Jan. 5, 1937. C. H. MAIBEN 2,067,092

MARKING MACHINE

Filed Oct. 8, 1934 2 Sheets-Sheet 1

Fig. 1.

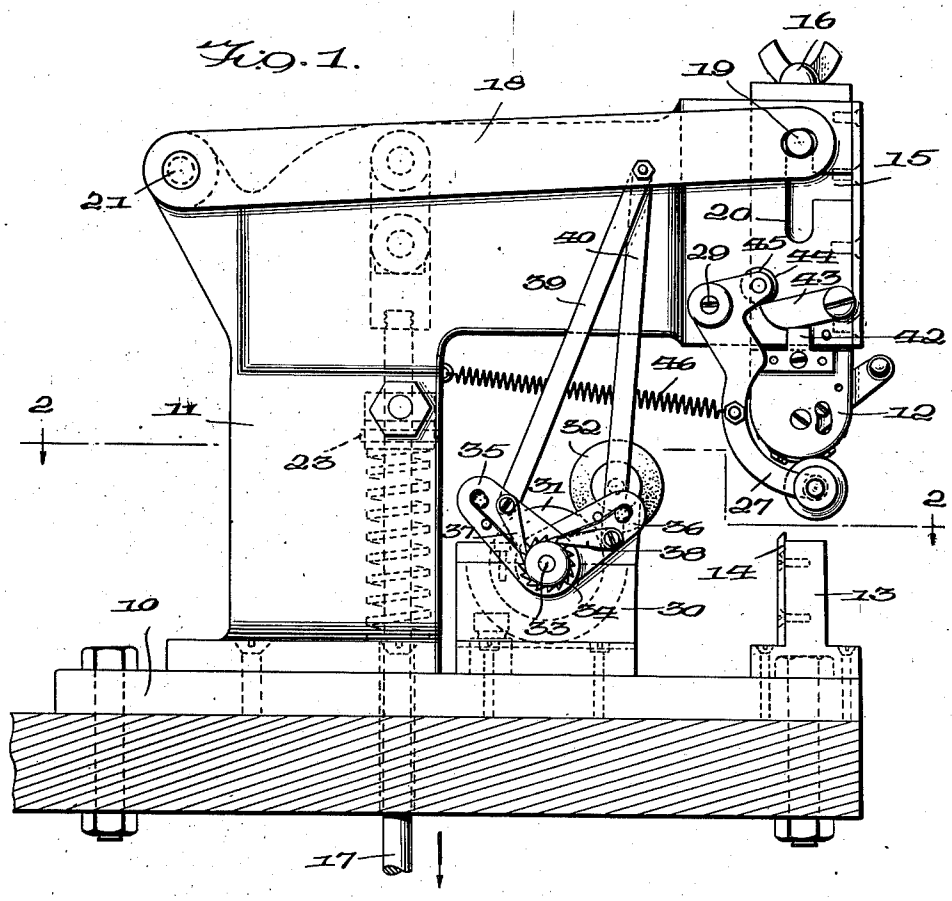
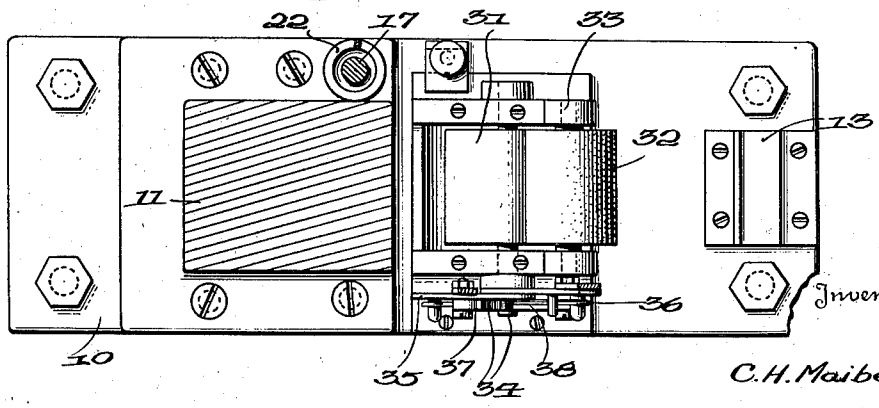


Fig. 2.



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Filed Oct. 8, 1934 2 Sheets-Sheet 2

Fig. 3.

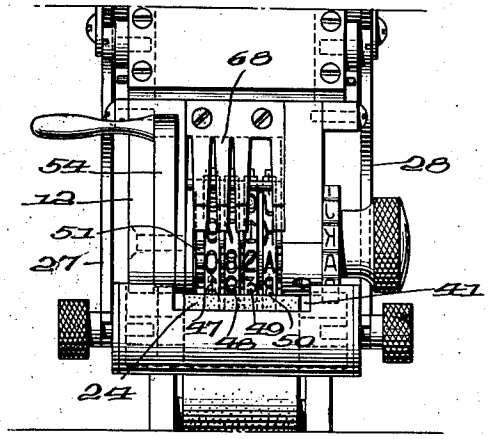


Fig. 5.

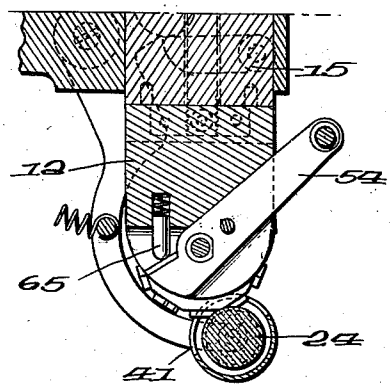


Fig. 6.

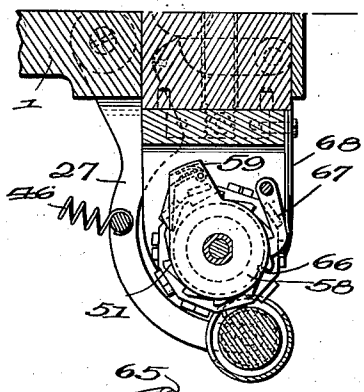


Fig. 4.

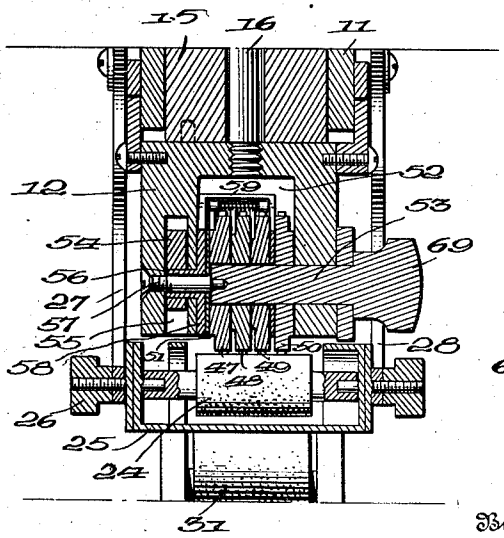
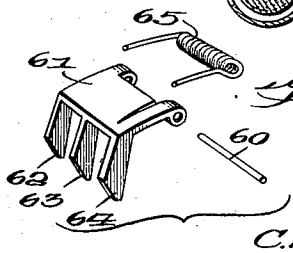


Fig. 7.



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MARKING MACHINE

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11 Claims. (Cl. 101—321)

This invention relates to marking machines of the type wherein the work to be marked is interposed between a printing member mounted for movement one relative to the other. The invention includes a printing head of novel construction and an inking mechanism automatically manipulated to ink the printing type between each marking operation.

A particular object of the invention is to provide a marking machine which may be efficiently employed in laundry and cleaning establishments to identify single or group lots of articles as to owner and/or service to be performed, but the invention is capable of application to marking machines generally for a variety of different types of work.

The above and other objects and features of the invention will be understood from the illustrative machine shown in the accompanying drawings which will be described in detail.

In the drawings:

Fig. 1 is a view in side elevation of a marking machine embodying the invention;

Fig. 2 is a view of the same machine taken on the line 2—2 of Fig. 1;

Fig. 3 is a detailed view of the printing head and the inking mechanism in operative position therewith;

Fig. 4 is a sectional view corresponding to Fig. 3;

Figs. 5 and 6 are sectional views taken at right angles to Figs. 3 and 4 showing different parts of the printing mechanism and operating mechanism therefor;

Fig. 7 is a view of certain detailed elements of the printing mechanism in unassembled relation.

The machine illustrated includes a base member 10 on which is mounted an inverted L supporting frame 11. Supported in the frame is a printing head 12, hereafter to be described in detail, and underlying the printing head secured to the base 10 is a work support 13. In laundry work in which the particular machine is used, it is desirable that the work support or platen be rather small and be provided with a work engaging shoulder as provided by the upper end of plate 14.

It is of course common in a machine such as generally described to move either the printing head towards the work support or to provide a stationary printing head and move the work support upwardly into engagement therewith. As will hereafter be more clearly understood the invention may be used in connection with either arrangement. In the illustrative machine the work support 13 is stationary and the printing head 12 is mounted for reciprocation toward and away from the work support. To operate the printing member the same is mounted on a rectangular block 15, slidably mounted in a shaft at the outer end of the L frame. As will be best seen in Figures 1 and 4 the printing head 12 is detachably secured to the block 15 through a wing bolt 16 extending longitudinally through the block. Such arrangement is to enable the printing head to be readily removed for purposes of cleaning or replacement. As will be seen in Figures 4 and 5, pins are provided in the upper end of the printing head, engageable with slots in the abutting end of block 15 so that the printing head will be firmly secured against rotation.

Any suitable means may be used to actuate the printing head in its printing operation. Either a lever, motor or pedal may connect with operating shaft 17 (Figures 1 and 2). A pair of arms 18 pivotally connecting to the slidable block 15 through pins 19 riding in slots 20 in the frame are hingedly supported at 21 to the opposite end of the frame. Such arms are connected through suitable linkage with the operating shaft 17 in the manner illustrated in Figure 1. As the shaft moves downwardly the arms 18 are depressed to force the printing head downwardly towards the work support 13. A spring 22 surrounding shaft 17 and engageable at its upper end with a collar 23 is provided so as to be compressed by the operating rod and serve to return the printing head to its inoperative position in spaced relation with the work support.

Special automatically operative means is provided to ink the type of the printing member during the intervals between printing operations, the arrangement being such as to constantly transfer ink from a liquid source without the use of any ink absorbent pads of felted rolls. Engageable with the type of the printing member, as best shown in Figure 4, is an inking roller 24 preferably having a resilient rubber surface. Said roller is supported for rotation in a surrounding casing 25, which casing serves to catch any surplus ink, and detachably supported by means of thumb screws 26 at the end of a pair of arms 27 and 28. Such arms are pivotally hung from the frame 11 by suitable pins or screws 29 and so arranged as to enable the inking roller 24 to be swung into rolling engagement against the face of the type in the printing head.

An ink supply is provided in the form of an ink pot 30 secured to the base member 10 wherein is rotatably mounted an ink pickup roll 31 which may be of metal. Mounted in rolling contact with the pickup roll is an ink transfer roll 32 which may be supported in ears 33 extending upwardly from the ink pot. Roll 32 will preferably be composed of resilient material such as rubber, the same in any event being of such character that it will readily take up ink from the roller 31 and transfer it to the inking roller 24.

Actuating means is provided to rotate the pickup roll 31 in the ink pot and therethrough effect rotation of the transfer roll 32. Secured to the outer end of the pickup roll shaft 33 is a ratchet 34 (Figures 1 and 2), and supported in opposing relation on opposite sides of the ratchet through independent supporting plates 35 and 36 loosely mounted on shaft 33 are a pair of pawls 37 and 38, said pawls being held in yielding engagement with the ratchet by suitable springs as shown. Connecting with the respective pawl supporting plates 35 and 36 are arms 39 and 40 which at their opposite ends are secured to one of the actuating arms 18 of the printing member.

By the arrangement just described the ink pickup and transfer rolls 31 and 32 will be partially rotated through the reciprocation of the printing member. Pawl 37 will be active as arm 18 is depressed and as such arm moves upwardly pawl 38 will become active to further rotate the rolls. Thus it will be evident that the two rolls are partially rotated upon both the downward and upward movements of the printing head, thus insuring a constant fresh supply of ink during the entire period of operation of the machine.

The supporting arms 27 are so arranged and balanced that the inking roller carried thereby can be swung out of engagement with the type of the printing member into contact with the ink transfer roll 32. The guard casing 25 surrounding the inking roller is provided at its upper end with a slot 41 (see Figures 3 and 5) sufficiently wide that the roller may engage the transfer roll and the type of the printing member at the opposite ends of its reciprocatory path.

To swing the inking roller into engagement with the type of the printing member, use is made of the movement of the printing member as it withdraws from the work support. As the printing head 12 retracts upwardly, a pair of ears 42 secured thereon engage fingers 43 pivotally supported on the frame. Such fingers are thereby caused to bear against rollers 44 supported by offset portions 45 of arms 27. The same heavy spring 22 which causes the printing head to move upwardly thereby operates through the mechanism just described to cause the inking roller to swing with a rolling contact across the face of the type of the printing head. As the printing head is depressed towards the work support fingers 43 and hence the swinging arms 27 are released to cause the inking roller to fall away from the type and out of the operating path of the printing member.

It is of course possible to provide positive linkage operating through the arms 27 to swing the inking roller from the printing member over into engagement with the ink transfer roll 32. Special advantages, however, are gained by employing instead a low tension spring 46 anchored to a suitable point on the frame and connecting with the arms 27 at a point removed from their pivot 29. Whatever means is employed to swing the inking roller 24 into engagement with the transfer roll, it will be appreciated that since the roller is rotatably mounted in its casing 25 it will engage the rotating transfer roll 32 with a rolling contact so as to constantly present a new surface thereto and also to the printing type when it is again thrown into engagement with the printing head.

Since the fingers 43 are released as the printing head is depressed, the spring 46 snaps the swinging arms 27 rearwardly, and because of the yielding character of the spring the initial contact of the inking roller 24 with the transfer roll 32 will be followed by a repercussion under which the inking roller on its arms will bounce back and forth into and out of contact with the transfer roll. This intermittent contact and oscillating action will of course be of limited duration, but it has the important function of preventing the inking roller from taking up an excess of ink from the transfer roll such as might spoil the work if applied to the printing type. The bouncing or oscillating action just described will of course be enhanced where either the transfer roll 32 or the inking roller 24 are made of a yielding composition such as rubber.

The printing head is particularly constructed for identification work and comprises a plurality of type discs each bearing a series of characters. Essentially, the arrangement is one where certain discs are interdependent and changeable through a common control mechanism while one or more other type discs mounted in cooperative printing relation with the interdependent series are capable of adjustment through separate control mechanism. In the particular embodiment shown in Figures 3 through 6, three discs 47, 48, and 49, each bearing a series of numbers from zero to nine are arranged in interdependent relation to produce the units, tenths and hundredths figures of a three-figure number from 000 to 999. An independently changeable disc 50 is provided in association with the other discs of the group.

Each of the discs 47, 48, and 49 is provided with a narrow ratchet 51 at the side of its type characters somewhat smaller than the periphery of the disc. The ratchets for the respective discs will be of graduated diameter, the units disc 47 having the largest ratchet, the hundredths disc being appreciably smaller, and the tenths disc having a ratchet of intermediate size. As shown in Figure 4, all of the discs are mounted in a recess 52 in the printing head 12 and freely supported on a shaft 53.

The control of the number discs is effected through suitable actuating mechanism which may take the form of a hand lever 54 seating in a slot 55 and rigid on a shaft 56. Said shaft 56 is supported by a screw or pin 57 and has a flat enlargement 58 in the disc recess 52 adjacent disc 47 and provided beyond the periphery of the discs with an axial extension 59. Supported by the extension 59 through a pin 60 is a pawl plate 61, best shown in Figure 7 having three pawls 62, 63, and 64 adapted to engage respectively the ratchets of discs 47, 48, and 49. A spring 65 is provided to maintain the pawls in operative relation with the ratchets.

The arm 54 is maintained normally in retracted position by the spring pressed pin 65 shown in Figure 5, and the downward pull there-

of will through shaft 56 and parts 58 and 59 swing the pawl plate 61 to change the discs.

As heretofore pointed out, the ratchets of the three discs 47, 48, and 49 are of progressively diminishing diameter. Their corresponding pawls, however, are of uniform dimensions so that except at certain times the units disc 47 will be the only one rotated by operation of the lever through engagement of pawl 62. Under such conditions pawls 63 and 64 will ride free of the ratchets of discs 48 and 49. The ratchet of each disc will have a notch corresponding to every character thereon which in the embodiment described will be ten.

In discs 47 and 48 notch 66, corresponding in position to the type numeral 9, will be deeper than the remaining notches of said ratchets, that of ratchet 48 being the deeper of the two. The arrangement described enables the units disc 47 through the pawl 62 to be rotated around to the number 9 without actuation of discs 48 and 49. The pawl 62 will at that time engage the deep notch 66 in the ratchet of disc 47 to allow the pawl plate 61 to bring pawl 63 into engagement with the ratchet of disc 48. The next movement of the control lever 54 will thereupon move disc 47 and simultaneously bring up the numeral 1 on disc 48. Such operation will, of course, release pawl 62 from the deep notch 66 in the ratchet of disc 47 and thereupon throw pawl 63 out of engagement with the pawl of disc 48 until disc 47 has been again completely rotated.

The operative relation between disc 49 and disc 48 is the same as between that of disc 48 and 47 just described. That is to say, discs 47 and 48 must be rotated until the number 99 appears, at which time the deep notches in the ratchets of these two discs will be in registry to allow the pawl finger 64 to engage the ratchet of disc 49.

By the operating arrangement just described it will be evident that by consecutive actuation of lever 54 any number from 000 to 999 will be brought into printing position in the printing head 12. Since the operation of lever 54 is entirely independent of the operation of the printing head 12 it will be evident that either the same or a different number may be employed in successive printing operations. To prevent undesired rotation of the various discs, a series of pivoted fingers 67 engageable by a spring plate 68 are provided to yieldingly bear against the ratchets of the various discs.

As heretofore mentioned, the printing member also includes a disc 50 in series with the interdependent discs 47, 48, and 49. As shown in Figure 4, disc 50, which may contain letters or other indicia, is fixed to the shaft 53 which shaft is mounted for rotation through a knob 69. Thus the complete printing assembly includes a cooperative group of discs 47, 48, and 49 interdependently operative through one control means, lever 54, and a separate character disc 50 which is independently changeable through a separate control means knob 69. In operation the same or consecutive numbers may be brought up on the printing head in successive printing operations while the character on disc 50 may be maintained the same and changed either with or independently of the change in the characters of the other discs.

From the description herein given, it will be understood that I have provided a machine admirably adapted to various types of marking wherein the structural arrangement of the printing member is such as will suit various purposes and identification systems. I have also provided an efficient inking mechanism whereby the type characters may be constantly supplied with fresh ink between each marking operation without any risk of an excessive quantity of ink being applied to the type characters, or the splattering of ink either on the machine or the work to be marked. It will be evident to those skilled in the art that the various novel features of my machine may be carried out by variations in the detailed structure herein described and that the specific machine shown in the drawings is merely to be taken as illustrative of one practical application of the invention.

I claim:

1. A marking machine including a printing member and a work supporting member mounted for movement one toward and away from the other, and actuating means for the movement of said members, an ink distributing member, a member movable in a reciprocatory path between the ink distributing member and the printing member, an inking roller carried by the reciprocatory member and movable therewith alternately into engagement with the ink distributing member and the printing member type, means producing a bouncing action and yielding intermittent contact of the inking roller against the distributing member when the roller is at one end of its reciprocatory path, and means for shifting the inking roller in its path away from the distributing member and forcing the same into bearing engagement with the type of the printing member.

2. A marking machine including a printing member and a work supporting member mounted for movement one toward and away from the other, and actuating means for the movement of said members, an ink distributing member, a member movable in a reciprocatory path, an inking roller carried by the reciprocatory member and movable therewith alternately into engagement with the ink distributing member and the type of the printing member, spring means for effecting an oscillating contact between the inking roller and distributing member, and actuating means for moving the roller carrying member in its reciprocating path.

3. A marking machine including a printing member and a work supporting member mounted for movement one toward and away from the other, and actuating means for the movement of said members, an ink distributing member, a member movable in a reciprocatory path, an inking roller carried by the reciprocatory member and movable therewith alternately into engagement with the ink distributing member and the type of the printing member, spring means for shifting the inking roller across its path to the distributing member, and positive actuating means for shifting the inking roller from the distributing member into engagement with the printing member type.

4. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement toward and away from the work support, actuating means for the printing member, an inking roller, and cam means engageable by the printing member as the same moves away from the work support to force the inking roller into bearing contact with the type of the printing member.

5. A marking machine comprising a support-

ing frame, a work support, a printing member mounted in the frame for movement toward and away from the work support, actuating means for the printing member, an inking roller, a swinging mounting for the inking roller suspended from a fixed pivot on the supporting frame, and means controlled by movement of the printing member to actuate said mounting and swing the inking roller into and out of engagement with the type of the printing member as said printing member moves away from and toward the work support.

6. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement toward and away from the work support, actuating means for the printing member, an inking roller, a swinging mounting for the inking roller suspended from a fixed pivot on the supporting frame, and actuating means for said mounting including fingers engageable by the printing member as said printing member moves away from the work support to swing the inking roller into engagement with the type of the printing member.

7. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement toward and away from the work support, actuating means for the printing member, an inking roller, a swinging mounting for the inking roller, a pair of fingers engageable with the printing member upon movement of the printing member away from the work support and operative to swing the inking roller on its mounting toward the printing member, and a spring operative upon movement of the printing member toward the work support to swing the inking roller out of the path of the printing member.

8. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement toward and away from the work support, actuating means for the printing member, a pair of arms carrying a rotatable inking roller pivotally supported on the frame for swinging movement to and away from the type of the printing member, a pair of fingers engageable by the printing member as the same moves away from the work support and operative through said arms to swing the inking roller into bearing contact with the printing member type, an ink pot, an ink pickup roll in the pot, means for rotating the pickup roll comprising double pawl and ratchet means connecting with the printing member actuating means and operable upon movement of the printing member to and away from the work support to rotate the pickup roll, an ink transfer roll mounted for constant rolling contact with the pickup roll and rotatable thereby, a spring connecting with the swinging arm mounting of the inking roller and operative upon release thereof by the fingers controlled by the printing member to swing the inking roller into rolling contact with the ink transfer roll, said spring being of the low tension type and producing only a light contact between the inking roller and transfer roll and a bouncing action of the roller against the roll after initial contact, thereby to prevent the transfer to the inking roller of an excessive quantity of ink.

9. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement towards and away from the work support, actuating means for the printing member, an ink pot, a rotatable ink pickup roll in the pot, a rotatable ink transfer roll mounted for rolling contact with said pickup roll, double pawl and ratchet means connecting with the printing member actuating means and operable upon movement of the printing member to and away from the work support to rotate the several ink rolls, a pair of arms carrying a rotatable inking roller pivotally supported on the frame, and actuating means for said arms operable to swing the inking roller back and forth into rotative engagement with the ink transfer roll and the printing member type.

10. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement towards and away from the work support, actuating means for the printing member, an ink supply roll, a pair of arms carrying an inking roller pivotally supported on the frame for swinging movement, actuating means intermittently engageable by the printing member as the latter is at the extreme of its path of movement from the work support and operative through said arms to swing the inking roller into bearing contact with the printing member type, and spring means connecting with the swinging arm mounting and operable upon the release of the first actuating means as the printing member starts to move towards the work support to swing the inking roller with a snap action into engagement with the ink supply roll.

11. A marking machine comprising a supporting frame, a work support, a printing member mounted in the frame for movement towards and away from the work support, actuating means for the printing member, a pair of arms pivotally supported on the frame for swinging movement carrying an inking roller, an ink pot, an ink pickup roll in the pot, an ink transfer roll mounted in constant rolling contact with the ink pickup roll, actuating means for the pivotally supported arms operative to swing the inking roller back and forth into rotative engagement with the ink transfer roll and the printing member type, and actuating means operative to rotate the ink pickup roll and ink transfer roll intermittently, said means being operative during the back and forth swinging movement of the inking roller and being inoperative during periods when the inking roller is at the respective ends of its path of movement.

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