Sept. 7, 1926. 1,598,819

J. B. HILL

APPARATUS FOR REMOVING INK FROM PRINTING PRESS INKING ROLLS

Filed Feb. 18, 1925 2 Sheets-Sheet 1

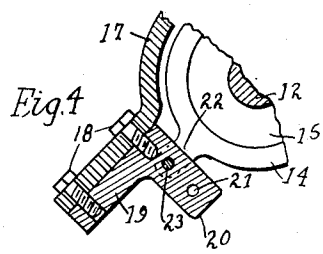



Fig. 4

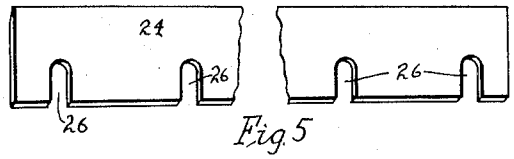



Fig. 5

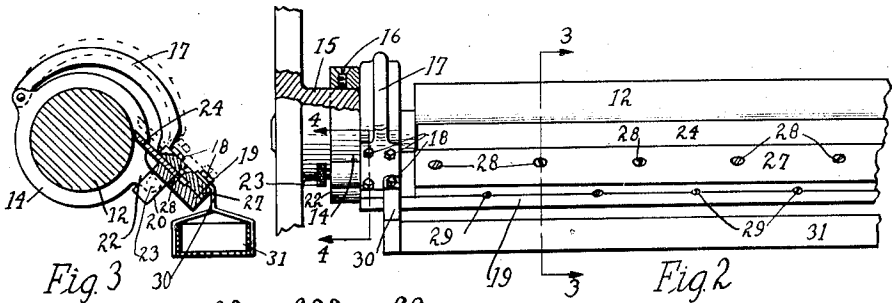



Fig. 3

Fig. 2

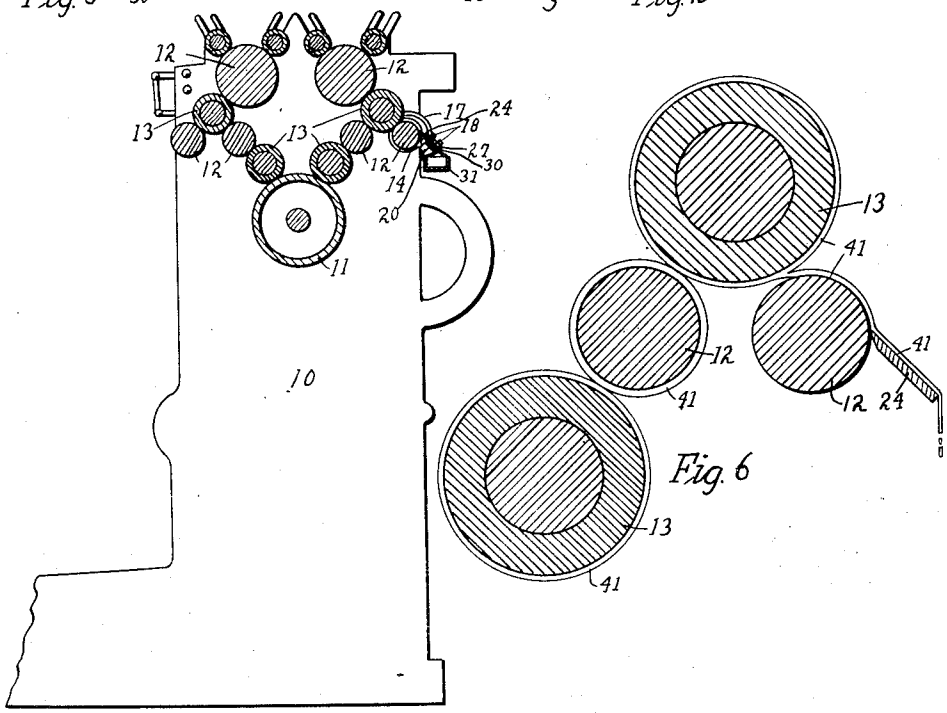



Fig. 1

Fig. 6

Inventor
Joseph B. Hill
by Quinby & Hague Attys.

Sept. 7, 1926. 1,598,819

J. B. HILL

APPARATUS FOR REMOVING INK FROM PRINTING PRESS INKING ROLLS

Filed Feb. 18, 1925 2 Sheets-Sheet 2

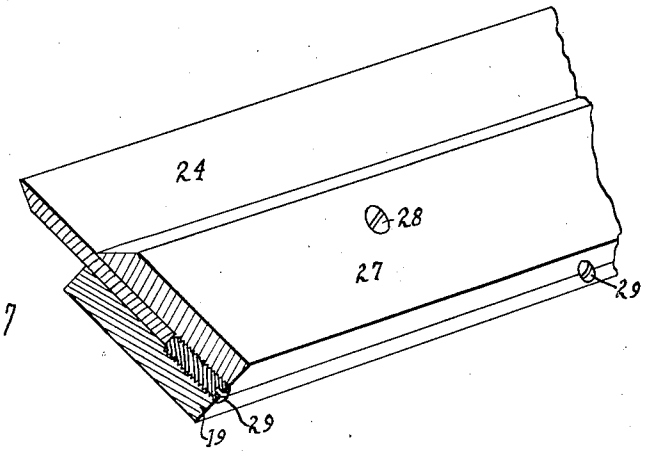



Fig. 7

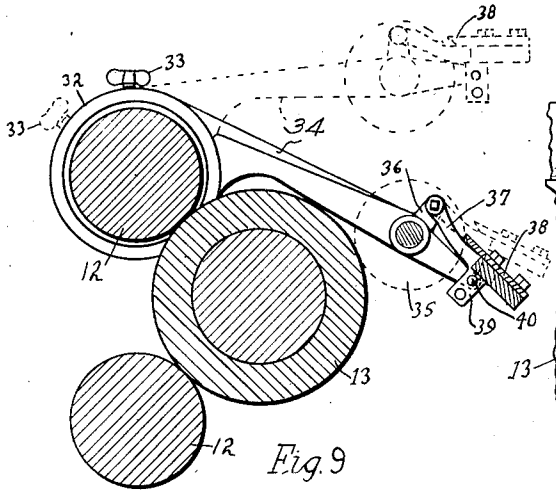



Fig. 9

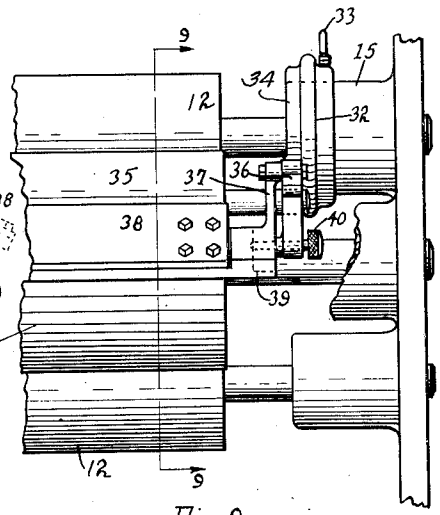



Fig. 8

Inventor
Joseph B. Hill
by Quigg & Hague Attys.

Patented Sept. 7, 1926. 1,598,819

# UNITED STATES PATENT OFFICE.

JOSEPH B. HILL, OF DES MOINES, IOWA.

## APPARATUS FOR REMOVING INK FROM PRINTING-PRESS INKING ROLLS.

Application filed February 18, 1925. Serial No. 10,068.

At the present time printing presses are ordinarily provided with a series of ink distributing and type inking rolls, arranged in series, the alternate rolls of the series being of solid metal and flexible or yielding composition material. It is further customary at the present time, after a certain period of use, or when the ink being used is changed from one color or shade to another, for the operator to remove all of the inking rolls from the press and wash them in an ink removing substance such for instance as gasoline, and then after they are cleaned, replace them before applying fresh ink. This process is commonly referred to as "washing up the inking rolls".

The object of my invention is to provide a device of simple, durable and inexpensive construction that may be used in the nature of an attachment for printing presses, and which, when moved to position for operation relative to one of the metal rolls in the series, very quickly and thoroughly remove from all of the rolls in the series all of the ink on every roll which is capable of being transmitted from one roll to another during their rotation when in engagement. In other words, to wash up the inking rolls without removing them from the press or applying any cleaning composition such as gasoline.

My invention consists in the construction, arrangement and combination of the various parts of the attachment, and in the method employed in washing up the inking rolls, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claim, and illustrated in the accompanying drawings, in which:

Figure 1 shows a vertical, longitudinal, sectional view of a part of a printing press showing the various inking rolls for distributing ink and applying it to the type.

Figure 2 shows a detail rear elevation of a part of the press frame and one of the ink distributing rolls and my improved ink removing device applied thereto.

Figure 3 shows a sectional view on the line 3—3 of Figure 2.

Figure 4 shows an enlarged sectional view on the line 4—4 of Figure 2.

Figure 5 shows an isometric view illustrating the ink removing blade.

Figure 6 shows an enlarged, detail, sectional view of a series of inking rolls and an ink removing blade applied to one of them for illustrating diagrammatically the method employed in removing the ink.

Figure 7 shows an enlarged, sectional, isometric view of the ink removing blade.

Figure 8 shows a rear elevation of a part of the inking press frame and portions of the ink distributing rollers and a modified form of ink removing blade applied thereto; and

Figure 9 shows a sectional view on the line 9—9 of Figure 8.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate generally the frame of the printing press. 11 indicates a cylinder on which the type or plates to be printed from are mounted.

As illustrated in Figure 10 there are two independent series of ink distributing rolls, each of which comprises a series of smooth faced cylindrical metal rolls 12 and a series of rolls 13 which are made of yieldable composition material. In each series these rolls are so arranged that the composition rolls are always in contact only with one or more metal rolls, which arrangement is that now generally employed in printing presses.

For removing the ink from each series of rolls, I have provided a device consisting of a collar 14 for each side of the press, designed to be passed over one of the bearing bosses 15 for one of the metal rolls. This collar is secured in any position of adjustment desired by a set screw 16. Pivoted to the collar 14 is a curved arm 17. These arms are connected by bolts 18 to a flat plate 19 that extends across the printing press adjacent to the metal roll upon which the bearing of the collar 14 is mounted.

This plate 19 is provided at one end with a lug 20 formed with two or more openings 21, and the collar 14 is formed with a lug 22 provided with an opening. A pin 23 is provided to extend through the opening in the lug 22 and through one of the openings 21, to thereby support the plate 19 in different adjusted positions relative to the metal roll with which it is associated.

Mounted on top of the plate 19 is a blade 24 having one edge adjacent to the roll sharpened, as shown in Figure 7. This blade as shown in Figure 5, is preferably formed with a series of notches 26 on its edge opposite from the sharpened edge, and it is held to the plate 19 by a plate 27 on top of the blade 24, and connected with the plate

19 by screws 28 which extend through the slots 26.

For making a very accurate adjustment of the blade 24 relative to the metal roll, I have provided a series of set screws 29 seated in screw threaded openings formed partially in each of the plates 19 and 27 with their inner ends in engagement with the outer edge of the blade 24, as clearly shown in Figure 7. This adjustment of the blade 24 is, of course, made when the set screws 28 are not thoroughly tightened, and after the adjustment is made, these screws 28 are tightened to lock the blade 24 in position.

Mounted upon the arms 17 are the straps 30 which support a trough 31 which is suspended by said straps to position directly under the rear lower edge of the plate 19, so that any ink removed from the rolls by the blade 24 will flow laterally in both directions from the blade 24 and along the upper edge of the plate 27 until it reaches the ends of the blade 24, whereupon it will drop into the trough 31.

In the modified form illustrated in Figures 8 and 9, I have shown a collar 32 adjustably and detachably mounted upon the bearing 15 of one of the rolls, and adjustably held in place by a set screw 33. This collar has projecting downwardly and rearwardly from it an arm 34, and supported at the lower rear ends of said arm is a metal ink roll 35. When this arm 34 is in the position shown in Figure 9, ink is distributed from the composition roll 13 to the metal roll 35, but when the arm 34 is elevated, as shown by dotted lines in Figure 9, then the metal roll 35 is out of contact with the composition roll 13.

Formed on the arm 34 is a forwardly extending lug 36 in which is pivoted an arm 37 which is extended downwardly and rearwardly and supports an ink removing blade 38. This arm 37 is also provided with a lug 39 having openings in it to receive a pin 40 by which the blade may be supported either in contact with the roll 35 or, as shown by dotted lines in Figure 9, out of contact with the roll 35.

In Figure 6 of the drawings I have illustrated diagrammatically a series of ink distributing rolls and an ink cleaning blade in operative position relative to one of the metal rolls of the series. In this figure there is shown on each of the three rolls a coating 41 of ink, but on the roll 12, with which the blade 24 is in contact, the ink is shown as removed from that portion of the roll which has passed the blade 24 and not yet reached a position of contact with its mating composition roll 13, illustrating the method by which the ink from all of the rolls in the series is transmitted to the metal roll from which it is removed by the blade.

In practical use, and assuming that an ordinary printing press is equipped with my improved ink washing up device, and assuming further that the operator desires to change from, say black ink to, say for instance, orange colored ink, then, and in that event, the operator simply adjusts the blade 24 into position in contact with the adjacent metal roll. He then operates the inking press in the usual manner, thus rapidly revolving all of the inking rolls. The blade removes all of the ink from the metal roll with which it is in contact, as illustrated in Figure 6. Then the roll which is in contact with the metal roll to which the blade is applied is, during the further revolution of the press, continuously transmitted to the metal roll that is being continuously cleaned by the blade. Obviously, if there was no blade nor a type cylinder to receive the ink, the ink would be constantly transmitted back and forth from one roll of the series to the other. However, so long as there is a roll in the series which has wholly or partially a clean surface, then the ink is gradually transmitted from all of the rolls that contain ink to the roll which contains no ink. Hence, in a very short period of time during the rapid revolution of the inking rolls, all of the rolls in the series have transmitted to the roll, which is engaged by the blade, every particle of such ink which is capable of being thus transmitted from one roll to the other, and when this has been done, then the press is "washed up" and in condition to receive a new lot of ink.

In practice, and after the press has been washed up as just described, it is true that some of the rolls have not been so thoroughly cleaned as to remove all of the ink color, but in practice I have found that, after thus washing up the rolls when they previously have been operated with black ink, I can apply a new quantity of ink of, say for instance, orange color and immediately commence printing without transmitting any of the black ink to the printing cylinders.

It is, of course, necessary that the blade 24 be quite sharp and be adjusted with great accuracy relative to its co-operating metal roll, and by providing the set screws 29 for making this adjustment, I have found that it is not difficult to adjust the blade and maintain it in its adjusted position.

With the modified form illustrated in Figures 8 and 9, the entire device may be readily, quickly and easily applied to or removed from a printing press, and the blade may be left in a properly adjusted position at all times relative to the metal roll, so that when it is desired to wash up the press, it is only necessary for the operator to adjust the device so that the metal roll engages the corresponding composition roll, so that the operator need not pay any at-

tention to the adjustment of the blade relative to the roll.

I am aware that heretofore in the printing art ink has been removed from cylindrical surfaces by means of a sharpened blade, and I do not desire to be understood as herein claiming that process broadly. I have discovered by repeated experiments that where there is a series of alternate metal and composition inking rolls all in contact, ink can be removed from all of the rolls in the series by constantly keeping a portion of the surface of one of the metal rolls clean by the use of a blade, and then rapidly revolving all of the rolls in the series and constantly transmitting from the entire surfaces of all of the rolls all of such ink as is capable of being thus transmitted to the clean portion of the metal roll, which cooperates with the blade, so that after a few hundred revolutions of the series of inking rolls, they have been sufficiently washed up to receive fresh ink, or ink of a different color.

I am aware that heretofore attempt has been made to remove ink from soft or composition rolls by means of a scraper blade arranged approximately radially with relation to the roll from which the ink is to be removed. With such devices, however, it would be impracticable to cut the ink from the rolls in the manner contemplated by me, for if the knife blade were to set that it could actually cut the ink from the roll, it would also cut the soft or composition roll.

I am aware also that heretofore cutting blades or so-called "doctors" have been applied to printing cylinders for the purpose of removing ink from the surfaces of said cylinders without removing it from the depressions therein from which the ink is applied to the surfaces to be printed upon, but in such devices there are no soft or composition rolls for transmitting the ink from the printing cylinder to a hard surfaced cylinder from which it can be cut by a knife.

I claim as my invention:

In a printing press of the character described, the combination of a printing cylinder, an inking roll, and a number of ink distributing rolls between the inking roll and the printing cylinder arranged in contact with each other, some of them having metal surfaces and the alternate ones in the series having yielding or composition surfaces, a sharp edged knife adjustable from position out of contact with one of the metal surfaced rolls to a position in contact therewith and arranged with its cutting edge approximately tangential to the surface of the roll with which it is in contact, and whereby when the train of rolls is being rapidly rotated the layer of ink upon the roll with which the blade is in contact will be cut as distinguished from being scraped from the roll, and all of the ink upon the inking roll will be transmitted by the soft or composition rolls to the adjacent metal rolls and finally removed from the metal roll to which the blade is applied.

Des Moines, Iowa, January 13, 1925.

JOSEPH B. HILL.