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WASHUP ATTACHMENT FOR PRINTING PRESSES AND THE LIKE

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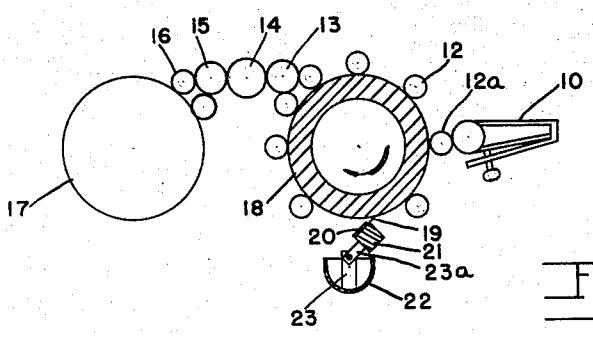


Fig. 1

Fig. 2

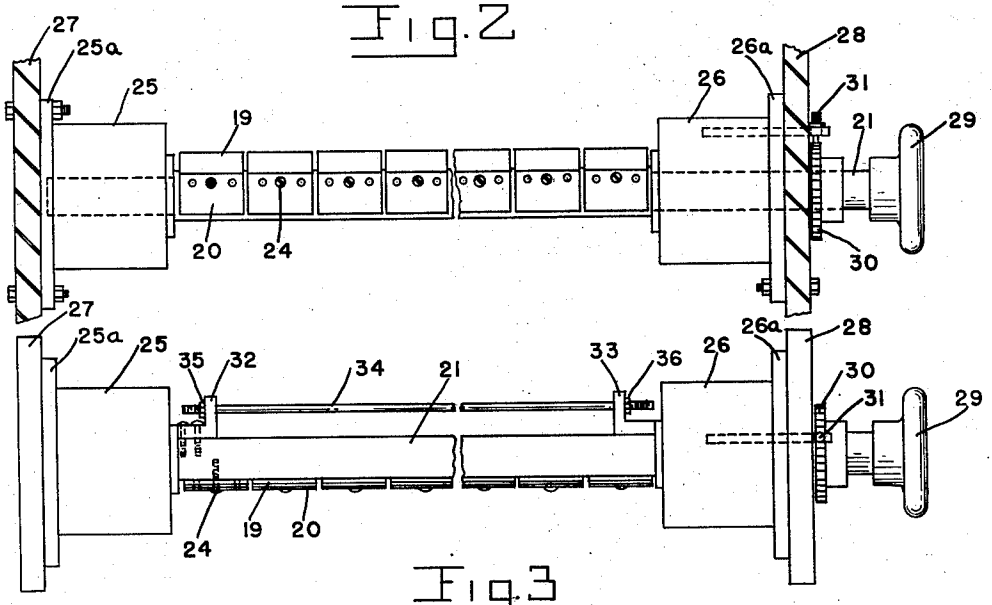


Fig. 3

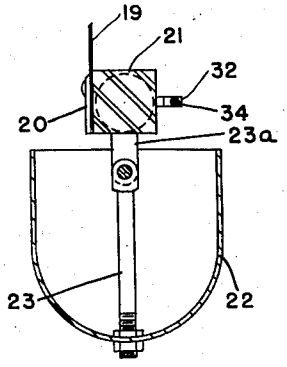


Fig. 4

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WASHUP ATTACHMENT FOR PRINTING PRESSES AND THE LIKE

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The present invention relates to a novel apparatus for cleaning or washing up coating rollers such as are commonly used in printing presses and the like. In particular, the present invention relates to the cleaning of a train of such coating cylinders or rollers, all of which are rotating in tangentially contacting sequence, and more especially, to an improved wash-up mechanism for printing presses. In coating machines, it is necessary that, from time to time, the coating material which is usually used in liquid form, be completely removed and cleaned from the coating or distributing roll. In the case of printing presses, the ink is usually applied or removed through the use of a steel distributing roll cooperating with other rolls in a train. Since there are usually a great many cylinders to be so cleaned in any one such apparatus, it has been found desirable to clean the rollers while they remain in their operating position on the machine, rather than to remove the rollers therefrom to be cleaned individually. To effect this desired objective, it has become the practice to remove the coating material from all of the rotating cylinders in the coating chain simply by wiping, scraping or otherwise removing the coating material from only one or two of the rotating cylinders. This procedure is capable of achieving the desired result of cleaning all of the rollers in the train because of the fact that the inherent cohesive properties of the coating material cause it to flow continuously to the point anywhere within the train of rollers at which it is being drawn therefrom. In order that the coating cylinders may be cleaned in this manner, it is, of course, necessary that the supply of the coating material to the train of cylinders must be shut off; and this may be accomplished in any of the well known manners such as simply breaking the contacting sequence between the cylinders to be cleaned and the cylinders supplying the coating material.

The problem of cleaning a complete train of coating cylinders has thus been reduced to the problem of swiftly and completely removing the coating material from any one roller or cylinder in the contacting sequence. In previous attempts to accomplish this expedient, however, considerable difficulty has been encountered in providing means for so removing the coating material from any one cylinder so as to achieve the uniformity and thoroughness of cleaning that is demanded. Contributing to this difficulty has been the fact that either the roller from which the coating material is to be drawn, or the blade or similar device which is to do the drawing, will have surface irregularities which, although they are imperceptible and not important so far as the coating operation is concerned, prevent the wiping or drawing off member from contacting the cylinder uniformly at all points. Wherever upon the surface of the cylinder the drawing off device fails to make operative contact, the coating material will remain on the roller, and the continuity of its flow which is necessary for the complete cleaning of all of the rollers, will be destroyed.

To improve the uniformity of contact between the

blade and the train of cylinders, it has previously been proposed to provide either a flexible surface about the cylinder from which the coating material is to be drawn, or a flexible scraping member. The disadvantages inherent in these proposals include the fact that, where a flexible wiping or drawing off member is used in connection with a hard surface cylinder or where a rigid drawing off member is used in connection with a cylinder having a flexible surface, the wearing and deteriorating effect of the hard or rigid member upon the flexible member has proven excessive resulting in premature failure of the device and much loss of time in repairs and replacements thereof. If, on the other hand, a cylinder having a flexible surface has been brought into contact with a flexible drawing off device, the necessary rigidity required for a complete and thorough cleaning action has been lost. Indeed, it has usually developed that even where only one of the members involved in the drawing off process was of a flexible nature, the flexibility necessary for the desired uniform contact between drawing off member and coated cylinder has been so great that the necessary rigidity for a thorough and complete cleaning action has been lost. Furthermore, both rigid and flexible scrapers as used by the prior art become distorted or sag during use so that uniform wiping action over the length of the roll is not obtained.

It is accordingly an object of the present invention to provide a cylinder cleaning apparatus capable of effecting thorough and uniform removal of a coating material from a train of cylinders.

It is another object of the present invention to provide a cylinder cleaning device which will be capable of establishing uniform contact throughout the length of the coating cylinders to be cleaned without any sacrifice of the necessary rigidity for a complete and efficient cleaning action.

It is yet another object of the present invention to provide a cylinder cleaning device which will be capable of long periods of effective operation and will not be exposed to the wearing effect inherent in the roll cleaning constructions previously proposed.

There is still a further object of present invention to provide a cylinder cleaning apparatus which may be conveniently and inexpensively installed and economically repaired.

It is also an object of this invention to provide an improved printing press washup device.

The present invention will be illustrated and described in connection with its application to printing presses and in particular to steel distributing rollers as used in such equipment. Applicability to other types of coating apparatus will be obvious to those skilled in the art.

To achieve the above enumerated objects and others to be apparent from a reading of the present disclosure, I propose a drawing off or wiping member comprising a series of individual blades separately mounted in spaced alignment upon a single mounting member, which mounting member will be equal in length to the cylinder from which the coating material is to be withdrawn and will underlie the same in parallel relation to its rotational axis. The mounting member I propose will be rotatably mounted upon the frame or other supporting members of the coating machine and will be so positioned and have means so provided that upon partial rotation of said mounting member, all of the individual blades or scraping members will be resiliently urged against the cylinder to be evacuated. In this manner, each of the individual blades will be free to firmly engage its respective portion of the cylinder from which the coating material is to be removed, and any protrusion or depression therein will not prevent the re-

maining blades from similarly establishing uniform contact with their respective portions of the cylinder.

There will, of course, be a nominal space between each of the separately mounted blades or scraping members, but this shall be of such inconsequential magnitude, in most cases not to exceed 1/16", that the cohesive force of the coating material will not be overcome as it is removed from the cylinder by the several blades, and the continuous flow of said coating material resulting in perfect cleaning of all of the cylinders in the train will not be interrupted. It is the discovery of the improved uniform engagement between blade member and cylinder resulting from the use of separately mounted smaller scraping members, together with the discovery that where the blades are only a nominal distance apart, the continuous flow of the coating material will not be impaired that forms the basis of the present invention. Since in a construction such as the one presently proposed, there is no need for a single flexible blade or wiping member and no need for a flexible surface about the cylinder from which the coating material will be removed, the disadvantages resulting from the premature wearing and deterioration of such flexible members is completely eliminated. At the same time, since the several blade members of this invention may be relatively rigid in construction, and, in the preferred case, may be used in conjunction with a steel surface cylinder as opposed to the flexible surface cylinder as mentioned above, firm wiping and/or scraping engagement between blade and cylinder is possible and quick and efficient removal of the coating material is easily effected.

The principal object and advantages of the present invention as previously described above may be more completely understood from the following detailed description in which reference is made to the appended drawings.

In the drawings:

Figure 1 is an elevational view in partial cross section of a typical sequence of coating rollers shown in operative engagement with a cleaning device embodying the principles of this invention.

Figure 2 is an elevational view of the cylinder cleaning apparatus illustrated in Figure 3.

Figure 3 is a plan view of the coating cylinder cleaning apparatus of the present invention showing the manner in which same is mounted for operation.

Figure 4 is an enlarged elevational view showing the mounting bar, draw bar and trough of the present cleaning device in transverse cross section.

Referring now to Figure 1, where there is illustrated a typical train or sequence of coating rollers, such as might be found for example, in a printing press, it can be seen how ink is carried from the fountain or supply receptacle **10** by the rotation of transfer roller **11** through ductor or distributor roller **12***a*, from which it is evenly distributed upon the metallic surface of the distributor drum or cylinder **18**. The ink or similar coating material thus distributed about the steel distributing cylinder **18** is again picked up by the distributor rollers **12** and carried by transfer cylinders **13**, **14** and **15** to the form supply roller **16** which delivers the ink or similar coating material to the form mounted upon the impression, printing, or coating roller **17**. The present illustration clearly shows the manner in which all of the rollers in the coating train are in such tangential engagement as to enable a quantity of coating material on any one of them to be uniformly distributed throughout the entire train. Thus the removal of the coating material from any one of the cylinders in the chain, after the severance of the train from its source of supply **10**, as for example by the removal of roller **12***a* from its tangential engagement with the roller **11**, allows the flow of the coating material from all of the rollers remaining in the tangentially contacting sequence leaving them clean.

To effect the desired complete evacuation of the coating material from one of the common rollers in the sequence, there is provided the coaxial alignment of individual blade members **19** separately mounted as, for example, by screws **24** through mounting plates **20** upon the mounting bar **21**. When the blades thus mounted are brought into contact with a cylinder in the coating frame, such as is shown in Figure 1, the coating material will be removed from the cylinder **18** and will travel into the troughlike receptacle **22** attached to the mounting bar **21** by depending brackets **23** and **23***a* in pivoting engagement.

As best shown in Figures 2, 3 and 4 the cleaning or wash-up device of the present invention comprises a mounting bar **21** rotatably mounted in bearing members **25** and **26** which are mounted by bolts passing through their respective flanges **25***a* and **26***a* to body members **27** and **28** of the frame or supporting structure of the printing press or similar coating apparatus. The blades or wiping members **19** which are of the order of 2" in length are mounted upon the mounting bar **21**, which is shown in this preferred example as being square or rectangular, by screws **24** passing through mounting plates **20** and anchored in the mounting bar **21**. The fractional rotation of the mounting bar thus journaled in the frame structure manually by turning wheel **29** integrally united therewith or by automatic means to be provided as desired, the blade members may be brought into cleaning engagement with a coating roller in the cylinder train as shown in Figure 1. In order to lock the blades in this operative engagement with one of the cylinders, a ratchet wheel **30** is fixedly mounted upon the mounting bar **21** such that it may be interdentally engaged by the pawl or set screw **31**. In the well known manner of a ratcheting mechanism the rotation of the mounting bar **21** and blades **19** thereon will be allowed in the direction of the cylinder to be engaged but will be prevented in the reverse rotation. Accordingly the blades **19** may be fixed in forced engagement with the cylinder such as **18** of Figure 1, the magnitude of the urging force being dependent upon the force initially exerted through turning of the wheel **29**. In this operative arrangement the mounting bar **21** is freely resting in bearing block **25** while it is locked in position by the ratchet **30** and pawl **31** and thereby acts as a tortion bar in resiliently urging the blades **19** into the desired contact with the cylinder **18**.

For further controlling the engagement between the individual blade members **19** and the coating roller, shims may be provided between the mounting bar **21** and/or the mounting plate **20** and the blade member so as to swing its cutting or scraping edge out of the general alignment of the blades **19** either toward or away from the cylinder depending upon whether an excessive protrusion or depression occurs in the cylinder at the point opposite which the blade is mounted.

A still further means of controlling the engagement between blade **19** and cylinder **18** is shown in Figures 3 and 4 to consist of a draw wire or draw bar **34** adjustably anchored at each end to brackets **32** and **33** which are themselves integrally mounted upon the mounting bar **21**, and, as is usually preferred, on the surface thereof opposite that upon which the blade members are mounted as shown. If, as is often the case, the coating roller from which the coating material is to be removed has an overall concavity continuously building toward a crest at the center of the cylinder, the entire mounting bar may be slightly arched so that the blade alignment will conform to this concavity by tightening the nuts **35** and **36** so as to tension the draw bar **34**.

Any appropriate means may be employed for fixing the trough receptacle **22** in position to receive the coating material drawn from the chain of rollers and a preferred example thereof is shown clearly in Figure 4. The depending bracket **23***a* is integrally formed with the mounting bar **21** and is adapted at its lower end to pivot-

ally receive the bracket **23** which is fastened to the bottom of the upwardly concaved trough. In a mounting such as the one shown, when the mounting bar **21** is turned by moving the wheel **29** the pivotal connection between the bracket members **23** and **23***a* will operate to keep to a minimum the lateral motion of the trough with respect to the mounting bar so that at all times the trough will remain below the blades to catch the coating material as it is drawn from the rollers.

Referring again to Figure 1, the manner in which the trough **22** rises rather than moves laterally upon rotation of the mounting bar **21** is shown. While in Figure 1 the blades and mounting bar have been so positioned that the blades **19** are at an angle to the radius drawn through the point of contact between blades and cylinder **18** in a direction opposed to the direction of rotation of the cylinder **18**, this invention also encompasses a reverse arrangement wherein the blades **19** would be so inclined away from a radius drawn to the point of contact between blades and cylinder in the direction of rotation of the cylinder **18**. In the former arrangement and that shown in Figure 1, the blade members tend to cut the coating material away from the roller and such a construction is particularly advantageous where a viscous coating substance is being used, or where any coating substance such as ink may have dried upon the roller. In the latter arrangement of blade and cylinder member described above, the blades tend merely to wipe the coating material from the cylinder.

As has been stated previously, the greatest utility and effectiveness of the present invention may be gained where, as in the preferred illustration above described, the blade members and cylinder surface to come in contact therewith are composed of a relatively hard and rigid substance such as steel or the like. This construction is extremely advantageous from a standpoint of wear particularly where, as is often the case in printing presses, the cylinder such as the roller **18** of Figure 1 from which the coating material is to be removed and with which the drawing member will establish contact, is in axially reciprocating motion. It is to be understood, however, that the use of a plurality of separately mounted blades of smaller dimensions as opposed to the use of a long continuous blade will have the same desired effect where the blades and/or cylinder surface are composed of a flexible material. One outstanding advantage of the present construction is that wherever and in whatever manner a wearing effect might be present as to the drawing off member, repairs may be made upon the present construction simply by replacing one or two of the individual blades at a cost and expenditure of time considerably less than would be involved in a replacement of the previously used continuous wiping or drawing off member.

Although the present disclosure contains references to specific examples and embodiments of this invention, it is to be understood that the same are purely for purposes of illustration and description and are not intended and do not limit the scope of the principles of this invention as more particularly defined in the subjoining claims.

I claim:

1. A wash-up device for cleaning a series of rotating cylinders in tangential contact comprising a mounting bar parallel to the rotational axes of said cylinders, a plurality of relatively short individual blade members anchored in closely spaced alignment on said mounting bar, means for positioning said mounting bar so that the blade members mounted thereon will be in substantially linear contact with the surface of one of said cylinders, and a draw bar adjustably anchored at each end of said mounting bar to control the linearity thereof.

2. A wash-up device for removing a coating material from a train of rotating transfer and coating rollers at least one of which is hard surfaced, comprising a mounting bar parallel to the longitudinal axis of said hard surface roller and substantially equal in length thereto, a plurality of individual blades each approximately 2 inches in length and spaced approximately 1/16 inch apart mounted along said bar with the edges thereof in substantial alignment parallel to the rotational axis of said hard-surfaced roller, and means for positioning said bar so that each of the blades mounted thereon will be resiliently urged into linear contact with the surface of said hard-surfaced roller notwithstanding departures thereof from truly cylindrical configuration.

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