Dec. 22, 1931. W. J. PIRIE 1,837,671

INK REMOVING CONTRIVANCE FOR PRINTING MACHINES

Filed Dec. 26, 1929

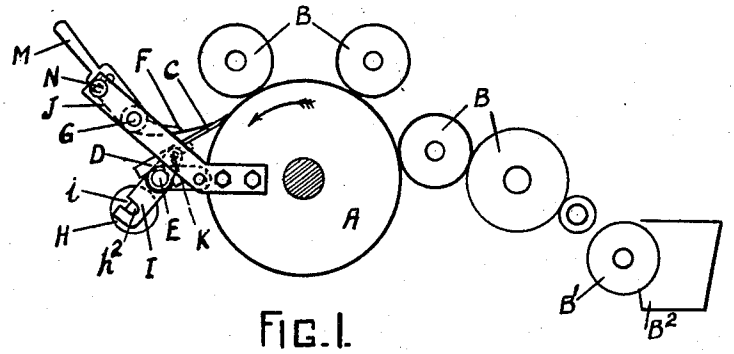


FIG. 1.

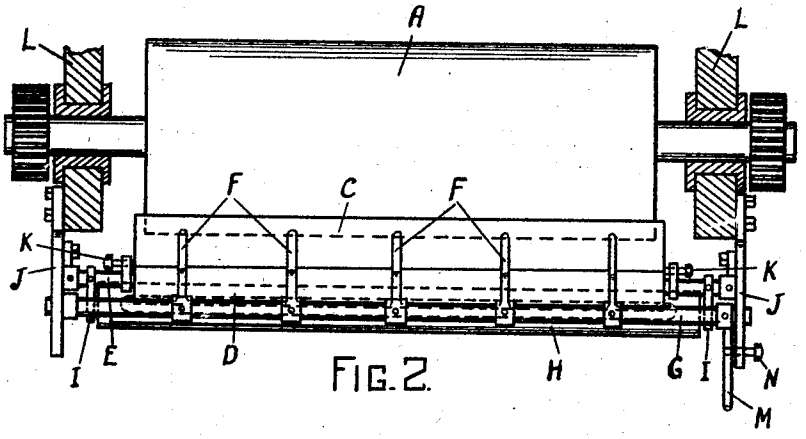


FIG. 2.

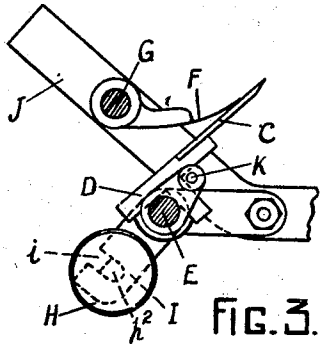


FIG. 3.

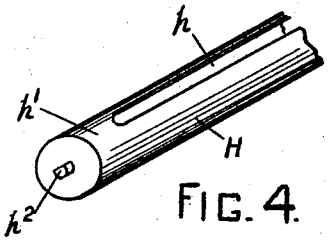


FIG. 4.

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UNITED STATES PATENT OFFICE

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INK REMOVING CONTRIVANCE FOR PRINTING MACHINES

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In order to facilitate the removal of ink from the inking rollers of printing machines various contrivances have heretofore been proposed with the object of cleaning the rollers without removing them from the machine.

The aforesaid contrivances may be divided into two classes, namely those in which the ink is scraped from one of the rollers in the inking train and those in which the ink is wiped from one of the rollers. In contrivances of the former class which have been found more satisfactory in practice, a scraping blade is held in contact with a roller which revolves towards or against the edge of the blade. Contrivances of the other class employ a flexible wiper or rubber strip which wipes the ink off the roller, the latter being revolved away from the edge of the wiper. The solvent used for thinning the ink has a deteriorating effect on the wiper if made of rubber.

In contrivances of the scraper type, the suggestion has been made to mount the scraping blade so that it is held in radial contact with one of the soft or composition rolls of the inking train, but such an arrangement is not satisfactory as the blade damages the resilient surface of the composition roll. It has also been proposed to mount a sharp-edged blade in contact with one of the metal rolls and at an angle to it so as to strip the ink from the metal roll, but in such case a stiff or rigid blade is employed clamped between top and bottom clamping plates so as to protrude from them, and means are provided for adjusting the protrusion of the blade from said clamping plates in order to adjust the parallelism of its edge to the axis of the roll. Means are also provided for adjusting the scraping blade into and out of its operative position. The ink scraped off by the blade flows by gravity into a trough provided to receive the ink. A suggestion has also been made that one of the inking rolls should be scraped by a scraping blade which is unitary with suction means for withdrawing the ink removed by the blade.

The present invention relates to contrivances for removing the ink from the inking rollers by the scraping action of a blade held in contact with one of the metal rolls of the inking train and the invention consists in the employment of a flexible scraping blade, the edge of which is mounted substantially tangential to the roller and opposed to the direction of rotation of the roller and is resiliently pressed against the surface of the roller by the provision of a plurality of spaced pressing members distributed along the whole length of the blade. In this manner automatic local adjustment is given to the scraping edge of the blade wherever it is required to ensure good contact with the roller. The pressing members may consist of spring fingers mounted upon and adjustable along a rocking shaft or like member which is rocked to cause the spring fingers to press upon the scraping blade.

The flexible scraping blade in conjunction with the spaced pressing members is superior to a rigid blade as it enables any undue wear that may take place along the length of the edge of the blade to be immediately corrected by moving one of the spring pressing members along to the point of correction and adjusting it so that it will apply sufficient pressure to the edge of the scraping blade at that point to bring the worn point of the scraping edge once again into contact with the roll.

It is preferable that the scraping blade should be in contact with a positively driven or gear-driven metal roll as the use of a thinning agent for thinning the ink tends to cause a friction-driven roll to slip and cease rotation if coacting with a scraping blade.

The ink removed by the scraping blade falls by gravity into a trough which in the preferred form according to the present invention is so constructed as to be capable of being up-ended without spilling the contents and which is also readily detachable so that it can be removed from the machine for emptying without danger of the contents being spilled over the printing machine.

A further characteristic feature of the present invention is that the scraping blade is carried by a bar of angle section, the angle of which rests loosely over and rocks upon a

fixed rod, the scraping blade being thus readily removable by lifting the angle-section bar from its supporting rod, while at the same time the scraping blade can be moved clear of the inking roller by rocking the angle-section bar on its supporting rod when the ink is not to be removed from the inking rollers.

In order that the invention may be more clearly understood, reference is hereinafter made to the accompanying drawings, whereon Fig. 1 diagrammatically illustrates the ink distributing mechanism of a printing machine having my invention applied. Fig. 2 is a side view of the inking roller and scraper, Fig. 3 is a detail view to a larger scale and Fig. 4 is a fragmentary perspective view of the ink trough.

Referring to Figs. 1 to 3 of the drawings, A represents one of the gear-driven metal rolls of the train of inking rollers of the printing machine. The roll A revolves in the direction of the arrow against or towards a scraping blade C. The roll A revolves in contact with other inking rollers B supplied with ink through a messenger roller B′ from an ink fount B^2.

The scraping blade C is a flexible metal blade, preferably of steel, slightly longer than the inking roller A and is fixed to a bar D of angle section which is supported on a rod E extending across the width of the printing machine. The edge of the flexible blade C is brought into contact with the roll A and held there by the pressure of adjustable flat spring steel fingers F mounted on a shaft G which is fitted across the printing machine.

When the inking roller A is revolved in the direction of the arrow and the ink on the inking rollers, A, B is thinned by a suitable solvent, the ink is scraped off the roll A by the blade C down which it runs into a trough or receptacle H which is supported under the blade by suitable brackets I which are fixed to the rod E.

The trough H is longer than the blade C and is of sufficient capacity to retain all the ink removed from the inking rollers. As shown in Fig. 4, it is preferably covered in except for a long open slot *h* in the top thereof, said slot stopping short of the ends of the trough which is preferably cylindrical as shown, so that when the trough is up-ended, the ink will collect in the cylindrical portion *h′* (Fig. 4) and will not flow out of the trough owing to the end of the slot *h* being at a distance from the end of the trough.

The apparatus can be attached to any printing machine which has a suitably accessible gear-driven metal inking roller revolving in the required direction and for this purpose I have shown brackets J attached to the frame L of the printing machine, the design of the brackets J being governed by the shape and design of the part of the printing machine to which the contrivance is to be attached in order to bring the steel blade C into contact with a suitable roller.

When not in use for removing ink from the inking rollers, the steel blade C is elevated by rocking the bar D on the rod E sufficiently to bring the edge of the blade out of contact with the roller A, the blade being retained in that position by a suitable catch such as a spring pin K, until again required, when it will fall by gravity into contact with the roller A on withdrawing the spring pin K.

The shaft G carrying the spring fingers F is rotatably mounted at its ends in the brackets J and carries a lever M which can be retained in one of two positions by a spring pin N or other suitable catch, which serves to retain the spring fingers in either their operative or inoperative position. When the spring pin N is withdrawn, the lever M can be moved to rock the shaft G and thus bring the spring fingers into or out of contact with the blade C. The spring fingers F are movable along the shaft G so that they can be set in any desired position in order that any desired local adjustment may be given to the blade.

The spring fingers F do not require adjustment after the blade is once set except where a new blade is fitted to replace a worn blade. The blade when in use is kept true to the surface of the inking roller by the spring fingers F and is kept sharp by the rubbing or sharpening action of the contact of the metal roll with the edge of the blade when the ink-removing apparatus is in action.

Although my invention is primarily intended for cleaning the inking rolls of the machine when the printing process has been stopped and the supply of ink to the inking rollers has been interrupted, in order that the colour of the printing may be changed, the apparatus may also be used for the process of "sheeting off", i. e. removing surplus ink during the printing process, without the use of any ink solvent, this sheeting-off operation being desirable in certain cases in order to restrict the supply of ink to the printing surface when matching up colours on making ready. The slightest change in shade of ink can be effected successfully by sheeting-off with this apparatus.

The present apparatus does not interfere except to a very small degree with the accessibility of the parts of the printing machine and can be completely detached from the machine if necessary by removing the brackets J from the machine. The apparatus however does not normally interfere with the removal of the inking rollers as these can ordinarily be removed without touching the ink-removing apparatus, but if more accessibility is desired, the blade C with the bar D can be lifted bodily off the rod E and

readily removed as it is not secured in any way to the rod E but merely rests thereon and is supported in an inclined position by the spring pin K.

The trough is also readily removable being provided with end pins h^2 which fit in correspondingly shaped notches i in the fixed brackets I. When the bar D with the scraping blade and the trough H have been removed, there are practically no parts left to interfere with accessibility to the machine. Moreover the blade does not require re-adjustment when replaced on the rod E as it automatically takes up its previously adjusted position when the spring fingers F are brought into action. This is an advantage as it permits of the blade being frequently removed for cleaning purposes.

Claims.

1. The combination with the inking train of a printing machine, of a flexible scraping blade in operative relationship with one of the metal rolls of said inking train, a rocking member associated with said blade, and a plurality of spring fingers mounted upon and adjustable along said member and adapted, when said member is rocked, to resiliently press the edge of said blade into contact with the roll.

2. Apparatus as specified in claim 1 having an ink-receiving trough associated with the blade.

3. The combination with the inking train of a printing machine, of a flexible scraping blade in operative relationship with one of the metal rolls of said inking train, a rocking member associated with said blade, supports removably attached to the printing machine for removably supporting said contrivance at its ends, thereby enabling it to be bodily removed from the machine, and a plurality of spring fingers mounted upon and adjustable along said member and adapted, when said member is rocked, to resiliently press the edge of said blade into contact with the roll.

4. In combination with the inking train of a printing machine, a scraping blade held in contact with one of the rollers of said inking train, and an ink receiving trough covered in except for a long open slot which terminates at a distance from the ends of the trough so that the trough may be up-ended without spilling its contents.

5. In combination with the inking train of a printing machine, a flexible scraping blade adapted for scraping contact with one of the gear-driven metal rolls of said inking train, a bar upon which said scraping blade is rockably supported for movement into and out of contact with said roll, a plurality of spring fingers rockably mounted to cause said fingers to exert pressure on said blade, and an ink-receiving trough mounted in association with said blade to receive ink therefrom.

6. A contrivance for removing ink from the inking rollers of a printing machine, comprising a flexible scraping blade, a bar of angle section to which said blade is secured, a fixed rod upon which said angle bar is adapted to rest and rock to hold the scraping blade in operative relationship with one of the metal rolls of the inking train, a plurality of spaced pressing members distributed along the blade, and means for moving said pressing members into or out of resilient contact with the blade.

7. The combination with the inking train of a printing machine, of brackets removably attached to the printing machine frame, a stay bar connecting said brackets, a rock shaft pivotally mounted in said brackets, a bar of angle section resting by one of its angles upon said stay bar, a flexible scraping blade carried by said angle bar for cooperation with one of the metal rolls of the inking train of the machine, retractible means for temporarily supporting said blade in an inclined position with its edge out of contact with said metal roll, a plurality of spring fingers mounted upon and adjustable along said rock shaft, means for rocking said shaft to cause said fingers to resiliently press upon the blade and an ink receiving trough detachably supported by said stay bar in a position to receive ink removed by the scraping blade.

Signed at Edinburgh, in the county of Midlothian and United Kingdom this 29th day of November, A. D. 1929.

WILLIAM JAMES PIRIE.