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R. M. CAZA

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INK FOUNTAIN ROLLER INTERRUPTING MEANS

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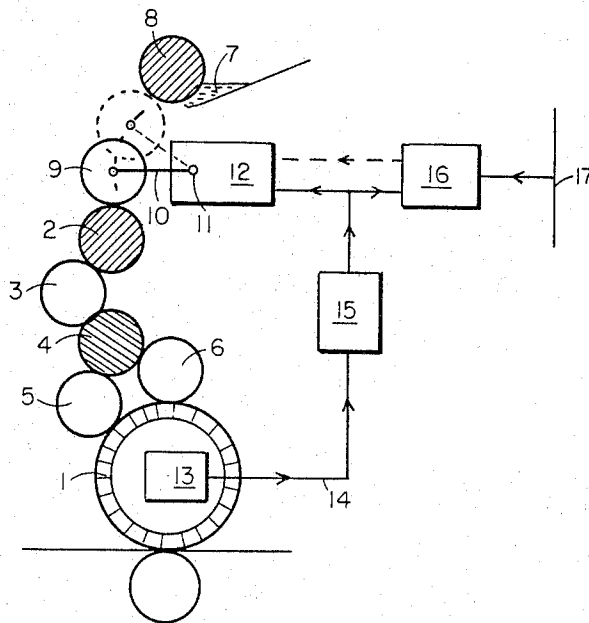


FIG. 1

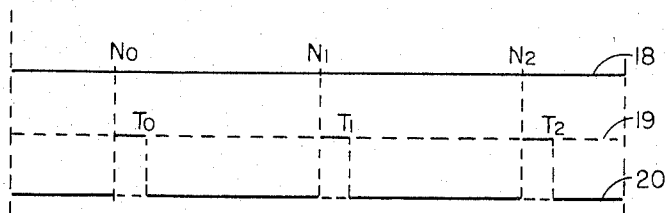


FIG. 2

INVENTOR.

Roger Marc Coza

Maxwell E. Sparrow

ATTORNEY.

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INK FOUNTAIN ROLLER INTERRUPTING MEANS
Roger M. Caza, St-Andre-sur-Cailly,
Seine-Maritime, France
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The present invention relates to improvements to printing machines and particularly, through not solely, to printer-slotters, used in the card-board and corrugated board industry for the purpose of slotting, cutting and printing box blanks or similar articles.

Such machines are equipped with a roller, called ductor roller for the transfer of ink from the ink fountain, especially from the fountain roller, to the oscillating rollers.

In the commonly-known printing machines, this ductor roller is actuated by a cam driven by the rotation of the printing drum, and fountain roller is rotated intermittently by means of a pawl and a ratchet wheel, with adjustable stroke, permitting the adjusting of the quantity of ink to be transferred.

The intermittent rotation of the fountain roller of such machines has the following drawback, i.e., the ink contained in the ink fountain is not constantly stirred; although it would be desirable, to provide a correct ink feeding, that there should be a continuous stirring of such ink whatever the speed of the machine may be.

The object of the present invention is to remedy the said drawback, thus rendering the application and use of the above mentioned printing machines more practical.

My invention mainly consists in providing the printing machine with devices ensuring, on the one hand, a constant rotation speed of the machine fountain roller, and, on the other hand, the automatic repetition of a cycle corresponding to a determined rotation of the printing drum, the ductor roller being placed in contact, for an adjustable period of the cycle, with the fountain roller, and then is placed in contact with at least one oscillating roller during the rest of the cycle.

My invention further consists in some arrangements hereinafter mentioned and preferably used together with the above mentioned main arrangement.

My invention particularly covers certain modes of application and realization of the said arrangements and also the improved devices of the said kind and the machines comprising such devices.

By way of example and to provide a better understanding of my invention, a specification of a particular mode of carrying out the invention is given hereinafter, said mode being illustrated in a diagrammatic and non-restrictive manner in the accompanying drawing. In said drawing:

FIGURE 1 is a partial side-view and a functional diagram of a printing machine, realized according to my invention; on said diagram, the impulse or signal lines are marked with arrows; said lines are figured by continuous lines for interlocking operations and by dotted lines for the reverse operations; and

FIGURE 2 is a diagram of the cycle of said machine.

If it is intended to realize a printing machine improved according to my invention, one proceeds as follows or in a similar manner.

As now known, the printing machine comprises a rotating printing drum 1 which is actuated by a suitable motor and which is inked, from oscillating roller 2, by the form rollers 5 and 6 by means of the transfer roller 3 and the oscillating roller 4, the said various rollers and drum 1 being in contact as shown in the figure.

In 7 is the ink fountain of the printing machine, the ink of which feeds the fountain roller 8.

The ductor roller 9, the function of which is to transfer the ink from the fountain roller 8 to the oscillating roller 2, alternatively comes into contact with the fountain roller 8 to take ink therefrom and into contact with the oscillating roller 2 to ink feed to the latter. For that purpose, the ductor roller 9 rotates in a movable lever 10, articulated in 11 and actuated in a suitable manner by a motor 12. Any other arrangement for roller 9, having the same result, is obviously possible and motor 12 may be mainly constituted by a piston moving in a cylinder under the action of a fluid under pressure, air for instance.

According to the invention, a constant rotation speed is given to the fountain roller 8. For example, the roller 8 may be actuated by a motor, the speed of which is independent from that of the other parts of the machine, for instance by an independent motor or any other device leading to the same result. The constant speed of rotation, given to the fountain roller, may moreover be adjustable.

Furthermore the printing drum 1 is provided with a device 13 sending an impulse through line 14 whenever drum 1 effects a given rotation, for instance at each revolution of drum 1. The said impulses, which may be electric, are recorded by a counter 15. After recording a determined number of the said impulses, the counter 15 sends to the control of motor 12 a signal determining the coming into contact of ductor roller 9 with fountain roller 8. The same signal resets the counter 15 to zero and sets a timing device 16 into action, which, after a given time, sends another signal, to the control of motor 12, the effect of said signal being to bring the ductor roller 9 into contact with oscillating roller 2.

Timing device 16, the function of which is to establish preset time period, may operate according to the counting of constant frequency impulses, provided by a line 17. For instance, the timing device 16 may count the cycles of an alternating electric network having a frequency of 50 periods per second.

The working cycle of the device is illustrated by the diagram of FIGURE 2, drawn as a function of time. On the said figure, the operation of counter 15 is schematically shown in 18 and that of timing device 16, in 19. The points $N_0, N_1, N_2, \dots$ correspond to the reset to zero of counter 15, to the bringing of the ductor roller 9 into contact with the fountain roller 8 and to the putting of timing device 16 into action. The points $T_0, T_1, T_2, \dots$ correspond to the stopping of timing device 16, to its eventual resetting to zero (in the case of an impulse counter) and to the bringing of the ductor roller 9 into contact with the oscillating roller 2. The time period of the contact of the latter is shown in 20.

Although it might seem advantageous to put the invention into effect by resorting to electric technique and using electric impulses and signals and electro-mechanical or electronic counting and timing devices, there will be obviously no departing from the scope of the invention by resorting to other techniques for its total or partial application: mechanical, pneumatic, hydraulic techniques for instance.

It results from the foregoing that in applying the above methods, improved printing machines can be obtained, said machines offering numerous advantages, among others, an easy and immediate adjusting of the ink transfer, the said adjusting being possible while the machine is operating.

Of course, the invention is not restricted to the methods of application and realization specifically indicated; it also embodies all the variants.

What I claim is:

1. In a printing machine having at least a printing drum, an ink fountain roller, an oscillating roller and a ductor roller, said ductor roller rotating in movable levers,

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the combination of first means insuring a constant rotation speed of said ink fountain roller and second means for a repetitive cyclic operation corresponding to a predetermined rotation of said printing drum, said second means first placing said ductor roller for an adjustable time portion of said cyclic operation into contact with said fountain roller and, second, placing said ductor roller into contact with said oscillating roller during the rest of said cyclic operation.

2. A printing machine according to claim 1, and a pressurized fluid operated motor actuating said movable levers of said ductor roller.

3. A printing machine according to claim 2, and an independent motor driving said ink fountain roller at adjustable speed.

4. A printing machine according to claim 3, and further comprising a counting device for counting preset rotation impulses of said printing drum, said device operating said ductor roller to contact said fountain roller after completion of said preset impulse count, and a timer, said timer actuated by said counting device, said timer setting the time period of said contact of said ductor roller with said fountain roller.

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5. A printing machine according to claim 3, and further comprising a counting device for counting preset rotation impulses of said printing drum, said device operating said ductor roller to contact said fountain roller after completion of said preset impulse count, a timer, said timer actuated by said counting device, said timer setting the time period of said contact of said ductor roller with said fountain roller, and electric means connected with said counting device and with said timer for operating said ductor roller to contact said fountain roller for a predetermined time.

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WILLIAM B. PENN, *Primary Examiner.*