Jan. 13, 1931. H. V. BALL 1,788,504

INKING MECHANISM FOR PRINTING PRESSES

Filed June 9, 1928 2 Sheets-Sheet 1

FIG. 1.

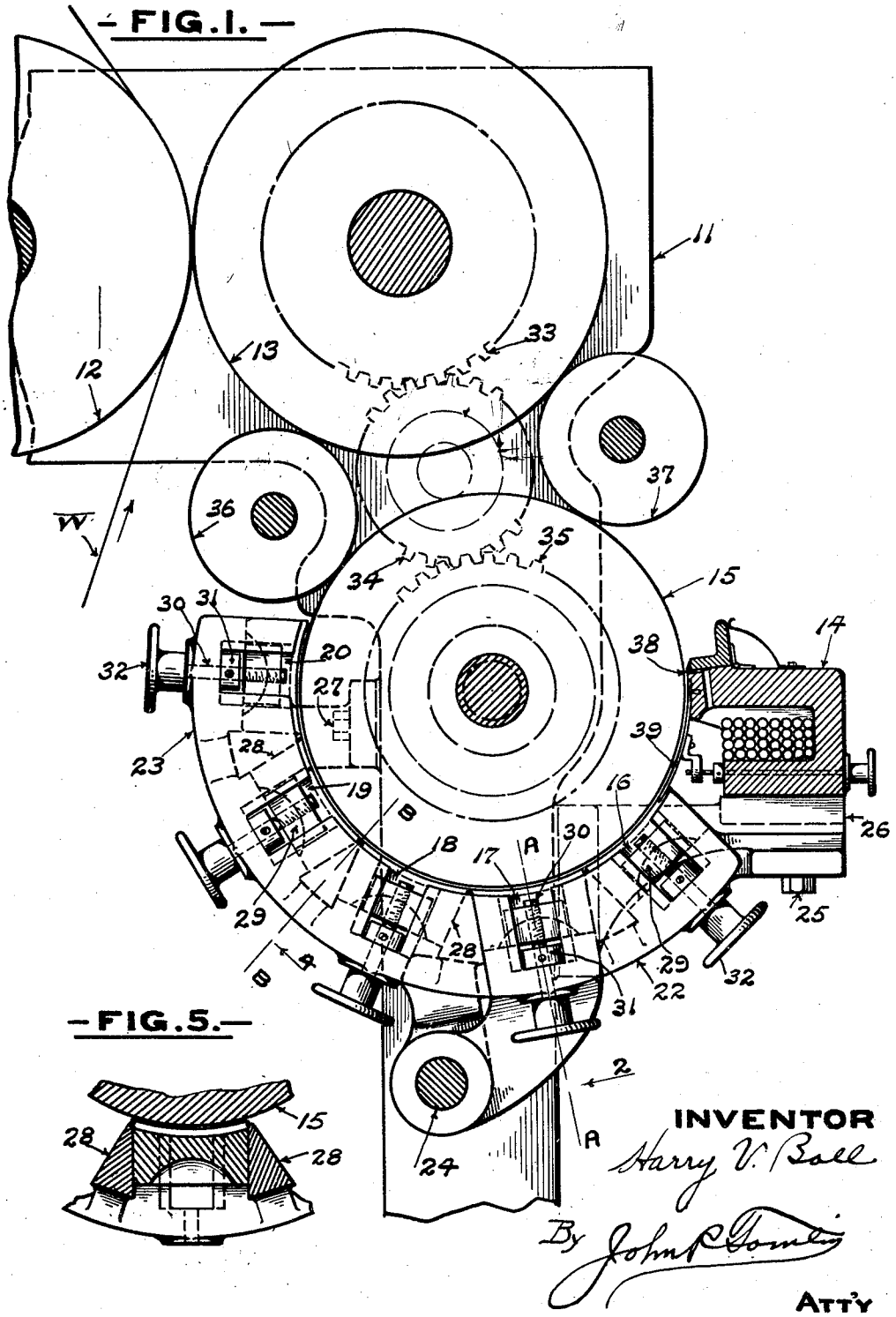


FIG. 5.

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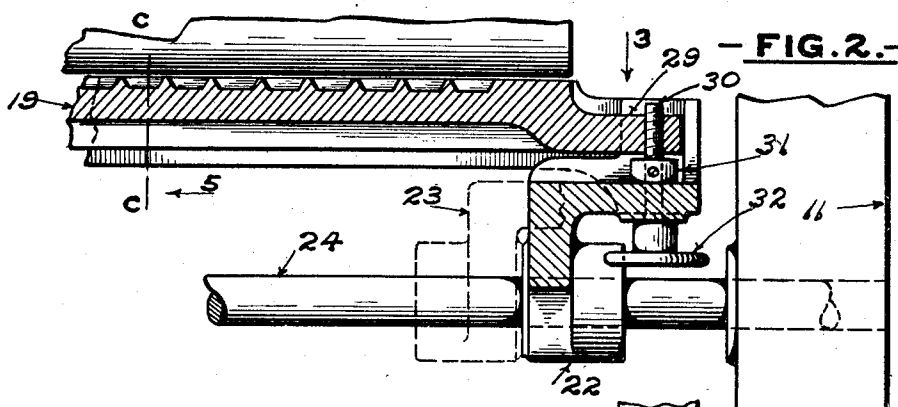


FIG. 2.

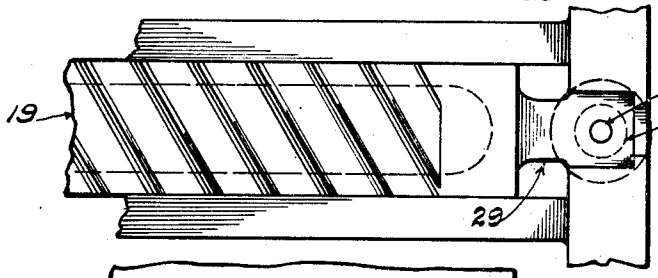


FIG. 3.

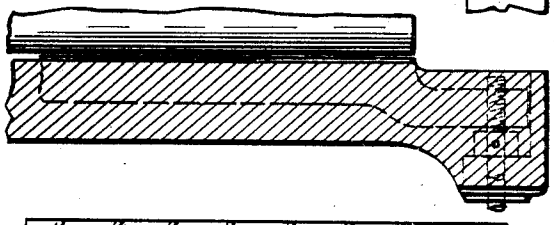


FIG. 4.

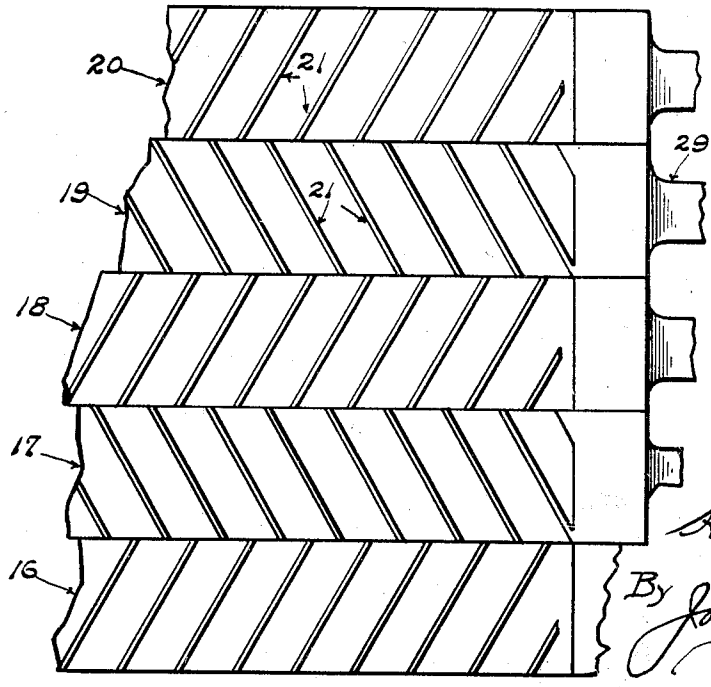


FIG. 6.

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UNITED STATES PATENT OFFICE

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INKING MECHANISM FOR PRINTING PRESSES

Application filed June 9, 1928. Serial No. 284,099.

This invention relates to inking mechanism for printing presses, especially rotary printing presses such as are used for printing newspapers, magazines and similar products. In order to produce a high quality of printing, the ink must be supplied to the printing plate which is carried on the plate or form cylinder in an even, continuous flow, and at a rate that varies in exact proportion to the speed of the press. The ink is supplied to the plate by a form roller that rotates in contact with it and also with an ink cylinder on which the ink is distributed in an even film so that it may be transferred to the plate in the proper quantity. The means heretofore employed for distributing the ink on the ink cylinder consists of a number of rollers running in contact with the ink cylinder and which, in addition to being rotated, are also caused to move endwise or vibrated. This combined rolling and vibrating motion effectively distributes the ink, but a great amount of power is consumed in vibrating the rollers and a large number of moving parts are required, whereas with the means herein disclosed the same result is accomplished, very little power is required and there are no moving parts.

An object of the invention is to provide an inking mechanism for a rotary printing press that will supply ink to the printing plate in the exact quantity and condition required to produce a high quality of printing.

Another object of the invention is to provide an inking mechanism fulfilling the requirements and having only a relatively small number of moving parts.

It is also an object of the invention to provide an inking mechanism of generally improved construction, whereby the device will be simple, durable, inexpensive in construction, and convenient, practical, serviceable, and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention has been illustrated in its preferred embodiments in the accompanying drawings, wherein:

Figure 1 is a view of a portion of a printing press with one side frame removed, and showing the improved inking mechanism as viewed from the side of the press, certain of the parts being shown in section.

Figure 2 is a sectional view taken on the line A—A of Figure 1, viewed in the direction of arrow 2, and depicting an end portion of one of the ink distributing bars and a portion of the frame that supports it.

Figure 3 is a plan view partly broken away of the ink distributing bar shown in Figure 2 and a portion of the supporting frame.

Figure 4 is a sectional view partly broken away of one of the frames that support the ink distributing bars, taken on the line B—B of Figure 1 and viewed in the direction of arrow 4.

Figure 5 is a sectional view of the ink distributing bar shown in Figure 2, and a portion of the frame that supports it, taken on the line C—C of Figure 2 and viewed in the direction of arrow 5.

Figure 6 shows a developed plan view of a portion of the face of the ink distributing bars showing the arrangement of ribs that distribute the ink on the surface of the ink cylinder.

Referring to the drawings, 11 indicates a portion of a side frame of a printing press, 12 indicates an impression cylinder and 13 indicates a plate or form cylinder. Ink is supplied to the printing medium, which may be printing plates carried on the plate cylinder by an ink distributing system hereinafter described.

Inking systems for printing presses comprise some form of reservoir which may be an ink fountain with a fountain roller therein from which the ink is transferred to the ink cylinder by a duct or roller, or, the reservoir may contain an ink pump having a plurality of cylinders and conduits leading therefrom, each to a separate orifice in an

ink rail mounted in close proximity to the cylindrical surface of the ink cylinder. An ink rail for a supply system of this type is indicated at 14 and shown in Halliwell U. S. Patent No. 1,644,723.

Instead of the vibrating rollers heretofore used for distributing the ink on the ink cylinder, I employ ink distributing bars supported adjacent to the ink cylinder 15. The ink distributing bars 16, 17, 18, 19 and 20 are formed with curved faces and serve to support spaced ribs or deflectors diagonally arranged thereon. The curvature of the ribs conforms closely to the periphery of the ink cylinder and the bars are carried in frames 22 and 23 pivoted on the shaft 24 which is secured to the main frame 11. The opposite side of the frame 22 is secured by the bolt 25 to the bracket 26 carried by the main frame 11, and the opposite side of the frame 23 is secured by the bolt 27 directly to the main frame 11. By removing the bolts 25 and 27, the frames carrying the ink distributing bars may be swung away from the ink cylinder to allow access to the faces of the bars for inspection or cleaning. It will be understood that swinging the frames does not affect the adjustment of the bars and that when the frames are again bolted in place the adjustment will be unchanged.

Means for supporting the ink distributing bars so they may be adjusted with reference to the ink cylinder is provided. The bars are formed with parallel sides as shown in Figure 5 and the intervening bars 28 of the supporting frames are accurately machined to fit them. The ink distributing bars will thus slide between the bars of the frame, but the opening will not permit ink to pass. The ink distributing bars have extended lugs 29, into which are threaded screws 30 having collars 31 secured on their shanks and shouldered heads with hand grips 32. These screws pass freely through holes in the supporting frames 22 and 23, and it will be seen that by turning them, the ink distributing bars will be moved radially to the ink cylinder and a nicety of adjustment obtained. While adjusting means for but one end of the bar is shown it should be understood that similar mechanism is used at the other side of the press for adjusting the other end of the bars.

It will be understood that the press may be driven by suitable means and that the impression cylinder and the plate cylinder will run at the same speed and with their surfaces in contact in order to print on the web W shown passing between them. A gear 33 is secured to the plate cylinder and meshes with an idler 34, which meshes with a gear 35, secured to the ink cylinder; the ratio of the gearing being such that the peripheral speed of the ink cylinder is the same as that of the printing cylinders. Form rollers 36 and 37 are made of a suitable composition material and are mounted to rotate in contact with the ink cylinder 15 and the plate cylinder 13.

In operation, ink is ejected from the ink rail 14 through orifices, one of which is indicated at 38. The ink is received by the ink cylinder and carried past the plate 39 which partially distributes it upon the cylinder. Further rotation of the ink cylinder carries the ink past the ink distributing bars 16, 17, 18, 19 and 20 in succession. These bars are preferably set so they are spaced at different distances from the cylinder, each bar being at a slightly lesser distance than the preceding one. The arrangement of the diagonal ribs 21 on the faces of the bars constitutes a succession of oppositely disposed deflectors in the path of the ink carried on the cylinder, the ribs on one bar deflecting to one side, all the ink that cannot pass between them and the cylinder, while the ribs on the next bar deflect to the opposite side whatever ink cannot pass under them. It is apparent that when these bars are set at progressively diminishing distances from the cylinder that the repeated deflection of the ink from one side to the other will cause it to be spread in an even film across the ink cylinder. From the ink cylinder the ink is transferred by the form rollers 36 and 37 to the printing plates on the plate cylinder 13.

While the invention has been described as applied to a press to which ink is supplied by a pump system, it will be understood that the invention is equally applicable to presses equipped with other means of supplying ink.

What I claim is:

1. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, diagonal deflectors arranged adjacent to the ink cylinder for distributing the ink thereon, and means for transferring ink from the ink cylinder to the printing medium.

2. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, stationary means arranged adjacent to the ink cylinder for distributing the ink longitudinally thereon, and means for transferring ink from the ink cylinder to the printing medium.

3. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a support arranged adjacent to the ink cylinder carrying diagonal deflectors interposed in the path of travel of the ink for distributing ink on the ink cylinder, and means for transferring ink from the ink cylinder to the printing medium.

4. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for

transferring the ink from the reservoir to the ink cylinder, a support arranged adjacent to the ink cylinder and carrying oppositely disposed diagonal deflectors interposed in the path of travel of the ink for distributing the ink on the ink cylinder, and means for transferring the ink from the ink cylinder to the printing medium.

5. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a support arranged adjacent to the ink cylinder carrying deflectors diagonally arranged in the path of travel of the ink for distributing ink on the ink cylinder, and means for transferring ink from the ink cylinder to the printing medium.

6. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring the ink from the reservoir to the ink cylinder, a plurality of deflectors adjacent the ink cylinder, and in the path of travel of the ink, said deflectors being arranged at different distances from the ink cylinder, and means for transferring the ink from the ink cylinder to the printing medium.

7. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a plurality of deflectors adjacent the ink cylinder and in the path of travel of the ink, said deflectors being arranged at progressively lesser distances from the ink cylinder, and means for transferring ink from the ink cylinder to the printing medium.

8. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a plurality of independently adjustable supports carrying deflectors adjacent the ink cylinder and in the path of travel of the ink for distributing ink on said ink cylinder, and means for transferring ink from the ink cylinder to the printing medium.

9. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a frame carrying deflectors on supports, said deflectors being normally adjacent to the ink cylinder and in the path of travel of the ink, means whereby the frame may readily be moved with relation to the cylinder to provide access to the parts, and means for transferring ink from the ink cylinder to the printing medium.

10. In a printing press, an ink reservoir, an ink cylinder, a printing medium, means for transferring ink from the reservoir to the ink cylinder, a moveable frame carrying deflectors, said deflectors being normally adjacent to the ink cylinder and adjustable in the frame, means whereby when the frame is moved to expose the deflectors, the adjustment of the deflectors with relation to the frame is not altered, and means for transferring ink from the ink cylinder to the printing medium.

11. In a printing press, an ink reservoir, an ink cylinder, means for transferring ink from the reservoir to the ink cylinder and diagonal deflectors supported adjacent to the ink cylinder and in the path of travel of the ink carried on the cylinder.

12. The method of distributing ink on the peripheral surface of an ink cylinder of a printing machine, consisting of depositing a quantity of ink on the cylinder, displacing towards one end of the cylinder, the ink in excess of a layer of pre-determined thickness, then displacing towards the other end of the cylinder, ink in excess of a layer of less thickness.

13. The method of distributing ink on the peripheral surface of an ink cylinder of a printing machine, consisting of depositing a quantity of ink on the cylinder, impelling to another part of the cylinder the portion of said quantity that is in excess of a film of pre-determined thickness, subjecting the ink to the impelling operation repeatedly, and leaving a thinner film after each operation.

In testimony whereof, I affix my signature.

HARRY V. BALL.