Oct. 12, 1954 J. E. McMULLEN 2,691,344

INK ROLL CLEANING SCRAPER FOR PRINTING PRESSES

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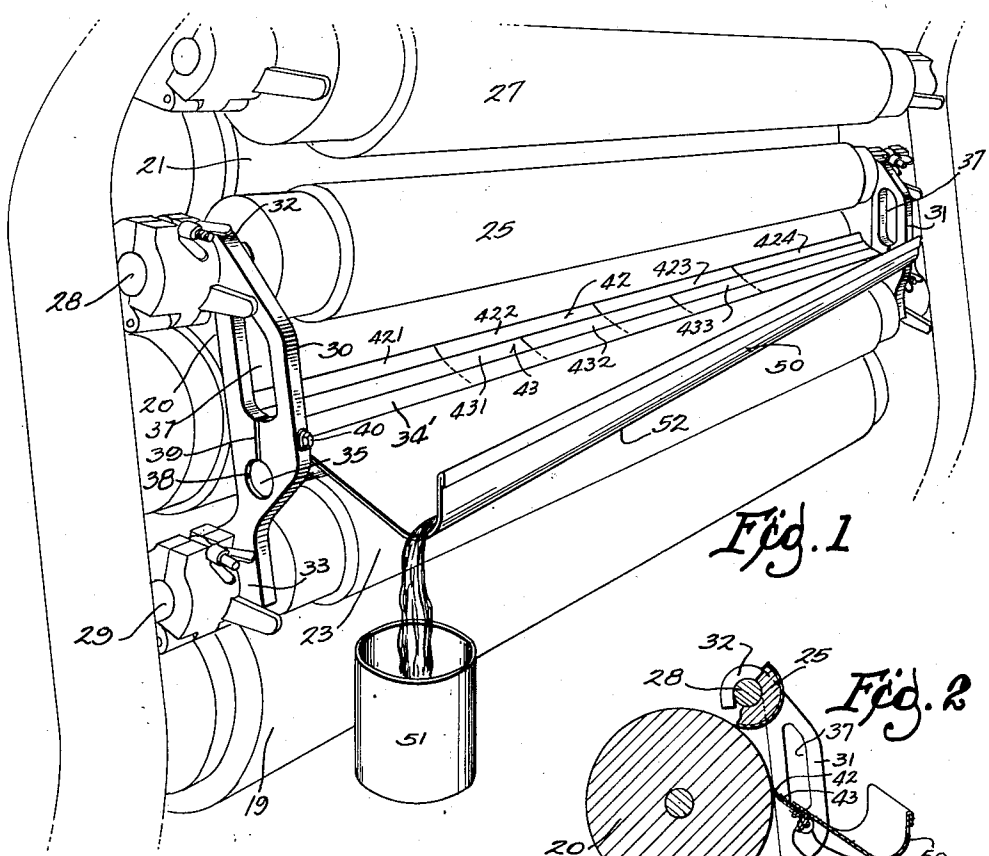


Fig. 1

Fig. 2

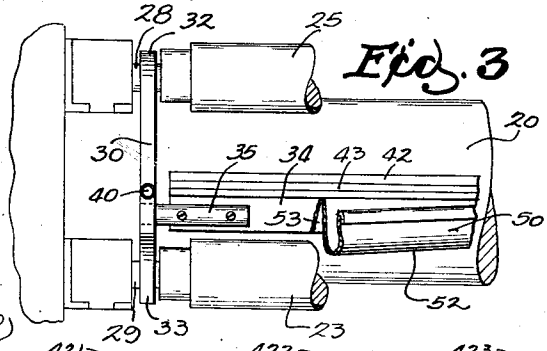


Fig. 3

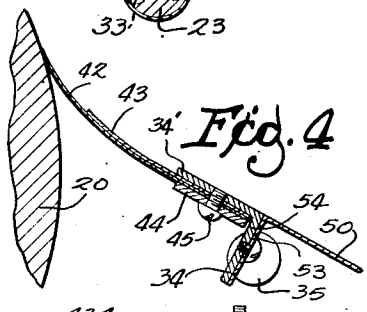


Fig. 4

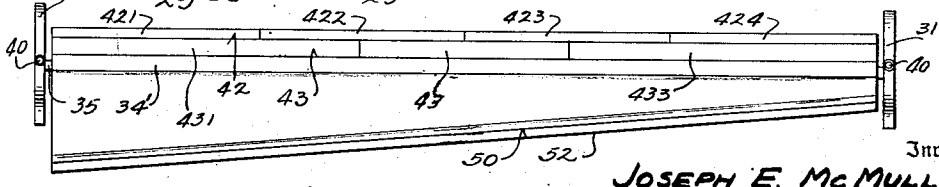


Fig. 5

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INK ROLL CLEANING SCRAPER FOR PRINTING PRESSES

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3 Claims. (Cl. 101—425)

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This invention relates to an ink roll cleaning scraper for printing presses. The present application is a continuation in part of my application No. 42,644, now abandoned, and contains apparatus claims divided therefrom.

It is a primary object of the present invention to provide a scraper which is instantly mountable and demountable respecting the frame of any conventional printing press and effective during rotation of the inking rolls to remove the ink previously used thereon, either as an incident to a change of ink, or preliminary to press shutdown. In the past, the cleaning of the inking rolls of the printing press either prior to shutdown, or for the purpose of changing ink, has involved either the use of a cleaning fluid, or the swabbing of the rolls with waste, or both of these steps. Through the method disclosed in the companion application above identified and the apparatus as disclosed in that application or the improved apparatus herein disclosed, it is possible to clean any conventional press in a shorter space of time and with less labor and more effective results than has heretofore been possible, all of a given type of ink being removed automatically and mechanically without requiring wiping or swabbing on the part of the operator.

It is a further object of the invention to provide a scraper blade which will contact the entire length of the roll surface without "rippling."

Moreover, my improved roll cleaning apparatus does not require that it be used exclusively on one particular press. A single piece of ink cleaning apparatus embodying the present invention may be shifted from one press to another of the same type and will be equally effective upon each, and it is an important object of the present invention to provide cleaning apparatus having this characteristic.

The objects of the invention will be more apparent from the following disclosure thereof with particular reference to the accompany drawings, in which:

Figure 1 is a view in perspective showing my improved roll cleaning apparatus applied to a printing press of conventional design.

Fig. 2 is a diagrammatic view on a somewhat reduced scale showing in cross section my cleaning apparatus and the rolls and shafts with which it is associated.

Fig. 3 is a fragmentary detail view in front elevation showing the application of one end of my cleaning apparatus to an intermediate inking roll for the cleaning thereof.

Fig. 4 is a very much enlarged fragmentary detail view taken in cross section transversely through the blade portion of the cleaning apparatus.

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Fig. 5 is a view of the cleaning apparatus in front elevation.

It is a feature of the invention that the printing press is of conventional construction, requiring no change whatever for the purposes of the present invention. For the purposes of the present application, it is necessary to show only the intermediate inking rolls 19, 20 and 21 and the cooperating spreading rolls 23, 25 and 27. The spreading rolls 23 and 25, which are in peripheral contact with, and co-act with, the intermediate inking roll 20, are provided respectively with shafts 29 and 28 shown in Figs. 1 to 3.

The characteristic of the ink which enables it to distribute itself uniformly throughout a series of rolls is used for cleaning the whole series of rolls in accordance with the present invention. The press is only stopped long enough to apply the attachment herein disclosed, and thereupon, with the inking rolls of the particular press section in rotation, preferably at a slow rate, the ink is simply scraped continuously from the intermediate roll 20. If the supply of ink has been interrupted, it will only be a few minutes before all of the rolls of the series are cleaned. If a different ink has been fed into the ink reservoir, in lieu of that originally supplied to the rolls, it will only be a few minutes before all of the rolls will be free of the original ink, the different ink being substituted.

The apparatus employed comprises a pair of brackets 30, 31 which may be identical. Each comprises an upper hook at 32 engageable over the shaft 28 of roll 25, and a lower hook or fork at 33 engageable over the shaft 29 of roll 23 (Fig. 2). Spanning the space between the brackets, and parallel to the intervening roll 20, is an angle iron frame element 34 connected at its ends to the flattened ends of stud shafts 35 which are adjustably mounted in the respective brackets.

Each bracket comprises inner and outer portions separated by an intervening opening at 37, the bracket having at 38 a bearing in which the respective stud shaft 35 is rotatably adjustable. The bearing opening communicates with the opening 37 through a slot 39 spanned by a clamp bolt 40 extended through the outer portion of the bracket and threaded to the inner portion thereof so that it may be used to draw the two portions together into clamping engagement with the stud shaft 35 in the bearing opening 38. The arrangement permits the angular adjustment of

shaft 35 and the intervening angle frame member 34 which is mounted thereon.

Carried by the flange 34' of the angle frame member 34 is a scraper which preferably comprises a number of very thin and highly resiliently flexible laminations of different widths, the widest being the scraper blade 42, the margin of which impinges on the periphery of roll 20 under substantial bias imposed by its own flexibility and controlled by the adjustment of the stud shaft 35 in the bearing apertures 38 of the brackets above described. Fig. 2 shows how the marginal portions of the blade 42 are flexed by pressure contact with the periphery of the roll when properly adjusted, the free margin being substantially tangential to the roll when in use. I desirably employ Phosphor bronze for this blade in order that it may have the desired flexibility and resilience, and can be made of the desired thickness.

At least one additional lamination, desirably of the same material, but of somewhat less width, is used at 43 to back up the scraper 42 and to increase its stiffness at the base of the blade without affecting its high degree of resilience near its free margin. Both laminations may be held by means of a clamping strip 44 secured to the angle iron frame member 34 by means of a suitable number of screws such as that shown at 45 in Fig. 4.

Likewise connected with the frame member 34 and extending outwardly and downwardly therefrom is a trough 50 which progressively deepens toward one end for the delivery into a bucket 51, or any other suitable container, of ink collected in the trough as the result of its being scraped from the roll 20, upon which the scraping blade 42 acts. It will be understood that the roll 20 operates in a clockwise direction, as viewed in Figs. 1 and 2, the device being applicable, according to the same principle, to any roll in the series which rotates toward the outside of the press, where access is easy.

The trough 50 comprises a channel of progressively increasing depth toward the end nearest the observer in Fig. 1 and Fig. 2, such channel being formed by a web of sheet metal which has at its bottom 52 a curve of short radius of approximately ninety degrees more or less, one upper side margin of the web having a flange at 53 (Fig. 4) which is bolted to the downwardly turned flange 54 of the angle iron frame member 34.

During normal press operation, the entire roll cleaning apparatus is normally removed from the press. It is attached to the press only when cleaning is desirable. For attachment, it is only necessary that the brackets 30 and 31 be hooked over the shaft 28 and 29 in the manner shown in the drawings, whereupon the highly resiliently flexible blade 42 will accommodate itself to the periphery of the roll which it contacts.

Due to this high degree of flexibility of the blade, the angular adjustment of the blade is not at all critical. It is used principally to adjust the blade to a position approaching the tangent of the roll, and one in which the scraping contact of the free margin of the blade with the roll periphery is assured.

There are inevitable minor irregularities in the periphery of such roll. In the past, these irregularities have been dealt with by making scraping blades of soft material which will wear to fit the particular roll with which the blade is used. Consequently, it has been necessary to provide a separate scraper for each roll. Another objection to the use of a blade of soft material lies in the fact that it does not scrape the roll clean, but tends to accumulate in a line of ink in the angle between the blade and the roll which, upon the completion of the operation, could be removed only by manual wiping.

Attempts to make a scraper with a one-piece flexible blade have been only partially successful due to the fact that a blade of thin resiliently flexible material develops "ripples" or slight convexities extending outwardly from the roll, these preventing some portions of the margin of the blade from contacting the roll at all, or preventing such marginal portions from contacting the roll with the same pressure that is developed along other marginal portions.

This problem is solved by the device of the present invention due to the fact that the lamination or ply 42 is divided lengthwise into four separate sections 421, 422, 423 and 424, the joints between these sections being lapped by the several sections 431, 432 and 433 of the lamination or ply 43 of the blade. By using separate ply sections of relatively short length, and breaking joints as between the laminations, the "rippling" problem is eliminated and all portions of the scraping edge seem to contact the roll uniformly and with substantially equal pressure subject to the resilient bias of the material used to make the laminations.

The present device scrapes clean any roll of any press upon which the brackets may be hung, and its requires no manual wiping at the conclusion of the operation. The resilience of the blade and its flexibility and inherent bias and sectional laminar construction are such that it adapts itself to all irregularities, the thinness of the blade being such as to lift the ink from the roll and discharge it through the troughs into the collecting vessel.

I claim:

1. A scraper for removing ink from an intermediate inking roll of a printing press comprising a thin resiliently flexible scraping blade having a holder and a plurality of blade sections individually connected to the holder and having free edge portions projecting therefrom to substantially the same rectilinear scraping edge in flexing engagement with the inking roll of the press, and an auxiliary thin resiliently flexible blade lamination overlying the blade sections first mentioned for flexing therewith, said auxiliary blade lamination being mounted in said holder and having a relatively free edge portion extending toward but offset from the free edge portion of the scraping blade.

2. A scraper of the character described comprising a thin resiliently flexible scraping blade having a holder and a plurality of blade sections individually connected to the holder and having free edge portions projecting therefrom to substantially the same rectilinear scraping edge in further combination with an auxiliary blade lamination comprising separate sections lapping and breaking joints with the first blade sections.

3. A device of the character described for demountable application to a printing press roll, said device comprising bracket means, a frame mounted thereon, and a laminar blade supported on the frame and having a free scraping edge, said blade comprising a first set of resiliently flexible scraper laminations arranged end to end and having free margins in substantial alignment, and a second set of blade laminations in longitudinal series along the first set and of lesser width than the sections first mentioned, the sec-

tions of the second set being of such length and position as to break joints with the sections of the first set.

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