H. A. W. WOOD.

METHOD OF DISTRIBUTING INK.

APPLICATION FILED SEPT. 24, 1910.

1,207,258.

Patented Dec. 5, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

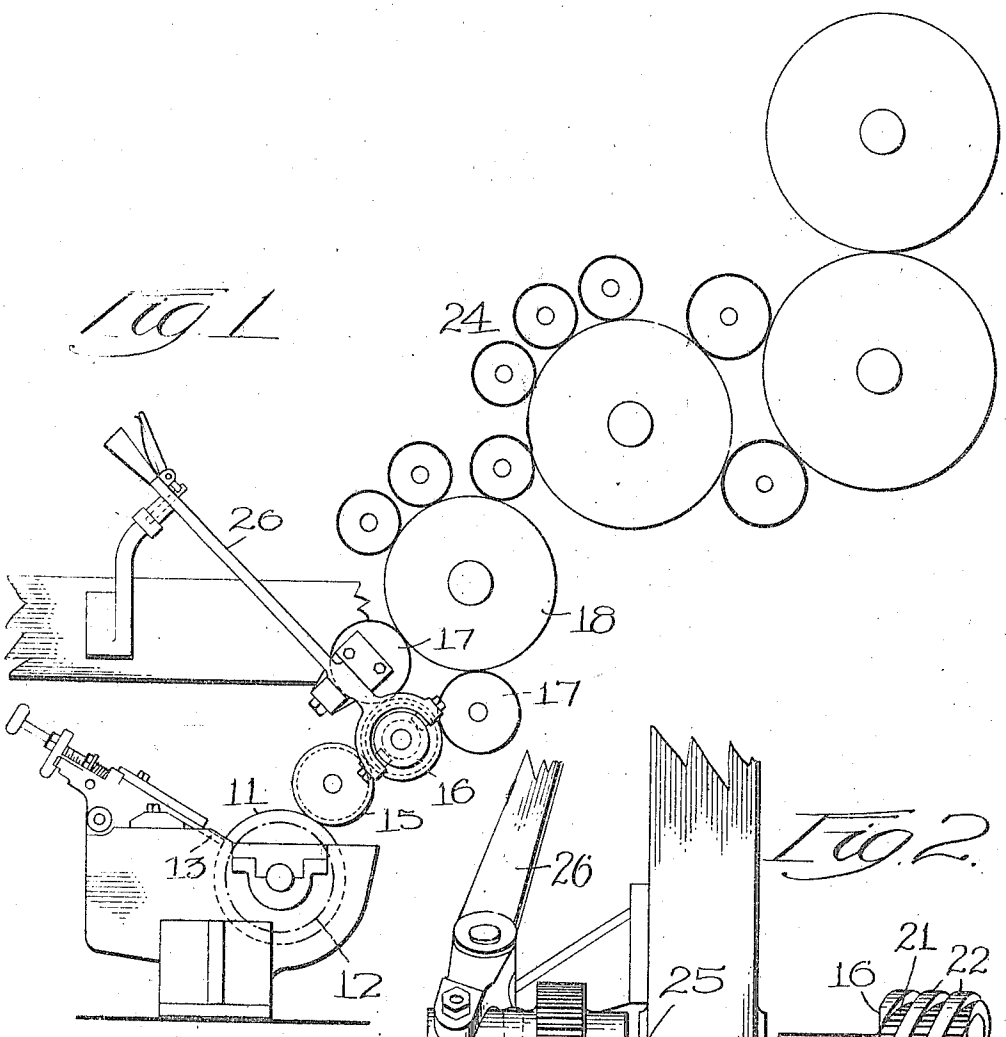
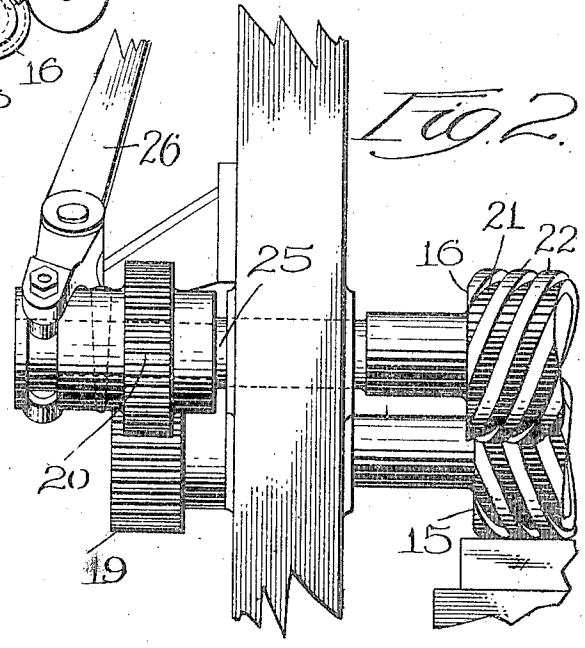



Fig. 2.




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2 SHEETS—SHEET 2.

Fig. 6.

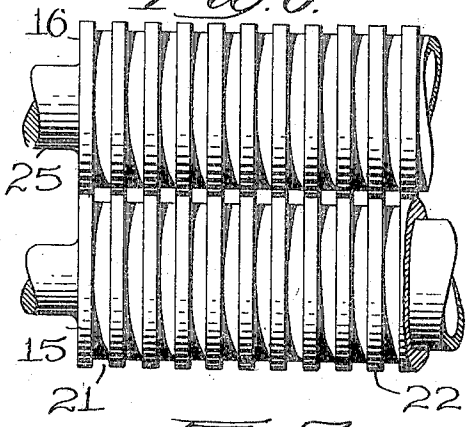



Fig. 3.

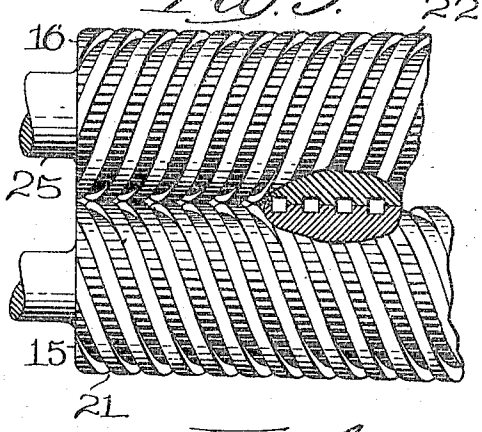



Fig. 7.

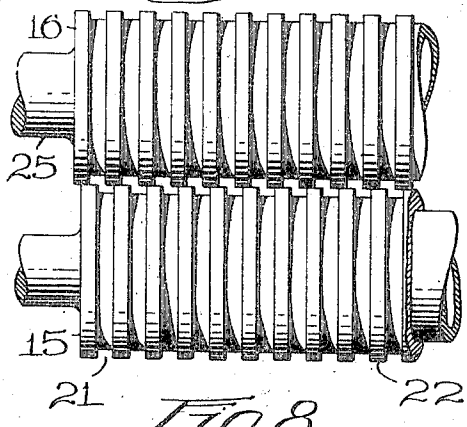



Fig. 4.

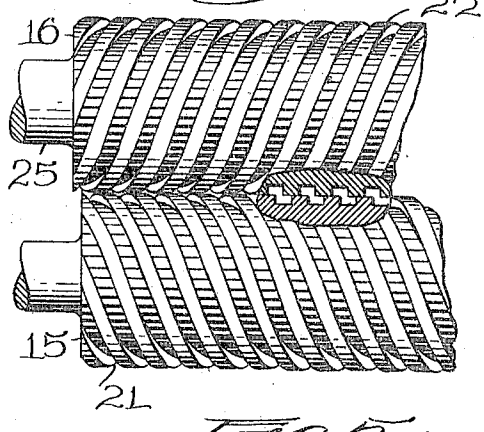



Fig. 8.

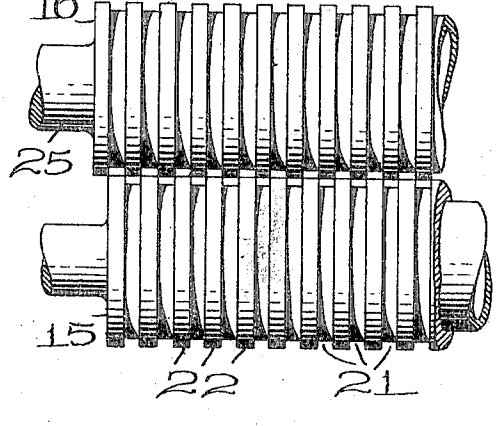
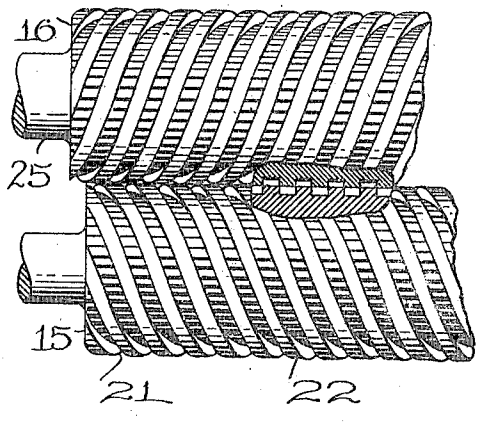



Fig. 5.




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# UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO WOOD NEWSPAPER MACHINERY CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA.

## METHOD OF DISTRIBUTING INK.

1,207,258. Specification of Letters Patent. Patented Dec. 5, 1916.

Application filed September 24, 1910. Serial No. 583,553.

*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 Method of Distributing Ink, of which the following is a specification.

This invention relates to a method of inking printing presses.

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 distributers 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 coöperate 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 press 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 method 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 subject to the most delicate regulation. The present invention 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 carried out. Fig. 2 is a front elevation of a portion of the same showing the adjusting mechanism. Fig. 3 is a front elevation of the two ductor rolls showing the parts arranged for 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 or no distribution, and Figs. 6, 7, and 8 are views, similar respectively to Figs. 3, 4, and 5, showing another form in which the invention can be carried out.

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 carried out by 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 13 for regulating the supply of ink.

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 shown. Two ductor rollers 15 and 16 are employed for transferring the ink from the fountain roller to either of the distributing rollers 17 which take the ink to the distributing cylinder 18. These rollers preferably are driven at web speed as by means of gears 19 and 20. The surfaces of these two rollers are provided with grooves or corrugations 21 and the interrupted surfaces of facets 22 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 helical, while in Figs. 6, 7, and 8 they are circumferential. Whatever their form, means is provided whereby one of these rollers can be adjusted a 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 16 will deposit on each of the ink distributing rollers 17 a series of full width patches in the form of parallel stripes. These rolls 17 are relatively located in such positions that each of the stripes transferred from one of them to the cylinder 18 will come in intermediate position between two of those which are transferred thereto by the other ink distributing roller 17. Therefore, when the parts are in the position shown in Fig. 3, the two ink distributing rollers 17 will supply a substantially continuous film of ink of the desired thickness to the cylinder 18. If it is desired to reduce the amount of ink delivered to the cylinder 18, one of the ductor rollers is 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 as delivered on the ink distributing cylinder will not be continuous and when this film is distributed by the distributing rollers 24, 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 the helical grooves are shown. Some of the results are similar if circumferential ones are employed as in Figs. 6, 7 and 8. In both these cases the adjustable roll is adjusted longitudinally, but of course it can be adjusted circumferentially if the grooves are arranged longitudinally or helically. 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 19 to its roller shaft while gear 20 is movable horizontally on its roller shaft 25 within certain limits. An operating fork 26 engages a groove in the hub of the gear 20. 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 15 and 16 is changed, as has been described. In this way it is possible to regulate the ink supply to the cylinder 18 from practically nothing up to a continuous ink film. This gives all possible variation in the thicknesses of the film delivered to the form rollers without changing the speed of rotation of the ductor rollers, and yet the regulating mechanism is of an exceedingly simple character to manufacture and operate.

Although I have illustrated and described the invention as applied to a particular machine I am aware of the fact that it can be applied to other machines without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to the constructions herein shown and described, but

What I do claim is:—

1. A method of distributing ink which consists in applying to one roller from another, a series of patches of ink of definite size, and transferring regulated portions of ink from said patches to a third roller or cylinder along a plurality of courses, those being transferred along one course being applied to the third roller or cylinder in intermediate positions between those transferred thereto along another course.

2. The method of distributing ink which consists in transferring from a roller a series of patches of ink, regulating the width of said patches during their course of travel, transferring these patches to two separate movable members, and transferring the patches from said members alternately to an ink cylinder.

3. A method of distributing ink which consists in applying to a roller a series of patches of ink and transferring ink from said patches to a cylinder along a plurality of courses, those being transferred along one course being applied to the cylinder in intermediate positions between those transferred thereto along another course.

4. The method of distributing ink which consists in bringing into contact two rolls each having interrupted coöperating surfaces, supplying with ink all of the coöper-

ating surface of one of said rollers, constantly rotating said rollers while in contact to take the ink therefrom on the other of said rollers, and regulating the area of contact of said surfaces to vary the amount of ink transferred by the second roll.

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

HENRY A. WISE WOOD.

Witnesses:
ELIZABETH CALDBECK,
F. W. HOWLAND.