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B. FASSMANN

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PRINTING MACHINE

Filed March 7, 1930

2 Sheets-Sheet 1

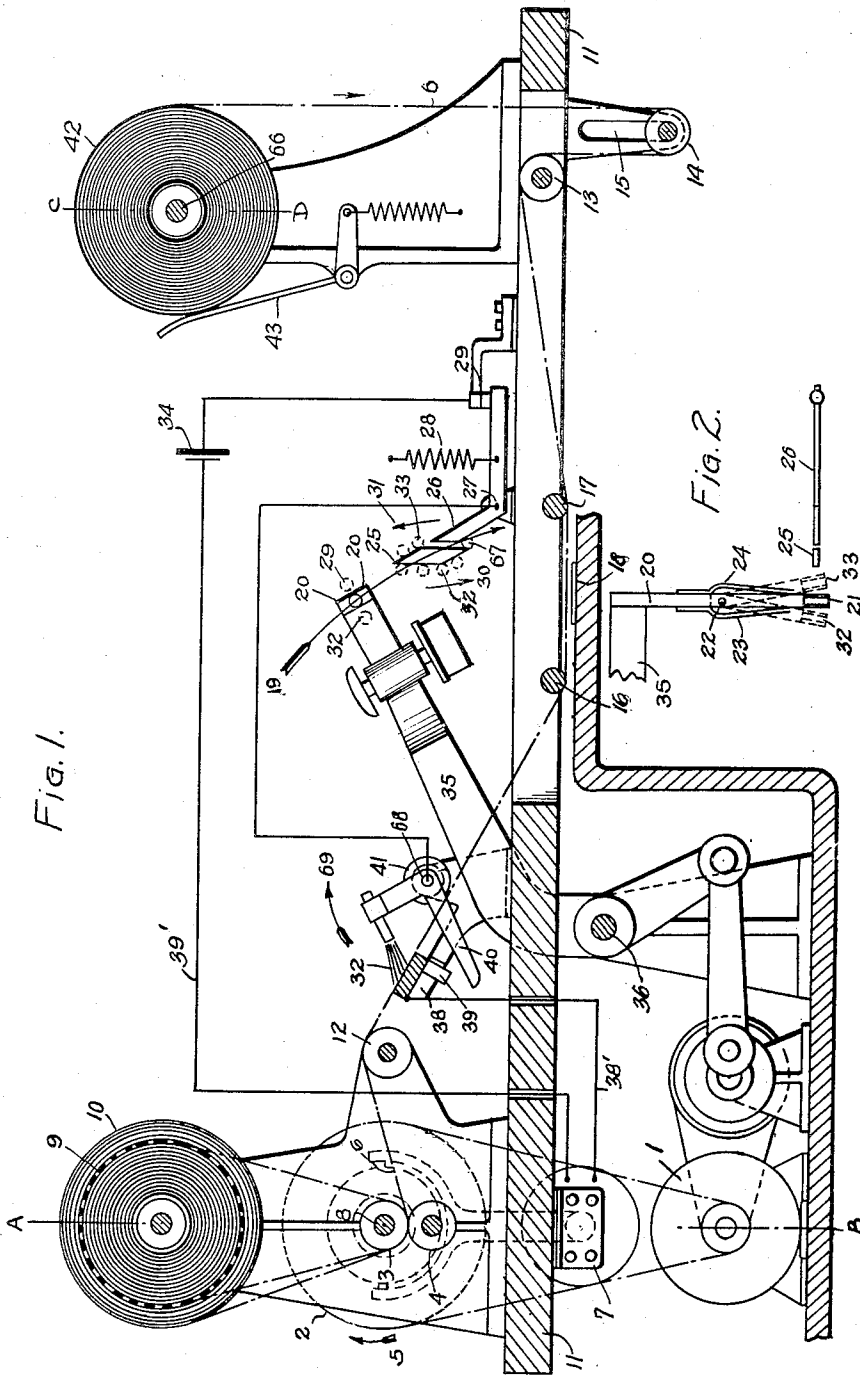


Fig. 1.

Fig. 2.

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Fig. 3.

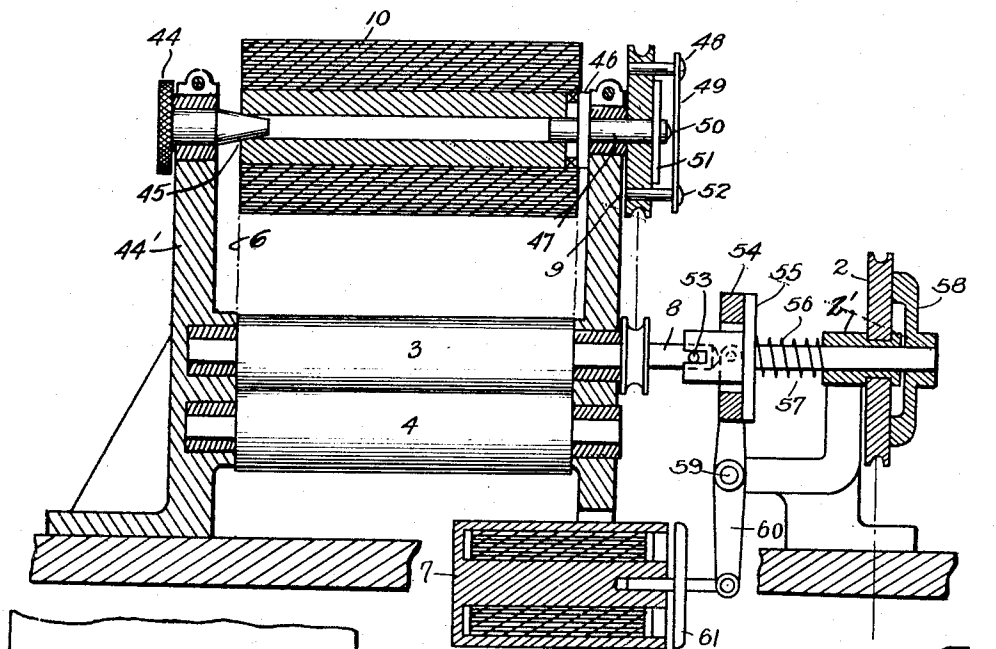


Fig. 5.

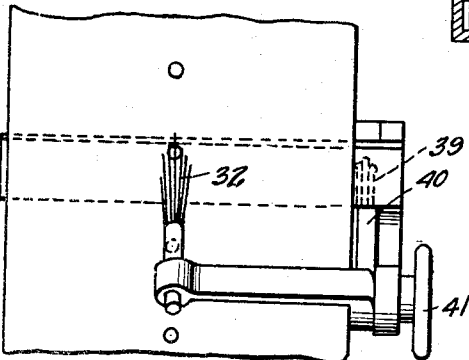
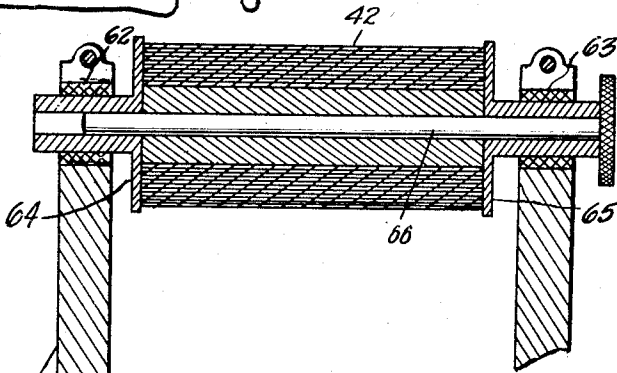


Fig. 4.



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UNITED STATES PATENT OFFICE

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PRINTING MACHINE

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12 Claims. (Cl. 101—288)

This invention relates to printing machines of the kind in which the feed of a web of paper is stopped during the time an impression is being made on the web. The web is perforated at intervals and a detecting means cooperates with the perforations to control the operation of a stopping device. The web feed is resumed automatically during the ascent of the printing member or platen arm of the machine. Prior devices have had a certain disadvantage in so far as they did not work quickly enough in certain circumstances. For example, the detecting means did not always register with a perforation for it would sometimes foul on the edge of a perforation and therefore fail to enter. Further, it has been noticed that the operation of the stopping device is sometimes jerky because, in certain circumstances, the driving parts may become excessively worn.

These disadvantages are remedied by the present invention. For this purpose, instead of a mechanical detecting device an electric contact device is provided which is more easily kept in order and, as it consists of brush-like contact wires it provides a more certain contact, and therefore provides for a certain stopping of the web feed. Instead of a stopping device, a friction clutch is provided, which operates quickly and accurately. For the purpose of putting the web feed into operation, here again an electric device is provided, which is such that a tongue on a spring is fitted on the platen arm and when the platen arm is in motion this tongue is guided on a fixed track and after the print is made the current is switched off by breaking contact.

In the drawings the device is shown as follows:—

Figure 1 is a diagrammatic side-view,

Figure 2 is a plan view of the tongue on the end of the stamper arm,

Figure 3 is a section of the winding device and the parts operating the same,

Figure 4 is a section of the unwinding roll, and

Figure 5 is a fragmentary detail plan view.

The motor driving the printing machine operates a pulley 2, rotatable on a bearing 2' having a shaft 56 rotatably journaled and axially movable therein. Fast on one end of shaft 56 is a friction wheel 58 and fast on the other end of the shaft is a friction wheel 55. Between the wheel 55 and the bearing 2' a spring is arranged in such a manner that the shaft with the friction wheel 58 is pressed against the driving wheel 2. The wheel 58 is disengaged from the driving wheel as soon as a lever 60, the lower end of which is connected with the armature 61 of an electro-magnet 7, is moved by pulling the lower end to the left. The upper end of the lever 60 is formed like a fork and carries the ring 54 which engages the wheel 55 on the shaft 56 to move the wheel 58 away from the driving wheel 2 against the pressure of the spring 57, the lever 60 pivoting on the pin 59. The end of the shaft 56, adjacent wheel 55, is provided with a drilling in which the shaft 8 of a roller 3 is inserted. The shaft 8 is secured to the shaft 56 by a pin 53, which is fixed in a slot in the adjacent end of the shaft 56. The roller 3 works with the roller 4 to move the web. A wheel 9 is driven from the shaft 8 through a suitable belt or the like, the wheel being rotatably mounted on the end of shaft 47. The shaft 47 carries a disc 51, which is pressed against the wheel 9 by a spring 49 acting through screws 48 and 52. Between the spring 49 and the end of the shaft 47 a ball 50 is inserted. Fast on the other end of the shaft 47 is a wheel 46 having a plurality of pins thereon which are fitted into cooperating depressions in core 45, to connect the core to the shaft. The opposite end of the core is rotatable on the conical pin 44 journaled in the frame 44'. The core is supported in the foregoing manner to permit adjustment thereof to regulate the winding of the web thereon.

The supply roller (see Figure 4) is rotatable on a pin 66. The core is held against edgewise movement by two wheels 64, 65 having cylindrical extensions slidably mounted to permit axial adjustment of the wheel and core on pin 66. To insert a supply roll of paper, the pin 66 is removed whereupon the core of the roll may be passed between the wheels 64, 65 and then the pin may be repositioned to retain the roll. The speed of unwinding may be regulated by a drag brake 43. A web 6 runs off the supply roller about a compensating roller 14, which can be moved in the slotted extension 15 of the frame, and then over the roller 13 and under pins 17 and 16 to be guided thereby through printing position in the machine. The web is then directed over the contact plate 38, a guide roller 12, to the rollers 3 and 4, to the rewind roll 10. A rocker 40 is pivotally mounted at 68 on a bracket supported on the frame of the machine near the contact plate 38. On the upper end of this rocker is the contact brush 32. A pair of spring contacts 39 are mounted on the lower face of the contact plate 38 and the lower end of rocker 40 is engageable therebetween but is nor-

mally disengaged therefrom. By turning the hand wheel 41 in the direction of the arrow 69, contact may be made between contacts 39 and the lower end of the rocker 40. The space between the contacts 39 and the lower end of rocker 40 is so determined that these parts are engaged before the brush 32 is disengaged from the contact plate 38. A conductor 38' connects the contact plate 38 with the magnet 7 and a conductor 39', having a battery 34 therein, connects the magnet to contact 29. The contact 29 is on the end of an angle piece 26, which is pivoted at 27 and tensioned by a spring 28. The end of contact 29 is disposed near a rhombus shaped deflecting piece 25, which is in a fixed position. On the end of stamper arm 35 and pivoted at 36, is a projection 21 on an arm 20. The projection 21 is pivotally mounted at 22, and is held in its central position by springs 23 and 24. When the stamper arm makes a downward stroke, this projection 21 strikes against the deflecting piece 25 and is moved into position 32 (Fig. 2) during movement past said deflecting piece. The downward stroke of the stamper arm being continued, the projection returns under pressure of spring 23, and moves past the bottom corner of the deflecting piece after movement thereof past said deflecting piece. During ascent of the stamper arm 35, in the direction of the arrow 31, after printing, the projection 21 is so moved by the angle formed on the bottom of the deflecting piece that the projection moves into position 33, and presses the lever 26 to one side, to thereby open the circuit by disengaging contact 29. The downward movement of the stamper arm is shown by arrow 19, and the movement of the projection around the deflecting piece, during downward movement by arrow 30.

During the time the contact brush 32 is rubbing on the moving paper strip, the current of the battery 34 is interrupted, the armature of the electro-magnet 7 is in the position shown in Figure 3, and the wheel 58 engages on the driving wheel 2 through the pressure of the spring 57. The rollers 3 and 4 will be in motion and will be unrolling the paper strip from roll 42 on to roll 10. In order that there may be no slackening of the paper strip through the changing diameter of the paper roll 10, the wheel 9 is driven with a corresponding acceleration. However, in order to prevent the strip from tearing, the drive of the shaft 47 is not made direct through wheel 9, but through a friction wheel 51 which is pressed against the wheel 9 by spring 49. The pressure between these two parts may be regulated by screws 48 and 52. If the peripheral speed of the roll 10 is greater than the speed of the strip, a corresponding slipping takes place between the wheels 9 and 51. When the contact brush 32 passes through a perforation in the web which is perforated at spaced intervals, the circuit is closed, the armature 61 is drawn in, and the wheel 58 released from the driving wheel 2, so that the movement of the re-wind roll 10 is stopped and also of the web. At the same time the platen arm 35 is operated in such a manner that it makes a downward stroke. After the imprint is made, the arm 35 moves upwards again; the projection 21 moves the lever 26 and disengages the contact 29, thereby breaking the circuit, whereby the paper strip is again set in motion.

An especially quick stopping of the paper strip is brought about for when the armature 61 is drawn in, the ring 54 is pressed against the wheel 55 with a corresponding pressure from spring 57, thereby arresting the impetus of the moving parts.

As the web is withdrawn from the supply roll 42 to be wound upon the re-wind roll 10, the perforations at spaced intervals therein successively register with the contact brush 32 whereby circuit is closed to the electro-magnet 7 to interrupt movement of the web whereby an impression may be made thereon by the platen arm in the manner well understood. When it is desired to manually interrupt movement of the web, the hand wheel 41 is turned to engage the lower end of rocker 40 with the contacts 39 which is the same, in effect, as the passing of the brush 32 through a perforation in the web and the various parts operate as above described.

While I have illustrated and described a selected embodiment of my invention it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the spirit and scope of the following claims:

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a printing machine which has a supply roll therein from which a perforated web may be withdrawn for movement through printing position in said machine, means for rewinding said roll, operating means for withdrawing said web from said supply roll and for moving said rewinding means to wind said web thereon, and means including a platen arm for making impressions at spaced intervals on said web, the combination of an electric circuit having an electro-magnet therein for controlling the operation of said operating means, contact means in said electric circuit registerable with the perforations in said web for closing the circuit to said electro-magnetic means when a perforation in said web registers with said contact means to thereby interrupt movement of said web when an impression is being made thereon by said platen arm, and means operable from said platen arm for opening the circuit to said electro-magnetic means whereby movement of said web may be resumed after an impression has been made thereon.

2. In a printing machine which has a supply roll therein from which a perforated web may be withdrawn for movement through printing position in said machine, means for rewinding said roll, operating means for withdrawing said web from said supply roll and for moving said rewinding means to wind said web thereon, and means including a platen arm for making impressions at spaced intervals on said web, the combination of an electric circuit having a normally closed contact and a normally open contact therein whereby when a perforation in said web registers with said normally open contact circuit will be closed to an electro-magnetic means in said circuit controlling the operation of said operating means to thereby interrupt movement of said web while an impression is being made thereon, and means for opening said normally closed contact after an impression has been made on said web whereby said electro-magnetic means will be rendered inoperative to permit said operating means to resume movement of said web.

3. A device for interrupting movement of a perforated web through a printing machine embodying a platen arm for making impressions on said web, a clutch for controlling the movement of said web, electro-magnetic means for controlling the operation of said clutch, means registerable with perforations in said web for closing

ing the circuit to said electro-magnetic means, a switch in circuit with said electro-magnetic means, a guide member, and switch operating means on said platen arm and movable over said guide member, said guide member deflecting said switch operating means during movement thereof in one direction to prevent operation of said switch and deflecting said switch operating means upon movement thereof in the opposite direction to operate said switch.

4. A device for interrupting movement of a perforated web through a printing machine embodying a platen arm for making impressions on said web, a clutch for controlling the movement of said web, electro-magnetic means for controlling the operation of said clutch, means registerable with perforations in said web for closing the circuit to said electro-magnetic means, a switch in circuit with said electro-magnetic means, a guide member carried by said printing machine and shaped to provide guiding surfaces, switch operating means on said platen arm and movable over said guiding surfaces to be deflected away from said switch upon movement of the platen arm in one direction and to be deflected toward said switch to open the circuit to said electro-magnetic means during movement of said platen arm in the other direction.

5. A device for interrupting movement of a perforated web through a printing machine embodying a platen arm for making impressions on said web, a clutch for controlling the movement of said web, electro-magnetic means for controlling the operation of said clutch, means registerable with perforations in said web for closing the circuit to said electro-magnetic means, a switch in circuit with said electro-magnetic means, a rhombus shaped guide member carried by said printing machine, switch operating means on said platen arm and movable over one surface of said rhombus shaped guide member during movement of the platen arm in one direction to be deflected away from said switch and movable over the opposite surface of said rhombus shaped guide member upon movement of the platen arm in the other direction to open said switch, and yieldable means normally centering said switch operating means.

6. A device for interrupting movement of a perforated web through a printing machine embodying a platen arm for making impressions on said web, a clutch for controlling the movement of said web, electro-magnetic means for controlling the operation of said clutch, and means including a contact plate over which said web is directed and a brush contact comprising a plurality of fine wires engageable with said web and movable through perforations in said web to close the circuit to said contact plate when perforations move into alignment with said brush contact whereby circuit is closed to said electro-magnetic means to interrupt movement of said web.

7. In a printing machine having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for said withdrawing and winding means, means for interrupting operation of said operating means and including a clutch and a brake, electro-magnetic means for controlling the interrupting means, and means including an electrical contact movable through perforations in

said web to close the circuit to said electro-magnetic means to interrupt operation of said withdrawing and winding means.

8. In a printing machine having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for said withdrawing and winding means, means for interrupting operation of said operating means and including a clutch and a brake, electro-magnetic means for controlling the interrupting means, a printing member in said printing machine, means including an electrical contact movable through perforations in said web to close the circuit to said electro-magnetic means to interrupt operation of said withdrawing and winding means, and means controlled by said printing member for opening the circuit to said electro-magnetic means to engage said clutch and disengage said brake.

9. In a printing machine having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for said withdrawing and winding means, means for interrupting operation of said operating means and including a driving disc, a clutch member engageable with said driving disc, yieldable means holding said clutch member in engagement with said driving disc, electro-magnetic means for disengaging said clutch member, and means including an electrical contact movable through the perforations in said web to close the circuit to said electro-magnetic means to thereby withdraw said clutch member from said disc.

10. In a printing machine having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for said withdrawing and winding means, means for interrupting operation of said operating means and including a driving disc, a clutch member engageable with said driving disc, yieldable means holding said clutch member in engagement with said driving disc, a brake member for holding said withdrawing and winding means against movement, electro-magnetic means for disengaging said clutch from said disc and for engaging said brake member, and means including an electrical contact movable through perforations in said web to close the circuit to said electro-magnetic means to interrupt operation of said withdrawing and winding means.

11. In a printing machine including a platen and having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for the withdrawing and winding means, means for interrupting operation of said operating means, electro-magnetic means for controlling the interrupting means, means including an electrical contact movable through perforations in said web to close the circuit to said electro-magnetic means to interrupt operation of said withdrawing and winding means, and means

carried by said platen for rendering inoperative the means including said electrical contact.

12. In a printing machine having a supply roll and a re-wind roll therein, means for withdrawing a perforated web from the supply roll and for moving the web through printing position in the machine to the re-wind roll, means for winding said web on said re-wind roll, operating means for the withdrawing and winding means, means
10 for interrupting operation of said operating

means, and means including an electrical contact movable through perforations in the web to close the circuit to said electro-magnetic means to interrupt operation of said withdrawing and winding means and including a manually movable part for closing the circuit to said electro-magnetic means when said electrical contact is rendered inoperative. 80

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