

Jan. 29, 1935.

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1,989,531

PRINTING PRESS CONTROL

Filed Feb. 2, 1934

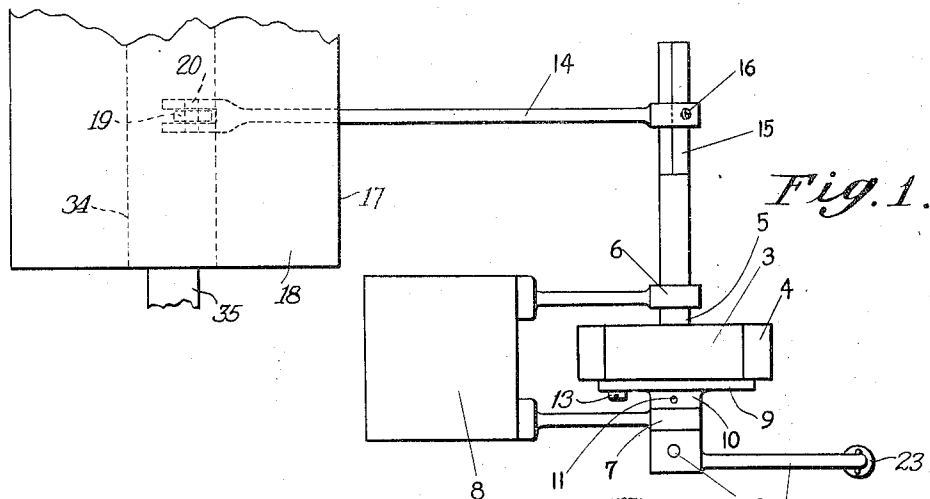


Fig. 1.

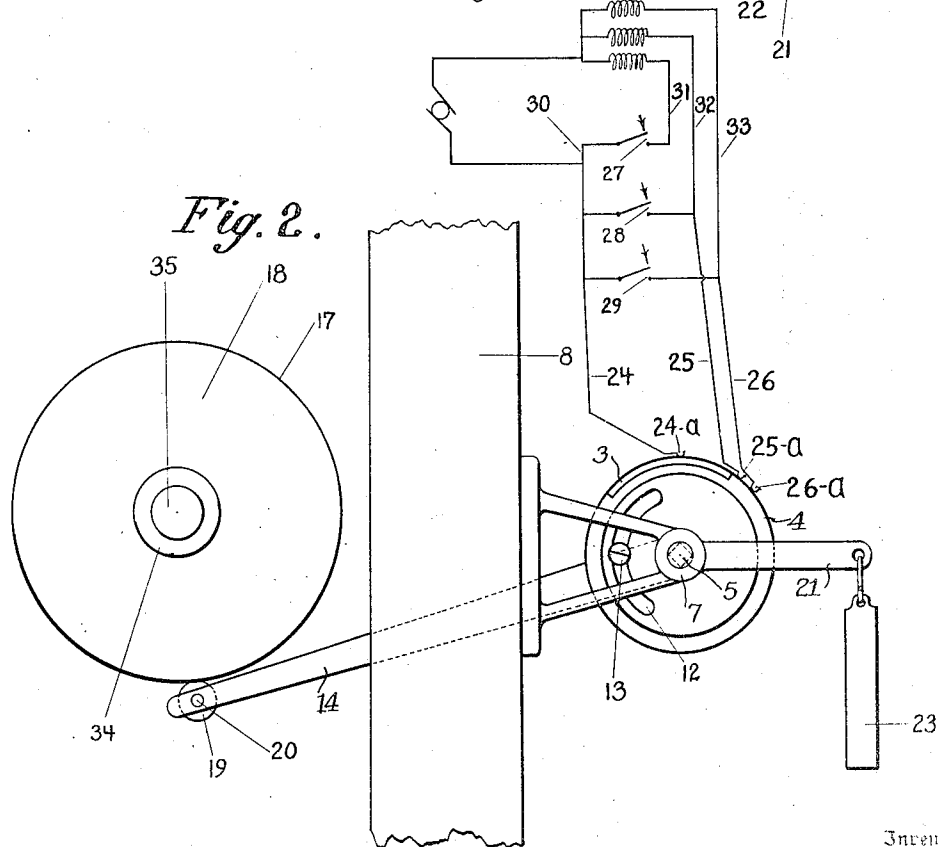


Fig. 2.

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1,989,531

PRINTING PRESS CONTROL

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Application February 2, 1934, Serial No. 709,492

3 Claims. (Cl. 192—127)

My invention relates to a new and useful improvement in printing presses, particularly rotary printing presses of the type in which the paper supply is in the form of a roll of paper (instead of pre-cut sheets), as for instance, the rotary printing presses commonly employed for printing daily newspapers.

In the operation of rotary printing presses of this type, the newspaper stock is received in the form of rolls of paper in which a single sheet of paper is wound on a suitable core, and a roll of this character is placed upon a suitable expander on the printing press from whence it is fed in a generally continuous fashion through the various feed rolls and other rotary printing mechanism of the printing press in a generally continuous manner, until the paper supply of the particular roll is nearly exhausted. Shortly before the paper supply on a roll is completely exhausted, the machine must be stopped and a fresh roll of paper put in place of the nearly-consumed roll of paper. In making this change, the nearly-consumed roll of paper is removed from the machine, with a suitable length of loose end of paper left behind in the machine, and to this loose end of paper already threaded through the press, the "lead-in" end of the fresh roll of paper is adhesively secured. This connection (generally adhesively) between the last portion of one roll and the "lead-in" end of the fresh roll, is necessary in order to save the laborious and time-consuming task of threading the paper web freshly through the many rolls of the printing press with each change of paper rolls, or with each fresh paper roll. Thus, the "lead-in" end of the fresh roll of paper being secured to the disappearing end of the previous paper supply, permits the new paper to be drawn right through the machine without being manually threaded through the machine as is necessary with the first roll, or as may be necessary if the web of paper accidentally breaks, so that it runs out of the machine before another "lead-in" end can be attached to it.

In the conventional construction of printing presses of this character, the electric motor which drives the printing press is controlled by the operator through a series of electric buttons which in turn operate upon a relay switch for starting the machine as well as for stopping the machine, and for driving the machine at a slow speed. Thus, the manually operable portions of the control generally consist of three push-buttons, one a "stop" button, one a "slow-speed" button, and one a "full-speed" button. (These buttons es-

tablish electrical connection to the actuating coils of the relay switch, and take relatively little current.)

In printing press practice, it has generally been the custom for the operator visually to gauge (as nearly as he could) the amount of paper remaining on the roll of paper as the roll was nearly consumed, or to estimate visually about when the machine should be stopped in order that the paper may not run out of the machine, because, as stated above, if the paper was permitted to run out of the machine, the fresh roll of paper must be threaded through the entire machine at the expense of much labor and time. As the human judgment in this matter could not be quite accurate, it has always been the custom to leave on the core of the paper roll a substantial amount of paper when making the "change-over" from one roll of paper to the next roll, in order to assure that the paper would not run out of the machine. Because of this, a substantial amount of paper, possibly four to seven pounds (more or less) is generally left on the core of each roll when it is discarded, and the paper thus left on the core is wasted.

The object of my present invention is to eliminate this waste of paper to a substantial extent, if not completely, by eliminating the human judgment in the stopping of the machine for the "change-over" from one roll to the next roll, by automatic means which will stop the machine just short of the complete removal of all paper from the core and which will effect this operation accurately and without any chance of losing the trailing end of the paper.

With the above and other objects in view, my invention consists of an electrical switch connected in parallel across the manual control "buttons" of the conventional printing press controls, and means yieldably bearing against the paper roll and adapted to actuate said electric switch in relation to the diameter of the paper roll, thereby first, to "slow-down" the machine when approaching the end of the paper, and then to stop the machine completely just before the last bit of paper has been unwound from the core.

My invention further consists of other novel features of construction which will appear more fully from the following detailed description.

For the purpose of illustrating my invention, I have shown in the accompanying drawing, one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities

of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Referring to the drawing in which like reference characters indicate like parts:

Figure 1 represents a schematic top plan view of the device of my present invention in relation to the paper roll mounted on a rotary printing press of the character stated.

Figure 2 represents a schematic front elevational view of the same.

According to my present invention, I provide a movable electrical contactor or band 3, formed of any suitable conducting material, such as metal, which is mounted upon any suitable insulating member such as the insulating disc 4. The insulating disc 4 is preferably adjustably mounted upon a shaft 5 or the like, which in turn is suitably journaled, as for instance, in bearing pedestals or brackets 6 and 7 carried upon any suitable structural member or supporting member 8, which may be any part of the frame work of the printing press or may be any other suitable supporting member which is here indicated in a generally upright position. In order that the disc 4 and the contactor strip or band 3 may be adjustable in relation to the shaft 5, said disc 4 is loosely or rotatably mounted on the shaft 5, while an auxiliary disc 9, which may be a metallic disc having a suitable hub 10, is fixedly secured to the shaft 5 by a pin 11 or any other suitable locking means, such as a key or set screw or the like. The disc 9 is provided with an arcuate slot 12 of suitable extent, through which a set screw 13 is extended. The set screw 13 is threaded into a suitable threaded opening in the disc 4, so that upon tightening the screw 13, the disc 4 will be locked in any pre-determined position (within the range of adjustment permitted by the slot).

Upon the shaft 5, a follower arm 14 is secured, preferably in a longitudinal adjustable manner. Thus, a portion of the shaft may be formed with a generally square or other polygonal cross-section as indicated at 15, with the end of the lever provided with a corresponding opening, and by means of the set screw 16 through which the lever may be locked in any position longitudinally. The end of the lever is adapted to contact the periphery 17 of the paper roll 18, either directly or through any suitable follower roller 19, pivotally supported upon the lever by means of the pivot 20, whereby the friction between the lever and the paper roll may be reduced. To the shaft 5, a tension lever or other tension means 21 is also secured by means of suitable pin, set screw, or the like, 22, to which either a spring or a weight 23 is attached, of sufficient strength or of sufficient weight to overbalance the weight of the lever 14 to a suitable extent, thereby yieldably or resiliently to maintain the "follower-end" of the lever 14 in operative relation to the constantly changing periphery 17 of the paper roll 18.

Upon any suitable supporting structure (not shown in the drawing) suitable electric contact shoes 24, 25 and 26 are carried with their contact portions (24-a, 25-a and 26-a) in yielding contact or in spring-pressed contact with the periphery of the disc 4. The contact 24 serves as a feeder contact through which the continuous connection or permanent connection is made to the segment 3, while the contacts 25 and 26 are connected to the "slow" button and to the "stop" button, respectively, of the conventional manual

control buttons of rotary printing presses. Thus, in Figure 2, I have illustrated diagrammatically the three control buttons, to wit, the "start" button 27, the "slow" button 28 and the "stop" button 29 which may be connected on one side to a common feeder line 30 and which are connected on the other side to control lines 31, 32 and 33 respectively, leading to the different relay coils or other actuating portions of the relay switch (not shown) through which the power to the motor is ultimately controlled.

By suitably adjusting the disc 4, and hence, the contact segment 3 upon the shaft 5 by means of the set screw 13, the contact segment 3 may be caused to contact the "slow" contact 25, when the follower end or the roller 19 of the lever 14 has approached the core 34 of the paper roll 18, to a sufficient extent. This causes the machine to slow down, that is, to run at its slow speed. Thereafter, the segment 3 contacts the stop contact 26 and completely shuts the machine. By providing both a "slow" contact (25) as well as a "stop" contact (26), a more accurate control may be had because the "drift" of the machine is reduced to a negligible minimum, by first slowing down the machine, and running it at a slow speed towards the desired "end-point", and then finally stopping it substantially at the desired "end-point", that is, at a point where but a relatively few turns of paper are left on the core 34. Thereupon, the weight 23 is removed so as to permit the lever to drop and the core 34 is removed from the expander or shaft 35, and a fresh roll of paper placed upon said shaft. Thereupon, the weight (or spring) is again applied so as to place the lever 14 in operative relation to the roll.

While in the particular illustration, I have shown the lever contacting the roll from beneath, I may arrange or so dispose the various elements that the lever will contact the roll from above or from either side, or at any point around its periphery.

I am aware that my invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention. Having thus described my invention, what I hereby claim as new, and desire to secure by Letters Patent, is:

1. Printing press control for printing presses having a roll of paper supply rotatably mounted upon a suitable spindle, and having a core on which said paper is wound, and having relay-switch controlled electric motor for starting and stopping the press, including a follower member yieldably maintained in contact with the periphery of the paper roll with suitable force, a movable electrical contact element actuated by said follower member, and two spaced and generally stationary contact elements disposed in operative relation to said movable contact element, and adapted to be contacted thereby in succession, when the follower member has moved generally in the direction of the paper roll to the desired extent, said electrical contact elements forming part of two electrical circuits capable of supplying an actuating current to the coils of the relay switch of the printing press to slow-down and to stop the printing press.

2. Printing press control for printing presses having a roll of paper supply rotatably mounted

upon a suitable spindle, and having a core on which said paper is wound, and having relay-switch controlled electric motor for starting and stopping the press, including a follower member yieldably maintained in contact with the periphery of the paper roll with suitable force, a movable electrical contact element actuated by said follower member, two spaced and generally stationary contact elements disposed in operative relation to said movable contact element, and adapted to be contacted thereby in succession, when the follower member has moved generally in the direction of the paper roll to the desired extent, said electrical contact elements forming part of two electrical circuits capable of supplying an actuating current to the coils of the relay switch of the printing press to slow-

down and to stop the printing press, and means for adjusting the movable contact element in relation to the follower member.

3. Printing press control for printing presses having a roll of paper supply rotatably mounted upon a suitable spindle, and having a core on which the paper is wound, and having relay-switch controlled electric motor, including a follower member yieldably maintained in contact with the periphery of the paper roll, and electrical means operatively connected with said relay-switch and operable by said follower member for first slowing down the printing press and thereafter stopping the printing press as the follower member approaches the core.

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