Feb. 13, 1962 W. KOCH 3,020,840

INKING MECHANISM FOR PRINTING MACHINES

Filed Jan. 11, 1960

Fig. 1

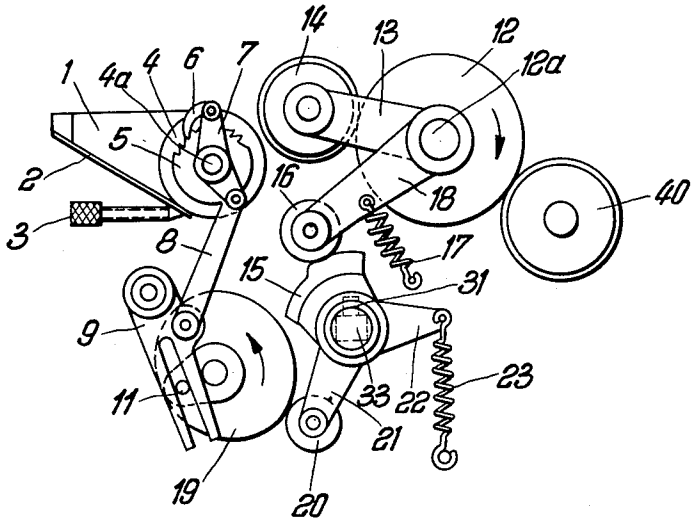
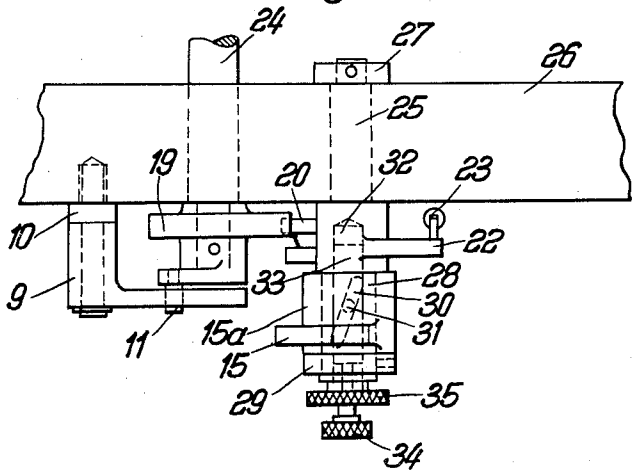


Fig. 2



Inventor:
WERNER KOCH
By Hane and Kyle
ATTORNEYS

United States Patent Office 3,020,840
Patented Feb. 13, 1962

3,020,840

INKING MECHANISM FOR PRINTING MACHINES

Werner Koch, Offenbach (Main), Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher A.G., Offenbach (Main), Germany, a body corporate of Germany

Filed Jan. 11, 1960, Ser. No. 1,687
Claims priority, application Germany Jan. 17, 1959
2 Claims. (Cl. 101—350)

This invention relates to an inking mechanism for printing machines and particularly to the ink ductor rollers and their operating means which are used in such mechanism for transferring the ink from an ink fountain roller to a transmitting roller, such as a vibrator roller for example.

The invention, more especially, has reference to that type of ink ductor roller which is in permanent touch with the vibrator roller but at timed intervals with the ink fountain roller only in order to transfer just the required amount of ink to the ductor roller during the intermittent movement of the same, that is when the fountain roller is being advanced.

Inking devices of the type just referred to have the advantage, that no sharp lines of ink are transferred into the inking mechanism, as is the case when the ductor roller is out of contact with the vibrator roller, so that it is brought to a standstill from its highest speed very abruptly. The ink ductor thereby rotates permanently and continues to take up ink from the fountain roller in layers of even thickness. This advantage, however, is counteracted in the conventional inking devices, by the fact that the controlled movement of the ink fountain roller is stopped before the revolving ductor roller has become out of contact therewith. This results in that the ink from the ductor roller collects on to the fountain roller, producing thick ridges of ink at the places of contact of the two rollers, which ridges are taken up by the ductor roller and carried around with it when the same is being lifted, whereby a number of sharply marked stripes or lines are produced on the print, which render the same unusable.

It is, therefore, one of the objects of the invention to remove these disadvantages and to ensure an even distribution of the ink by lifting the ductor roller off the fountain roller already during the intermittent periods of movement of the same. This prevents the formation of the said ink ridges on the fountain roller and enables even the most sensitive prints to be made.

The invention further provides that the ink ductor roller comes into contact with the fountain roller only after the movement of the latter has already started. In this way it becomes practically impossible for the ink to collect on the fountain roller which otherwise might cause an uneven distribution of the ink over the rollers.

Another object of the invention rests in the provision of simple and effective means for a stageless regulation of the quantity of the ink which is transferred at every movement of the ink ductor roller by varying the time during which the ductor roller contacts with the fountain roller without, however, thereby altering the intermittent advance of the ink fountain roller.

The accompanying sheet of drawings illustrates the invention diagrammatically by way of example. In these drawings:

FIG. 1 is a side elevation of an inking mechanism with the invention applied thereto, parts of the device being omitted for better clearance.

FIG. 2 is a plan view of FIG. 1 with also some parts removed.

The inking mechanism which is shown in FIG. 1 comprises the ink fountain 1 with its doctor blade 2, regulating

screws 3 and the fountain roller 4 arranged as usual in printing machines. A ratchet wheel 5 is splined to the shaft 4*a* of the roller 4 and is engaged by the pawl 6 of a two-armed lever 7 which is capable of rocking movement about the shaft 4*a* as initiated by a connecting rod 8 under the influence of a forked lever 9. This forked lever turns on a pivot pin 10 screwed or otherwise fixed in the frame of the inking mechanism and is rocked by a crank pin 11 as will be explained further down in this specification.

The conventional vibrator roller 12, which transfers the ink to the printing mechanism via a transfer roller 40, is journalled on a shaft 12*a* opposite the fountain roller 4 and in spaced relation thereto. Levers 13 which are mounted coaxially with the vibrator roller 12, one at each side thereof, carry the ink ductor roller 14 turnably at their free ends. During the swinging movement of the levers 13 about the axis of shaft 12*a* of the vibrator roller the axial distance between the rollers 12 and 14 remains constant, and the ductor roller 14 can be moved into and out of engagement with the fountain roller 4. This movement is initiated by a stepped cam 15 and transferred by the cam follower 16 and the lever 18 to the ductor lever 13, whereby the cam 15 is oscillated by another cam 19 acting over the follower 20 on the arm 21 of a two-arm lever 21, 22. A spring 17 is provided to maintain the lever 18 in contact with cam 15, while another spring 23, acting on arm 22, tends to keep the follower 20 in contact with cam 19. This cam or revoluble disc 19 is splined to a shaft 24 (FIG. 2) and, by the rotations of same, is caused to rotate in timed relation to the operation of the printing machine or the inking mechanism respectively.

The double-arm lever 21, 22 is provided at one side with a stub shaft 25 by means of which it is journalled in a bore of the side wall 26, being secured in position by a collar 27. On the other side of the wall 26 and coaxially with the shaft 25 the lever 21, 22 is provided with a cylindrical axle pin 28 upon which the cam 15, which has a stepped cam surface, is turnable, being secured in position by a collar 29. Provided in the hub 15*a* in close proximity to the stepped cam 15 is a spiral shaped notch or slot 30, into which engages a cylindrical pin 31 of a substantially square clutch member 33 which is displaceably accommodated in a bore 32 of the shaft 25, 28.

Displacing the clutch member 33 by means of the hand screw 34 in axial direction causes the cam 15 to turn in relation to the lever 21, 22 by virtue of the slot and pin 30, 31 and to thereby vary the time of contact between the rollers 4 and 14; a lock nut 35 being provided to secure the clutch member 33 in its respective positions.

The crank pin 11 and the cam or revoluble disc 19 are so mounted in relation to each other, that the movement of the two-armed lever 21, 22 and, thereby, of the cam 15 in clockwise direction, and consequently the earliest possible contact between the ductor roller 14 and the fountain roller 4 will be able to take place only after the forked lever 9 has started its movement in counter-clockwise direction and, thereby, has caused the fountain roller 4 to rotate under the influence of the ratchet mechanism 5 to 8. At the same time the follower 20 has already remounted the largest radius of the cam 19 and has thereby terminated the separating movement of the ductor roller 14 from the fountain roller 4 before lever 9 has reached its extreme position in its counter-clockwise movement, in which the fountain roller 4 is again at rest.

What I claim is:

1. In an inking mechanism for printing machines having an ink fountain roller, means for intermittently rotating said ink fountain roller at always even distances, an ink transmitting roller, a ductor roller in permanent contact with said transmitting roller, and means for moving said

ductor roller into and out of contact with said fountain roller, the provision of means for controlling the intermittent movement of said fountain roller, comprising a revoluble disc, a crank pin on said disc, a forked lever operable by said crank pin during the rotations of said disc so as to perform a rocking movement, a ratchet mechanism between said lever and fountain roller including a ratchet wheel on said fountain roller, a double-arm lever, a pawl on said double-arm lever, and a connecting rod for transmitting the movement of said forked lever to said double-armed pawl lever, the means intermediate said revoluble disc and said ductor roller for imparting timed raising and lowering movement of the said ductor roller into and out of contact with said fountain roller during periods of rotation of the latter.

2. In an inking mechanism for printing machines as set forth in claim 1, said means intermediate said revoluble disc and the ductor roller comprising, a stepped cam for imparting intermittent reciprocating movement from said

revoluble disc to said stepped cam, a two-arm lever fulcrumed coaxially with said ink transmitting roller, one of said lever arms carrying a roller in contact with said stepped cam and the other lever arm carrying said ductor roller in permanent contact with said vibrator roller, and spring means for keeping the said cam means, levers and rollers in cooperative contact with one another.

References Cited in the file of this patent

UNITED STATES PATENTS

966,094	Hollingsworth	Aug. 2, 1910
1,354,639	Wood	Oct. 5, 1920
1,376,982	Walser et al.	May 3, 1921
1,683,243	Blaine	Sept. 4, 1928
1,996,607	Barber	Apr. 2, 1935
2,092,461	Luehrs	Sept. 7, 1937
2,467,199	Faeber	Apr. 12, 1949