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[33] **Japan**
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[54] **INK SUPPLY REGULATION DEVICE FOR OFFSET PRINTING PRESS**
5 Claims, 5 Drawing Figs.
[52] U.S. Cl..... **101/365, 118/261**
[51] Int. Cl..... **B41f 31/04**
[50] Field of Search..... **101/365, 350, 207, 208, 363; 200/11, 14, 17, 18, 21, 30; 74/10.29, 10.31, 10.35, 10.6, 567, 569; 118/261**

ABSTRACT: An ink supply regulating device for an offset press wherein a cam rod is connected through a rotative means with a regulating plate determining the quantity of ink supplied. A plurality of recesses are formed in the cam rod in varied arrangement. The rotative means is either a plurality of rollers or a rockable member and the setting of the regulating plate is determined by the member of recesses into which the rollers or rockable member are received as the cam rod is rotated.

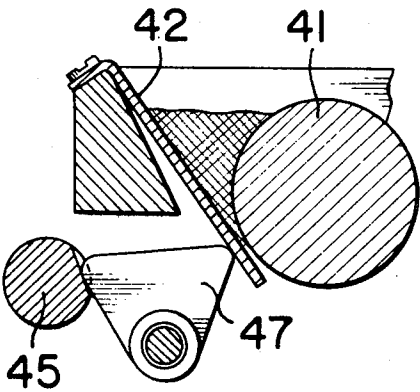


FIG. 1

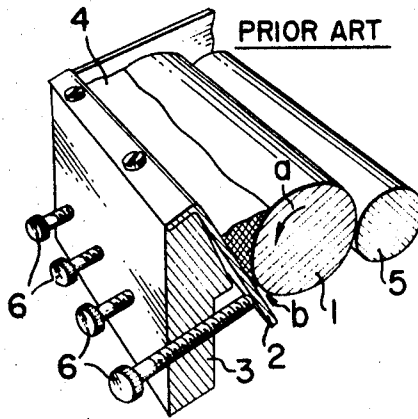


FIG. 2

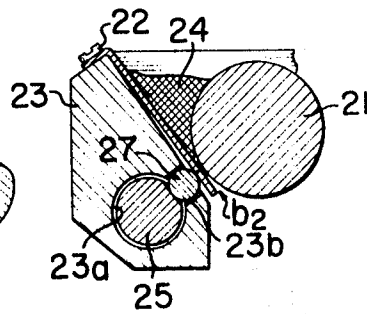


FIG. 3

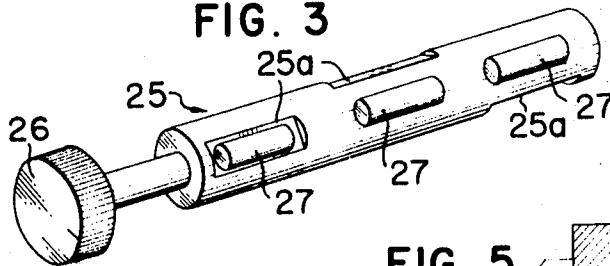


FIG. 4

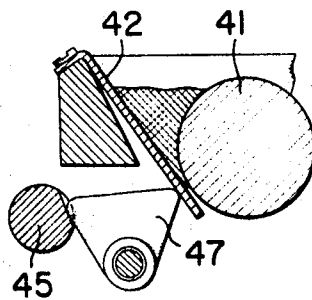
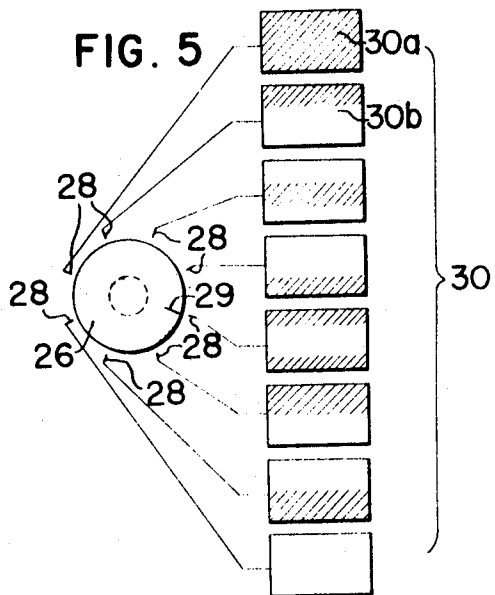


FIG. 5



INK SUPPLY REGULATION DEVICE FOR OFFSET PRINTING PRESS

BACKGROUND OF THE INVENTION

The present invention relates to an inking mechanism for an offset printing press and more particularly to an ink supply regulating device attached to an ink fountain for releasing the ink to a printing plate clamped around a plate cylinder of an offset printing plate.

First the conventional device of the type described above will be described. As shown in FIG. 1, an ink fountain is composed of an ink roller 1 and an ink supply regulating plate 2 made of an elastic material. The upper side edge of the regulating plate 2 is firmly secured to a regulating plate mounting member 3 while the lower side edge thereof is disposed in closely spaced-apart relation with the ink roller 1. Thus, the ink 4 is stored in a wedge-shaped space defined by the ink roller 1 and the regulating plate 2 and is continuously released to an ink feed roller 5 in the amount corresponding to a spacing between the roller 1 and the lower side edge of the regulating plate 2. The ink feed roller 5 is rocked so as to alternately contact with either the roller 1 or a rider roller (not shown) so that the ink 4 is released from the roller 1 toward the roller 5 and is further released to a printing plate (not shown) clamped around a plate roller through an ink mixing roller (not shown). The quantity of the ink to be released as described above is dependent upon the spacing *b* and the whole or partial tone of the printed image varies depending upon the spacing *b*. Thus, for best printing operation the quantity of the ink to be released or supplied must be sufficiently controlled. So far this control has been effected by moving toward or away from the ink roller 1 the leading side edge of the regulating plate 2 by advancing or retracting a plurality of screws 6 threaded through the supporting member 3. Therefore, an operator makes a trial print to check the whole or partial tone of printed image and controls the tone by adjusting the screws 6. In the conventional device of the character described above, the screws 6 must be individually adjusted for controlling the tone and this adjustment is very tedious as these screws 6 are attached to the printing press at the back side thereof so that the operator must leave the printing position and go to the screw adjustment position every time when the adjustment is required.

In view of the above, the primary object of the present invention is to eliminate the defects encountered in the conventional device and to provide an ink supply regulating device by which the tone can be readily controlled.

SUMMARY OF THE INVENTION

According to the present invention, a rotatable cam rod having a plurality of cam surfaces formed at the peripheral surface is disposed in parallel with an ink supply regulating plate of an ink fountain. Upon rotation of the cam rod, the ink supply regulating plate may be displaced relative to an ink roller directly or through intermediate members so that the spacing of an ink supply opening defined by the ink supply regulating plate and the ink roller may be suitably adjusted by the operation from the exterior of the offset printing press.

According to one embodiment of the present invention, the cam rod is provided with one cam surface extending across the whole axial length of the peripheral surface of the cam rod or a plurality of cam surfaces aligned in the axial direction of the cam rod and a plurality of cam surfaces in the form of recesses or notches all of which are not aligned in the axial direction of the cam rod. Between the ink supply regulating plate and the cam rod is interposed a plurality of rollers and the regulating plate is normally pressed against these rollers. Therefore, upon rotation of the cam rod, the regulating plate is moved toward or away from the ink roller through the rollers, thereby suitably varying the spacing between the regulating plate and the ink roller, thus varying the quantity of ink to be supplied to be released to a printing plate.

According to another embodiment of the present invention, instead of the rollers, rocking members may be utilized to perform the same function as in the case of the rollers described above.

According to a further embodiment of the present invention, the above-described rollers or rocking members may be eliminated and in this case the cam surfaces are raised or protruded. In the device of the present invention in which the ink to be released or supplied is adjusted by the rotation of the cam rod, it is preferable to provide the indications which indicate in what area or portion of a printing plate the ink is mostly released depending upon the angular positions of the cam rod.

Therefore, according to a still another embodiment of the present invention, the indications may be provided by an index mark marked upon a knob attached to one end of the cam rod, scale marks graduated upon one sidewall of the printing press through which extends the cam rod, said graduated scales being provided with patterns which indicate in what area or portion of the printing plate the ink is mostly released.

Unlike the device of the prior art in which the ink regulating plate is displaced relative to the ink roller by advancing or retracting a plurality of screws as described hereinabove, the present invention makes it possible to regulate the release or supply of the ink to the whole surface or a partial surface of a printing plate only by the rotation of the cam rod. Thus, it will be understood that the tedious adjustment of the prior art device may be completely eliminated and no time is wasted in adjustment since the cam rod is disposed to one side of the printing press, opposed to the conventional device which is disposed at the back of the press.

These and other objects and features of the present invention will be better understood upon consideration of the following detailed description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a conventional ink supply regulating device;

FIG. 2 is a sectional view of one embodiment of the present invention;

FIG. 3 is diagrammatic perspective view illustrating one example of a cam rod utilized in the present invention;

FIG. 4 is a sectional view of another embodiment of the present invention; and

FIG. 5 is a schematic view illustrating the relation between an adjustment knob and scale marks with patterns indicating the ink released over the surface of a printing plate.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 2, reference numeral 21 designates an ink roller; 22, an ink supply regulating plate made of an elastic material; and 23, a regulating plate mounting member to which is securely fixed the upper side edge of the regulating plate 22. An ink fountain for ink 24 is defined by the roller 21 and the regulating plate 22. The mounting member 23 is provided with a hole 23a into which is rotatably fitted a cam rod 25 in parallel with the regulating plate 22. The hole 23a is communicated with an elongated slot 23b which opens to the side of the regulating plate 22. As shown in FIG. 3, the cam rod 25 is provided with a plurality of recesses 25a formed at the peripheral surface thereof and with a knob 26 attached to one end thereof. The portion of the cam rod 23 having these recesses 25a is loosely fitted into the hole 23a. These recesses 25a have the flat surfaces which perform the function of the cam surfaces. A plurality of rollers equal in number with the recesses 25a are loosely fitted into the elongated slot 23b and the regulating plate 22 is imparted with a tendency of normally pressing these rollers 27 against the cam rod 25. Thus, when the cam rod 25 is rotated by operating the knob 26 from the exterior, the regulating plate 22 is caused to rock. It is to be noted that the number of the recesses 25a and the spacing

therebetween are determined depending upon the width of a printing plate.

When the rollers 27 are moved into the recesses 25a the regulating plate 22 is moved away from the roller 21 while when the rollers 27 are not located in the recesses 25a, the regulating plate 22 is moved toward the roller 21. Therefore, it will be understood that the spacing b_2 between the free side edge of the regulating plate 22 and the roller 21 may be suitably adjusted by rotating the cam rod 25. Thus, when the recesses 25a whose number corresponds to that of the required tone control steps are provided, the control of the ink supply or release may be suitably controlled. That is, the adjustment of the quantity of ink to be supplied or released to the whole surface of the printing plate may be realized by the recess which extends across the whole axial direction of the peripheral surface of the cam rod 25 and the peripheral surface thereof adjacent to this recess. On the other hand, the partial control may be realized by the provision of a plurality of the recesses 25a distributed all over the peripheral surface of the cam rod 25. The combinations of these recesses make possible the stepped adjustments as shown in FIG. 5. In FIG. 5, the scales 28 indicating the partial and whole adjustments are graduated upon one sidewall of the printing press. That is, the graduated scales 28 indicate the angular positions of the cam rod 25 at which the required stepped adjustments can be effected. Thus, when the index mark 29 upon the knob 26 is aligned with a desired graduated scale, a desired ink release or supply may be carried out accordingly. Each of the graduated scales is provided with a pattern 30 indicating the adjustable or controllable portion or area of the printing plate in order to facilitate the adjustment. For example, when the index mark 29 is aligned with the pattern 30a, the cam rod 25 is so positioned that the recess 25a extending across the whole axial length of the cam rod 25 faces the rollers 27 so that the regulating plate 22 is moved away from the roller 21, whereby the ink is released in large quantity upon the whole surface of the printing plate. When the index mark 29 is aligned with the graduated scale mark having the pattern 30b, the cam rod 25 is rotated to such an angular position at which only one recess at the rightmost in FIG. 3 faces one of the rollers 27 in the elongated slot 23b so that the regulating plate 22 is moved away from the roller 21 only at the portion corresponding to the rightmost recess 25a of the cam rod 25 whereby the ink is released in a large quantity only to the right side portion of the printing plate.

FIG. 4 illustrates another embodiment of the present invention in which a rocking member 47 having a segmental cross section is interposed between the ink supply regulating plate 42 and the cam rod 45. According to the present invention, the intermediate member 47 interposed between the cam rod and the regulating plate may be suitably selected as needs demand, but it will be understood in a further embodiment of the invention that the cam rod may be directly abutted against the regulating plate without the use of the intermediate member.

In this case, the portions corresponding to the recesses 25a of the cam rod must be protruded. It will be further understood that means for supporting the cam rod and the intermediate member or members are not limited to those illustrated in the accompanying drawing and that any suitable means may be utilized. In FIG. 4, reference numeral 41 designates an ink roller.

I claim:

1. An ink supply regulating device for an offset printing press comprising
 - a rotatable ink roller having a longitudinal axis;
 - a regulating plate mounting member;
 - a regulating plate fixed only at its upper end to said mounting member and having its lower end closely disposed to said ink roller to define a wedge-shaped area therebetween for the ink supply;
 - a bore formed within said mounting member, said bore being parallel to said roller axis;
 - an elongated cam rod rotatably mounted within said bore, said cam rod having a plurality of recesses formed in its surface;
 - means having rotative movement positioned between and being in contact with both said cam rod and said regulating plate; and
 - the spacing of said recesses in said cam rod surface being predetermined so that rotation of said cam rod allows said means to selectively move into one or more of said recesses for different degrees of said rotative movement to provide corresponding movement of said lower end of said regulating plate to thereby determine the amount of ink supplied to said roller.
2. An ink supply regulating device according to claim 1 in which an elongated slot parallel to said bore is provided in open communication on both sides respectively with said bore and said regulating plate, and said means comprises a plurality of rollers loosely rotatable in said elongated slot.
3. An ink supply regulating device according to claim 2 in which said plurality of recesses have a predetermined varied spacing and axial alignment arrangement so that in different rotative positions of said cam rod different numbers of rollers are received in said recesses.
4. An ink supply regulating device according to claim 1 wherein said means comprises a rockable member of triangular shape having one edge in contact with said regulating plate and the other edge adapted to be received within said recesses during rotation of said cam rod.
5. An ink supply regulating device according to claim 3 in which a knob having an index mark therein extends from said cam rod, graduated scales are formed on said mounting member individually corresponding with an individual variation in the recess arrangement so that alignment of said index mark with an individual scale provides an indication of a selective ink supply.