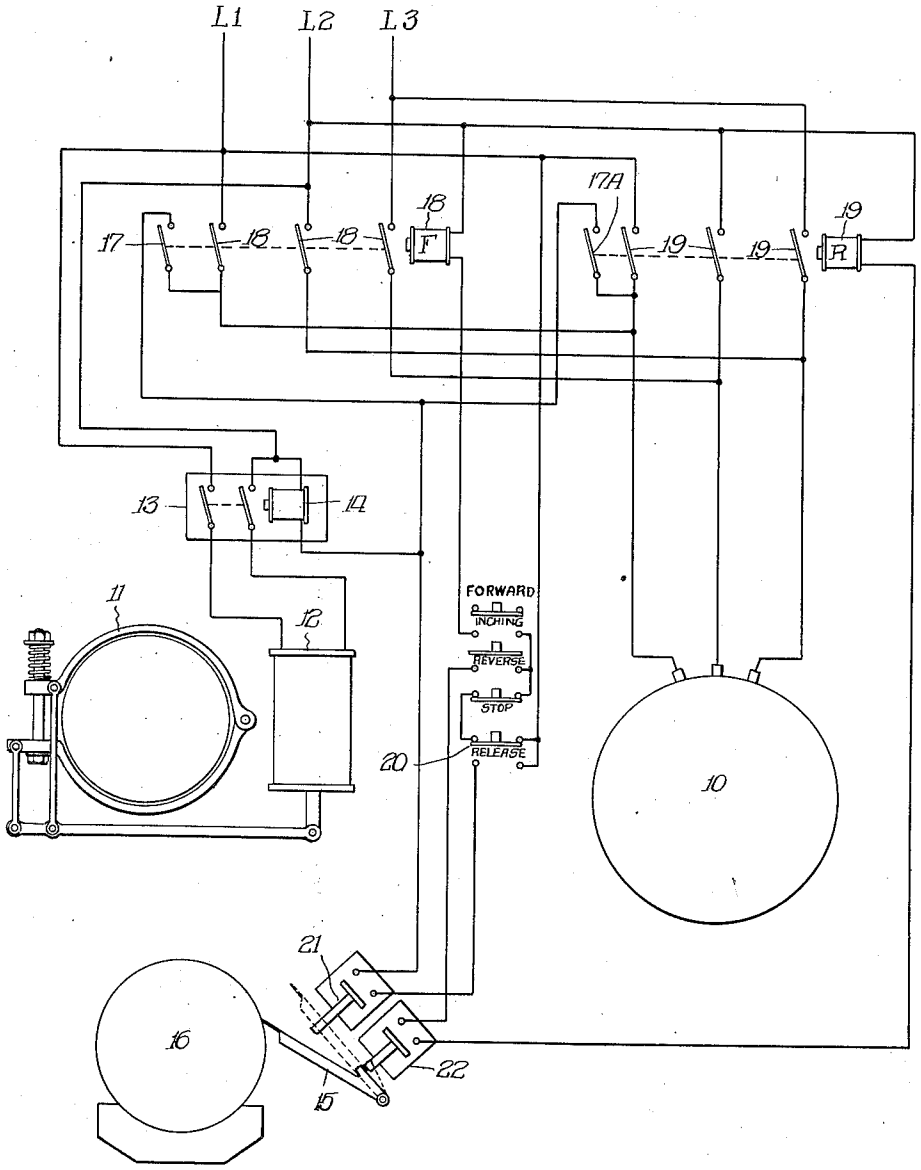
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CONTROL MEANS FOR PRINTING PRESSES

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CONTROL MEANS FOR PRINTING PRESSES

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This invention relates to safety means for printing presses such as for example intaglio i. e. rotary printing presses, and it more specifically concerns means governed by the actuation of a press element to automatically close and open the circuit for the electric control of the press.

In the rotary printing press using engraved plates, for instance, which generally includes a "doctor" blade for controlling the ink supply for the printing forms, i. e. whereby the surplus ink is scraped off the form or plate which carries the design to be printed, it frequently occurs that upon reversal of the press and therewith of the form carrying member or cylinder, damage is done to the design by the doctor blade cutting into the engraved plate.

It is therefore the principal object of my invention to eliminate any possible chance for incurring such injury to the engraved printing member. Another object is to provide means controlled by the position of the doctor blade, so that when the latter is in its operative position, the press, or its driving means cannot be reversed.

One preferred embodiment of my invention is illustrated in the accompanying drawing which represents diagrammatically a scheme whereby the objects of my invention may be readily accomplished.

This scheme includes a driving motor 10 of any desired type, suitable electric control means for said motor embodying the usual features of automatic starting, predetermined speed setting, inching service, fast and slow service, and stopping. It further includes an electrically operated brake 11 with solenoid 12, which brake may be actuated by gravity or by spring pressure and opened by the application of current to the solenoid or by any other desirable means for accomplishing this purpose. A suitable magnet switch 13, including a coil 14, is arranged for independent energization of the brake releasing solenoid.

The cooperative arrangement of said elements is such that so long as the doctor blade 15 remains in contact with the printing form it will be impossible to move the press in the reverse direction either by electric power or manually. It will also be impossible to reverse the press i. e. the form cylinder 16 by hand irrespective of whether or not there is current on the line. In order to reverse the press it will be necessary to trip the doctor blade from the printing form, that is to say, to move the blade 15 out of its operative relation with the form.

As indicated above, the brake 11 can be held in closed position either by means of a spring or by gravity, and in the particular form shown the brake is released by the application of current to its solenoid 12, it being readily understood, however, that any other suitable operating means for the brake may be chosen.

In accordance with the usual procedure for operating the brake of printing presses or the like, the brake is automatically released whenever the driving motor is supplied with current, this being true for either direction of operation.

As shown on the drawing, means is provided whereby the brake can be released at will also when current is not applied to the motor. This may be accomplished by means of the magnet switch 13 including the coil 14. The supply of current for operating the brake solenoid is taken direct from the lines L_1, L_2, through magnet switch 13. The actuating coil 14 of the magnet switch has one of its terminal connected to one of the main lines, in this case line L_2, the other terminal of the coil being connected to line L_1 through the additional contact 17 provided on the forward switch 18, or additional contact 17A on the reverse switch 19. Whenever either the forward switch 18 or the reverse switch 19 is closed during the regular working condition of the controller, the coil 14 of the magnet switch is energized and current will be supplied to the solenoid 12, thereby releasing the brake.

In order to release the brake while the motor is standing still, the doctor blade 15 must first be moved out of engagement with the form cylinder 16 and the push button switch 20 must be depressed.

The operation of the arrangement is as follows: When the doctor blade is thrown back into the position indicated in broken lines, the normally opened contacts of the switch 21 will become closed. When in addition to this the switch 20 is depressed, current will flow from L_1 through the lower contacts of switch 20, and through the contacts of switch 21, through the coil 14 of the magnet switch and then to line L_2, thereby causing the magnet switch 13 to close and consequently releasing the brake. Therefore it is obvious that unless the contacts of switch 21 are closed by throwing back the doctor blade into the position shown in broken lines, it will be impossible to release the brake 11 while the press stands still.

The switch 20 preferably has two contacts which are normally closed and through which the

control or pilot circuit for the equipment is established so that whenever the switch 20 is in its depressed position, the supply of current for actuating the control of the motor is cut off and therefore when the switch is in that position the motor cannot be run. It should be recognized that the pilot circuits which govern the motor control relays such as F and R are not shown complete; this being unnecessary for illustrating this invention. There would normally be a run control circuit and interlocking features between the forward and reverse control circuits.

A switch 22, similar in construction to the switch 21, is arranged so that it will also close when the doctor blade is swung back into its inoperative position indicated in broken lines. The pilot current for actuating the reverse contactor of the main control is taken through the contacts of said switch 22, so that reversing the press by power is impossible so long as the doctor blade remains in contact with the form cylinder, that is to say, the reverse current cannot be supplied unless the doctor blade is thrown back out of its operative engagement with the cylinder.

Inasmuch as releasing of the brake in case it is desired to reverse the press by hand is impossible unless the doctor blade is thrown back in order to close the switch 21, it is obvious that the press cannot be reversed by hand unless the blade is moved out of contact with the cylinder, furthermore inasmuch as the closing of the switch 22, by throwing the doctor blade 15 back is essential to the operation of the electric reverse, it is obvious that electric reversing of the press is likewise impossible so long as the doctor blade 15 is in engagement with the cylinder.

In the event that the power supply is shut off, then the brake 11 remains closed and the press cannot be moved in either direction, in other words the presence of current is not essential for the operation of this safety feature.

It will be readily understood that my invention could be applied to other types of printing presses and that various modifications could be introduced without departing from the principle of the invention; therefore it is my intention to cover any such arrangements that will come within the scope of the appended claims.

I claim:

1. In a printing press, the combination of power means for driving the press, a design carrying printing cylinder, a doctor blade normally in contact with said cylinder to control the ink supply therefor, a brake associated with said power means, and separate means for holding said brake in a positive fully effective position when said power means is normally at rest in order to avoid rotation of said cylinder in reverse direction while said doctor blade is in contact therewith.

2. In a printing press, the combination of power means for driving the press, a moving printing member, ink supply controlling means operatively associated with said printing member, and a reverse control circuit for the control of said power means, the opening and closing of said reverse control circuit being dependent on the position of said ink supply controlling means.

3. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, means for releasing said brake operable upon any energization of said driving means, and means for preventing the energization of said driving means in a reverse direction except when said doctor blade is in its safe position.

4. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, means for releasing said brake operable upon any energization of said driving means, means for preventing the energization of said driving means in a reverse direction except when said doctor blade is in its safe position, and means for causing the release of said brake independently of said driving means.

5. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a negative position, a brake for normally preventing all movement of said printing member, means for releasing said brake operable upon any energization of said driving means, means for preventing energization of said driving means in a reverse direction except when said doctor blade is in its safe position, means for causing the release of said brake independently of said driving means, and means for preventing such independent operation of the brake-release means except when said doctor blade is in its negative position.

6. In a printing press, the combination of means for driving a press, a device having an active position in which reverse movement of the printing member would be harmful, and a safe position; and means for quickly stopping said printing member when said driving means ceases to be energized and for positively preventing reverse movement of said printing member when such device is in said active position.

7. In a printing press, the combination of means for driving a press, a device having an active position in which reverse movement of the printing member would be harmful, and a safe position; and a single brake for quickly stopping said printing member when said driving means ceases to be energized and for preventing reverse movement of said printing member except when said device is in its safe position.

8. In a printing press, the combination of means for driving a press, a brake normally applied to prevent movement of the press, a printing member having a doctor blade normally applied thereto but shiftable to a safe position, a forward switch and a reverse switch for causing the operation of said driving means in the forward and reverse directions respectively; and means for releasing said brake effective upon the operation of said reverse switch only if said doctor blade is in its safe position.

9. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, a special release circuit, means for releasing said brake operable upon any energization of said driving means or upon closing of said special release circuit, and means for preventing the closing of

said special release circuit except when said doctor blade is in a safe position.

10. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, means for releasing said brake operable upon any energization of said driving means; and manually operable means for causing a release of said brake, and means for preventing the operation of said manually operable means except when said doctor blade is in a safe position.

11. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, means for releasing said brake operable upon any energization of said driving means, manually operable means for causing a release of said brake, and means for preventing both the operation of said manually operable means from being effective for causing such release and for preventing the energization of said driving means in reverse direction except when said doctor blade is in a safe position.

12. In a printing press, the combination of means for driving a press in forward and reverse directions alternatively, a moving printing member and a doctor blade normally in contact with said printing member but movable to a safe position, a brake for normally preventing all movement of said printing member, means for releasing said brake, a release control relay for controlling said means, a circuit for said relay and a manually controlled branch circuit, said first named circuit being controllable upon any energization of said driving means, or upon closure of said manually controlled branch circuit, and contacts for preventing both the closure of said branch circuit and the energization of said driving means in a reverse direction except when said doctor blade is in a safe position.

13. In a printing press, power means for driving the press, a brake associated with said means, a moving printing member, and ink supply controlling means operatively associated with said printing member, the operation of said brake being dependent on the position of said controlling means, and means for causing said brake under normal conditions to become fully effective, when the forward movement of the machine stops, to prevent any reverse movement of the machine.

14. In a printing press the combination of means for driving a press, a brake normally applied to prevent movement of the press, a printing member having a doctor blade normally applied thereto but shiftable to a safe position, a forward switch for causing the operation of said driving means in a forward direction, means for releasing said brake effective upon the operation of said forward switch, and means for preventing the effectiveness of said releasing means under any influences which do not cause a forward energization of said driving means except when said doctor blade is in its safe position.

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