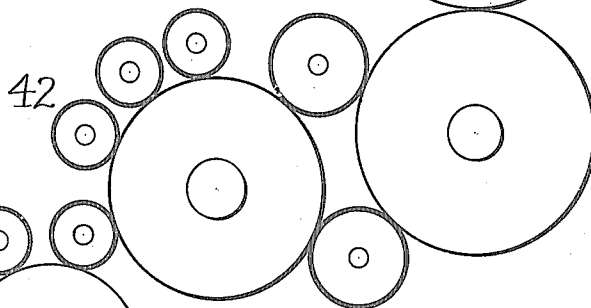
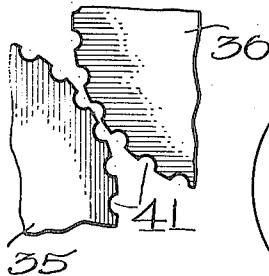
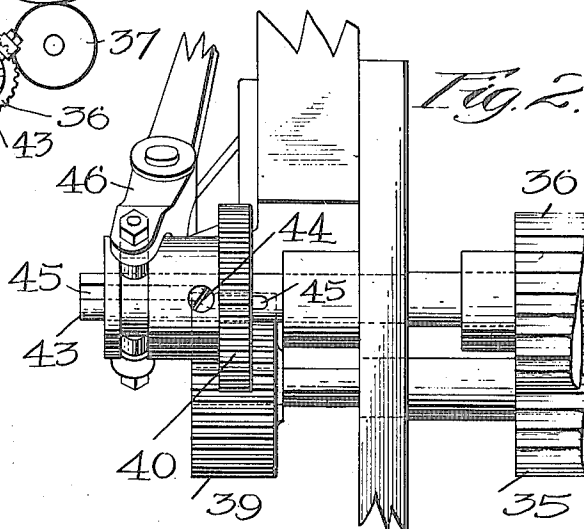


Fig. 1

Fig. 2



Witnesses:

E. F. Mason

W. J. Hartnett

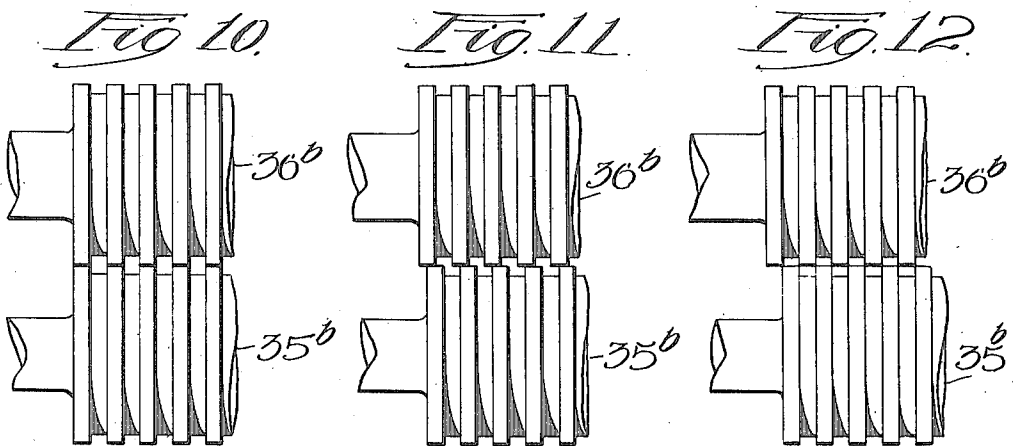
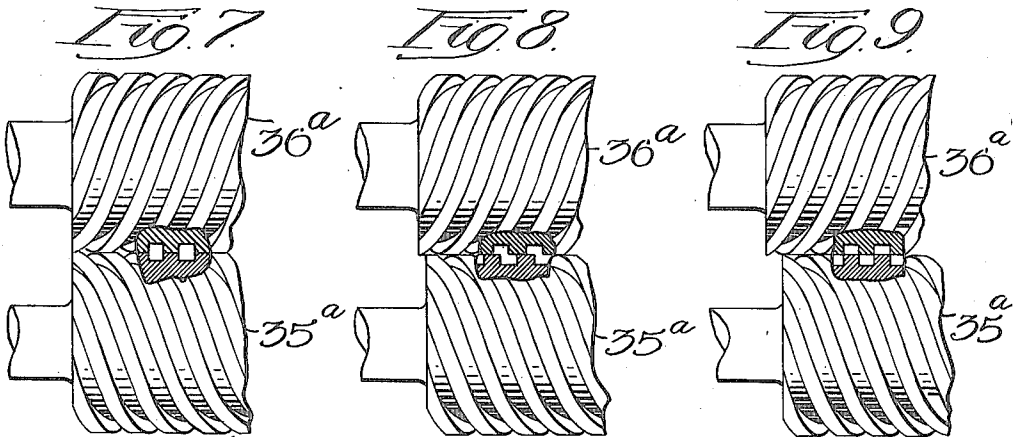
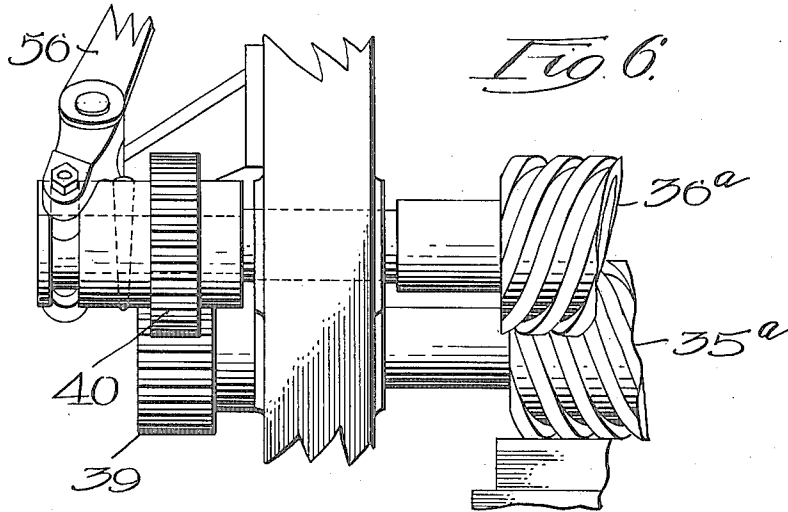
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 2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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INKING DEVICE FOR PRINTING-PRESSES.

1,207,259.

Specification of Letters Patent.

Patented Dec. 5, 1916.

Continuation in part of application Serial No. 583,553, filed September 24, 1910. This application filed
October 11, 1910. Serial No. 586,455.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Inking Device for Printing-Presses, of which the following is a specification.

This is a continuation of my application Serial No. 583,553, filed September 24, 1910.

This invention relates to an apparatus for inking printing presses.

One of the objects of this invention is to supply a continuously acting and rotary means which shall be subject to the most delicate adjustment for conveying the ink from an original source of supply, such as a fountain, to the distributing and ink applying mechanism of a printing press.

It is at present the universal practice, upon rotary as well as other printing machines, to make the transfer of ink from the fountain to distributors by means of a reciprocating roller, called a ductor, which plies between the fountain roll and the distributing mechanism. Such a ductor roll first contacts with the fountain roll through a portion of the rotation thereof and thus is charged with ink; thereafter it is moved bodily out of contact with the fountain roll and into contact with a roller of the distributing system, to which it applies such ink as it carries. It then returns for another charge and the operation is repeated. Thus it will be seen that the distributing and ink applying system receives its charge not continuously but at intervals. This renders it difficult to supply to the surface of the type a uniformly thick film of ink. This defect is principally noticeable upon modern newspaper presses in which the ductor roller acts but once during the printing of eight or nine products. Another defect of the present system lies in the fact that its fountain roller moves at a slow speed and that its inking system moves at a high speed, and as the ductor roller must cooperate with each in turn it is subjected to constant shocks due to the stoppage and starting of its rotative movement. It is because of this fact that in the modern high speed it is impossible to operate the ductor to supply ink for every impression.

It will be seen that a ductor, working under the conditions described, must carry up at each operation what might be termed a clod of ink which must be distributed over many times the area that it occupies upon the ductor roller and proportionately thinned down before it is applied to the type. This necessitates the use of many distributing rollers. Principally because of the defect described modern newspapers are execrably printed.

Now it is the object of this invention to supplant the present inefficient and speed-limiting ink-transferring device by one which shall not only be continuous in its rotation but shall continuously connect fountain and distributing system, and at the same time shall be subjected to the most delicate regulation. Such a device is the present invention, which accomplishes the following important functions: The inking system is continuously supplied with ink; there are no reciprocating nor intermittently rotating elements to limit the speed of operation; its adjustability is so delicate that it may range by infinitesimal degrees from no supply whatever of ink to a full head, and by reason of its continuous operation the ink from the fountain is supplied to the distributing system in a film which is almost ready for use and which, not having after transfer to be spread out over a very much larger area, dispenses with the need for so many subsequently operating distributing devices.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a side elevation of a well known type of printing press showing one way in which this invention can be applied thereto. Fig. 2 is a front elevation of a portion of the same showing the adjusting mechanism. Fig. 3 is a diagrammatic side elevation showing the parts arranged for a maximum ink distribution. Fig. 4 is a similar view showing the parts adjusted for a medium distribution. Fig. 5 is a similar view showing them adjusted for a minimum distribution. Fig. 6 is a view similar to Fig. 2 showing another form of the invention. Fig. 7 is a front elevation of the two

ductor rolls of the same showing the parts arranged for maximum ink distribution. Fig. 8 is a similar view showing the parts adjusted for a medium distribution. Fig. 9 is a similar view showing them adjusted for a minimum or no distribution, and Figs. 10, 11 and 12 are views similar respectively to Figs. 7, 8 and 9, showing another form of the invention.

In this case, although the ink is supplied to the type in a continuous film, this film is interrupted at one point during its travel from the fountain to the distributing rollers for the purpose of securing an efficient, delicate and simple regulation of the thickness of the entire supply of ink.

Referring to the drawings, the invention is shown as applied to a machine having a fountain roller 11 which may be driven by a gear 12 at the same surface speed as that of the web. If the fountain roller does not deliver direct to the ductor rollers as hereinafter described, it may run at a lower speed. In the fountain is a blade 15 for regulating the supply of ink. This blade is in the usual position and can be made in a number of sections so that the several sections are longitudinally guided between the fountain cover 17 and the guides 18 located above the same. Each of these blade sections has secured therein a rod 19. These are provided with set-screws 20 for adjusting them individually so as to regulate the supply of ink at any desired place in the length of the fountain roll. Each one preferably is made substantially the width of the column to be printed so that the appearance of each column can be controlled at will by the regulation of the ink supply by means of these blades. They are shown as being capable of adjustment also by these screws to take up wear. Springs 21 are shown for yieldingly pressing them against said screws to insure correct adjustment.

Instead of adjusting the fountain blade as a whole to regulate the thickness of the entire film of ink or in addition thereto, the following mechanism is provided: Two ductor rollers 35 and 36 are employed for transferring the ink from the fountain roller to either of the distributing rollers 37 which take the ink to the distributing cylinder 38. These rollers preferably are driven at web speed as by means of gears 39 and 40. The surfaces of these two rollers are provided with grooves or corrugations 41 and the interrupted surfaces or facets between these grooves preferably are of the same width as the grooves themselves. These grooves or facets may be continuous or interrupted and may be of many forms. In the first five figures, they are shown as longitudinal, while in Figs. 6, 7 and 8 they are helical, and in the last three, circumferential. Whatever their form, means is provided whereby one

of these rollers can be adjusted a maximum distance equal to the width of one of these surfaces or grooves. The result of such an adjustment is clearly indicated in Figs. 3, 4, and 5. When the two rollers are in such relative adjustment that the surfaces between the grooves register with each other, as shown in Fig. 3, the ductor roller 26 will deposit on each of the ink distributing rollers 37 a series of full width patches in the form of parallel stripes. These rolls 37 are relatively located in such positions that each of the stripes transferred from one of them to the cylinder 38 will come in intermediate position between two of those which are transferred thereto by the other ink distributing roller 37. Therefore, when the parts are in the position shown in Fig. 3, the two ink distributing rollers 37 will supply a substantially continuous film of ink of the desired thickness to the cylinder 38. If it is desired to reduce the amount of ink delivered to the cylinder 38, the ductor rollers are relatively adjusted, as for example to the position shown in Fig. 4. In this case each of the stripes delivered to the distributing rollers and to the distributing cylinder will be of less width than the space between the stripes. Therefore, the film on the ink distributing cylinder will not be continuous and when this film is distributed by the distributing rollers 42, etc., it will give a film of less thickness. In this way the relative thickness of the ink film delivered to the press can be regulated in a very simple manner. In Fig. 5 the rolls are shown in such adjustment that substantially no ink would be delivered to the ink distributing rollers. In these figures longitudinal grooves are shown. The result is similar if helical or circumferential ones are employed as in Figs. 6, 7, 8, 9, 10 and 11. In both these cases the adjustable roll is adjusted longitudinally, instead of circumferentially as in the first five figures. If the contacting surfaces are arranged like checker-work, longitudinal adjustment is preferred. Many ways can be provided for making this adjustment, but the one herein shown consists in fastening the gear 39 to its roller shaft while gear 40 is movable horizontally on its roller shaft 43 within certain limits. A pin 44 is fastened in the hub of the gear 40 and engages in an offset keyway 45 on the roller shaft. An operating fork 46 engages a groove in the hub of the gear 40. By turning this fork in an obvious manner, the gear 40 is shifted on its roller shaft and the shaft is turned slightly so that the relative positions of the corrugations of the rollers 35 and 36 are changed, as has been described. In this way it is possible to regulate the ink supply to the cylinder 38 from practically nothing up to a continuous ink film. This gives all possible variation in the thicknesses of

the films delivered to the form rollers without moving the ductor rollers bodily or changing their speed of rotation, and yet the regulating mechanism is of an exceedingly simple character to manufacture and operate. In Fig. 6 an operating fork 56 engages a groove in the hub of the gear 40. By turning this fork in an obvious manner, one of the rollers is shifted longitudinally and the relative positions of the corrugations of the rollers 35^a and 36^a are changed, as has been described. In the same way the rollers 35^b and 36^b of Figs. 10, 11 and 12 are adjusted.

While I have illustrated and described three preferred embodiments of the invention, I am aware that many other modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but

What I do claim is:—

1. An inking mechanism comprising two cooperating transferring rolls each provided with interrupted cooperating surfaces similarly arranged on the two rolls, adapted to come into contact and transfer ink from one to another, means for covering with ink all the cooperating surface of one roll, said rolls being relatively adjustable to regulate the area of contact of said surfaces.

2. In an inking mechanism, the combination of a pair of transferring rolls each provided with interrupted longitudinal surfaces adapted to come into contact with those of the other roll whereby ink may be transferred from one to the other, and means for relatively adjusting said rolls circumferentially to regulate the area of contact of said surfaces.

3. In an inking device, the combination with a fountain roll and a distributing roll, of rotatable means movable at the same surface speed as said rolls for conveying ink from one to the other in a series of longitudinal patches, and means for regulating the width of said patches.

4. In an inking device, the combination with a fountain roll and a distributing roll, of means for conveying ink from one to the other in a series of longitudinal parallel stripes and means for regulating the width of said stripes.

5. In an inking device, the combination with a fountain roll and means for distributing an even coating of ink throughout the surface of the fountain roll and regulating the thickness thereof, of a pair of ductor rollers in contact with each other, both having grooves, means whereby one of said ductor rolls takes constant sized patches of ink from said fountain roll, and

a distributing cylinder, the other ductor roll constituting means for taking a portion of the ink from each patch on the first named ductor roll and transferring it to the cylinder.

6. In a printing press, the combination of an ink fountain roller, a ductor roller in position to take ink therefrom and having a plurality of parallel grooves on its circumference, a second ductor roller constantly rotatable directly in contact with the first ductor roller and provided with grooves on its circumference, the spaces between the latter grooves being equal to the width of the grooves on the first ductor, and means for receiving the ink from the second ductor roller and spreading it out.

7. In an inking device, the combination with a fountain roll and a distributing roll, of a ductor roll having a cylindrical surface provided with grooves extending therealong, said ductor roll being in contact with the fountain roll, and a second similarly grooved ductor roll in contact with the first ductor roll and with the distributing roll.

8. In an inking device, the combination with a fountain roll and a distributing roll, of two ductor rolls having parallel longitudinal grooves in contact with each other.

9. In an inking device, the combination with a fountain roll and a distributing roll, of a pair of ductor rolls between them in contact with each other, each having parallel grooves thereon extending along the roll, said grooved rolls being relatively adjustable in a direction different from the direction of the grooves.

10. In an inking device, the combination with a fountain roll and a distributing roll, of a pair of grooved ductor rolls between them in contact with each other, one of them being circumferentially adjustable.

11. In a printing press, the combination of an ink fountain roller, a ductor roller in contact therewith having a plurality of parallel grooves on its circumference, a second ductor roller constantly rotatable directly in contact therewith and provided with parallel grooves on its circumference extending in the same direction as the grooves on the other roller, means for adjusting one of said rollers in a direction transverse to the direction of the grooves, and two rolls for receiving the ink from the second ductor roller and transferring it in alternate locations on another surface.

12. In a printing press, the combination with an ink fountain roll, means for driving it at the same circumferential speed as the web, a non-vibrating ductor roller in contact with said ink fountain roll, a pair of ink distributing rollers, an ink distributing cylinder for receiving the ink from the ink distributing rollers, and means between the said ductor roller and the ink

distributing rollers for transferring the ink between them and for regulating the amount of ink transferred from said ductors.

- 5 13. In a printing press, the combination with an inking roll, of a ductor roller in contact with said inking roll, a pair of ink distributing rollers, means between said ductor roller and the ink distributing rollers for transferring the ink in a series of patches to each one, and a cylinder with which both of said distributing rollers are in contact, said distributing rollers being relatively arranged for each to transfer a patch to the cylinder between two patches transferred thereto by the other.
- 10 14. In an inking device, the combination with an ink distributing member having projections and indentations, means for cov-

ering said projections with a uniform surface of ink, a second ink distributing member in contact with the first member having indentations corresponding in size and location with the projections on the first member and also having projections whereby the projections of the second member will remove ink from the projections of the first member, and means for receiving the ink from the projections of the second member and drawing it out into a uniform film.

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

HENRY A. WISE WOOD.

Witnesses:

ELIZABETH CALDBECK,
CHESTER R. SIME.