July 5, 1932. R. F. BONSCH 1,865,611

ROTARY PRINTING MACHINE

Filed April 5, 1930 4 Sheets-Sheet 1

Fig. 1.

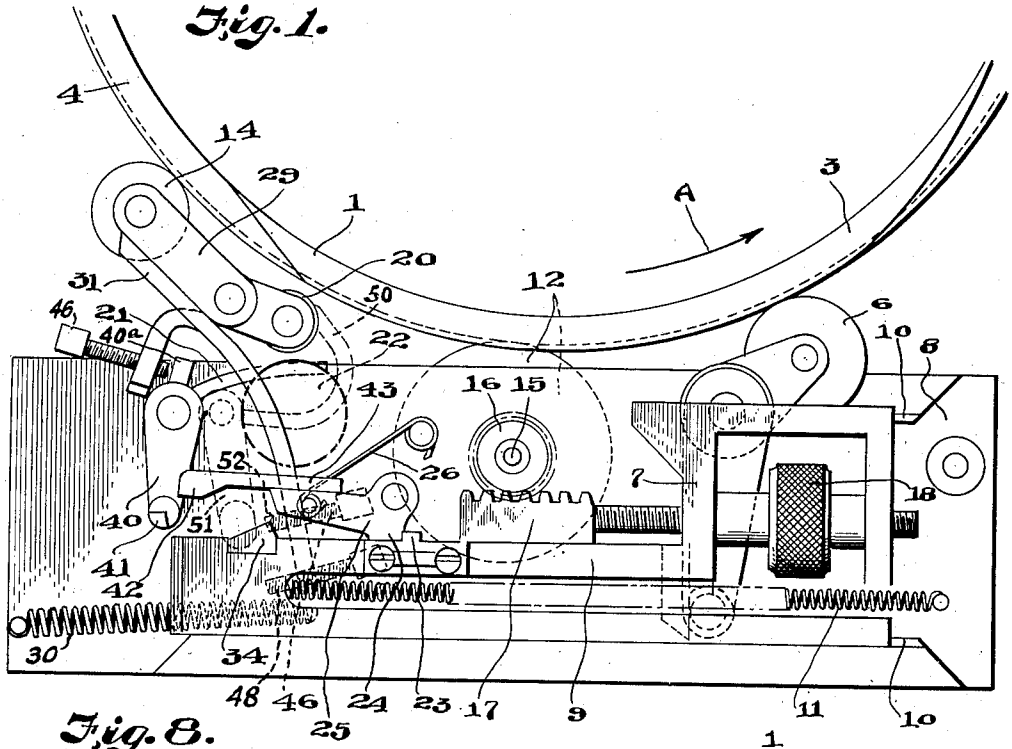


Fig. 8.

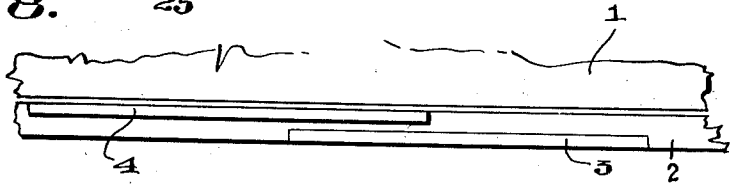
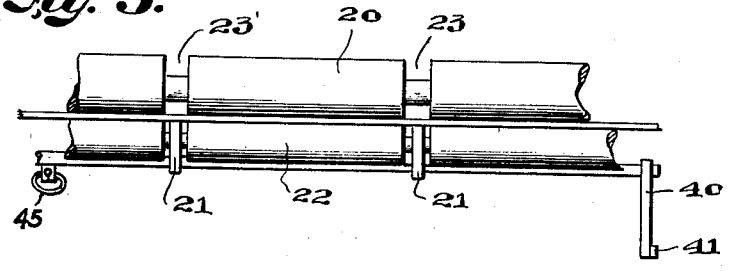


Fig. 9.



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ROTARY PRINTING MACHINE

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Fig. 2.

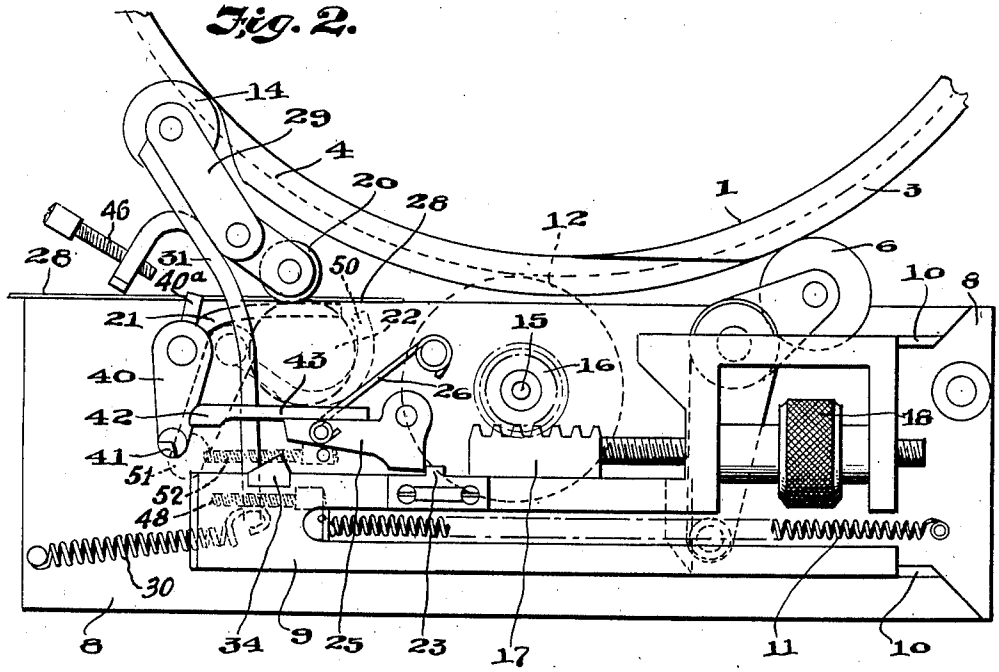
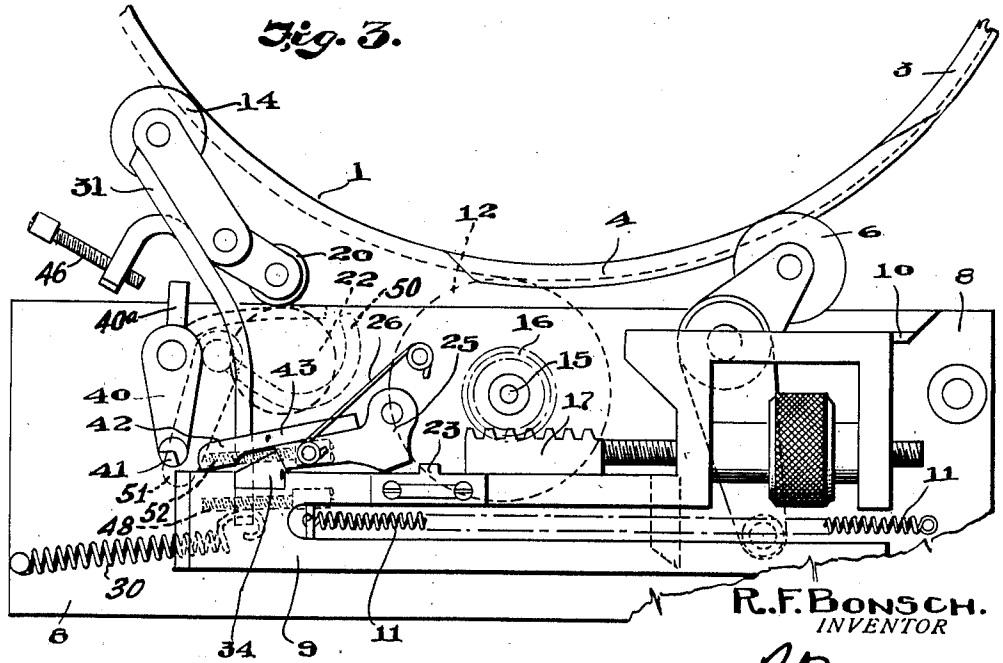


Fig. 3.



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ROTARY PRINTING MACHINE

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Fig. 4.

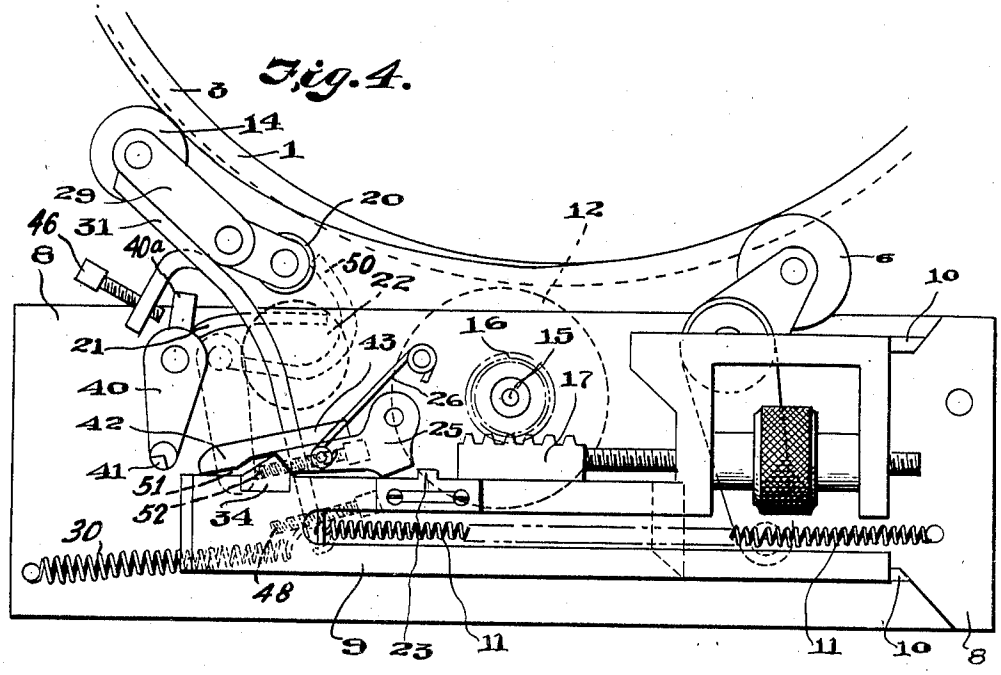
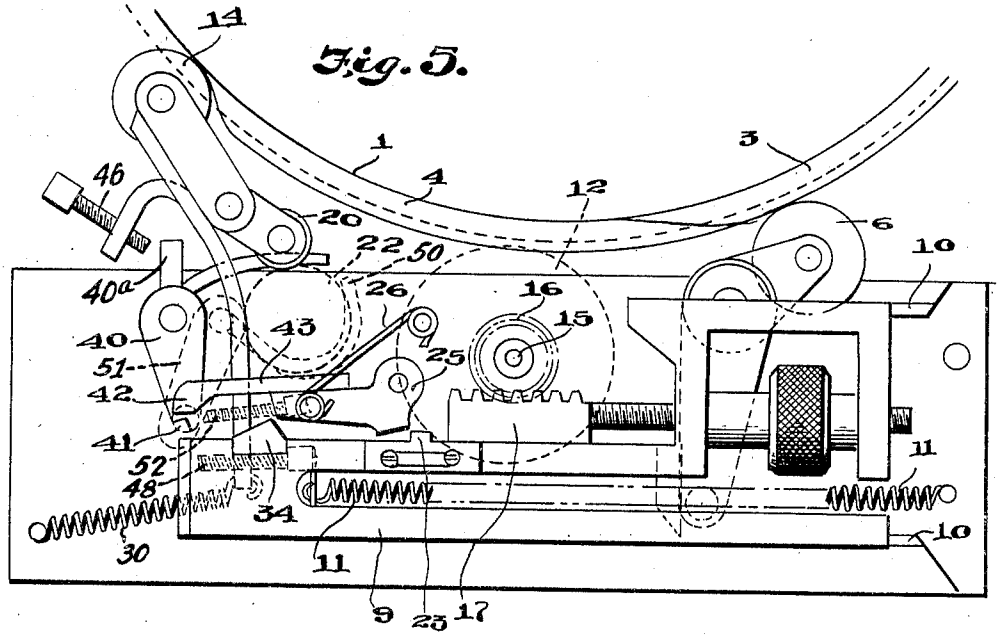


Fig. 5.



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ROTARY PRINTING MACHINE

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Fig. 6.

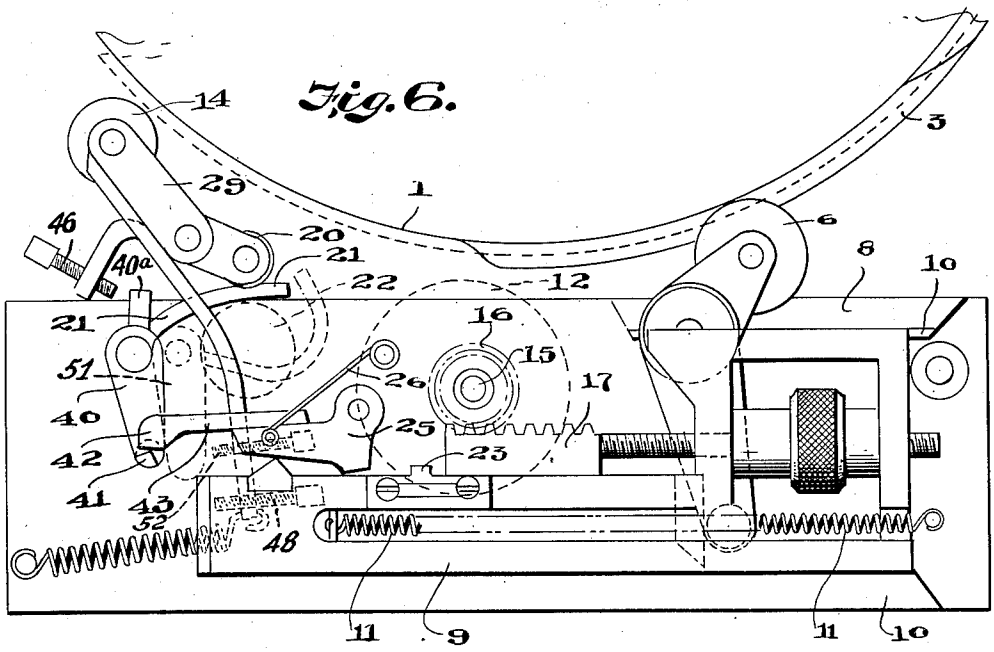
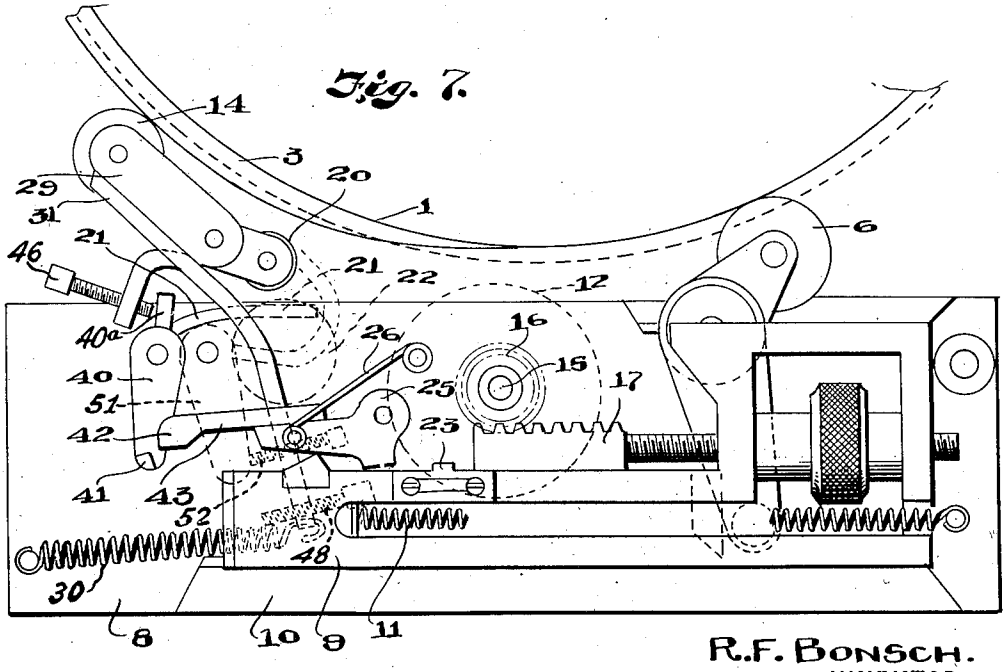


Fig. 7.



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Patented July 5, 1932 1,865,611

UNITED STATES PATENT OFFICE

RODOLPHE F. BONSCH, OF PARIS, FRANCE

ROTARY PRINTING MACHINE

Application filed April 5, 1930. Serial No. 441,778.

This invention relates to rotary printing machines and more particularly to mechanism for automatically controlling the pressure roller and for preventing improper feeding of paper to the machine.

On rotary printing machines of approved types now in commercial use, in instances where the paper fails to feed to the machine the type, cuts, or the like on the printing drum, which has previously been inked by the inking rollers, print on the pressure roller and upon the next cycle of operation of the machine, if paper is received by the machine the paper is printed on both sides, the reverse side being printed from the pressure roller, or at least smeared in such a way as to render it useless. Also such machines when the paper feeds improperly, such as arriving at the pressure roller after the drum has commenced its printing movement, the paper is printed at the wrong place and the printing is spoiled. These features cause considerable loss in time and paper and consequent expense, particularly in cases where such accidents frequently occur.

It is an object of the present invention to provide in a rotary printing machine means which will eliminate the waste of paper, time, etc. and overcome the disadvantages above enumerated.

The present invention comprehends a system of blocking automatically by means of cams which control the positioning of the pressure roller, and means for maintaining the pressure roller in its correct position for printing when paper is in the machine and moves the roller into an inactive position when there is no paper in the machine. The present invention also comprises means for preventing the paper from entering the machine when it arrives in print-receiving position if the printer roller has started in its printing movement.

With these objects in view, the invention consists in various features of construction and combination of parts, which will be first described in connection with the accompanying drawings, showing a rotary printing machine of the preferred form embodying the invention, and the features forming the invention will be specifically pointed out in the claims.

In the drawings:

Figure 1 is a fragmentary end elevation of the machine showing the paper feeding rollers and stop members for controlling the feeding of the paper in their positions immediately prior to the entrance of paper into the machine.

Figure 2 is a view similar to Figure 1 showing the paper entering the machine and the position of various parts at such time.

Figure 3 is a view similar to Figures 1 and 2 showing the position of the parts in a successive stage of operation of the machine.

Figure 4 is also an end view of the paper feeding mechanism showing it in the final position after printing.

Figures 5, 6 and 7 are views similar to Figures 1 to 4 respectively, showing the position of the parts when paper is not delivered to the machine during its operation.

Fig. 8 is a fragmentary view of the drum carrying head showing the cams carried thereby.

Fig. 9 is a detailed view showing the paper feeding rolls and paper stop fingers.

Referring more particularly to the drawings, the present invention, while relating broadly to rotary printing machines, relates more specifically to that type of printing machine embodying a rotary printing drum and a pressure roller or platen.

The printing drum-carrying head 1 has a cam band 2 attached thereto, which carries, on its periphery the cams 3 and 4. The cam 3 is positioned laterally of the cam 4 and is adapted for engagement with the cam roller 6 which is mounted on the carriage operating lever 7. The lever 7 is pivotally supported from the frame 8 and has its lower end connected with a carriage 9 which travels on the rail or runway 10 formed on the frame 8 of the rotary printing machine. A spring 11 is connected to the carriage 9 and to the frame 8 in such manner that it moves the carriage 9 to the right in Figure 1 of the drawings, or into its normal position.

The machine is shown in its initial position in Figure 1 of the drawings, and the

segmental drum carrying head 1 is rotated in any approved manner and revolves in the direction of the arrow A. At this time the pressure roller or platen 12 is down or spaced slightly from the perimeter of the drum 1 and is in an inactive nonimpression receiving position, at which time the cams 3 and 4 are approaching the cam rollers 6 and 14, respectively.

The pressure roller or platen 12 is eccentrically mounted on its shaft 15 and is rotated, by movement of the carriage 9 through the medium of a gear 16 mounted on the shaft 15 and a rack 17 carried by the carriage 9. The position of the rack 17 relative to the carriage 9 is regulated or adjusted by means of the adjusting screw and nut structure 18 so as to provide the proper rotation of the shaft 15 to properly position the eccentrically mounted platen 12 in relation to the drum 1 at the proper intervals of operation of the machine.

As the roller 1 rotates, the cams 3 and 4 press on or against the rollers 6 and 14 respectively and pressure on the roller 6 moves the carriage 9 to its extreme position to the left, of Figure 1 of the drawings, while the cam 4 engaging the roller 14 raises the paper feeding roller 20, lowers the paper stop fingers 21 and opens the space between the paper feeding roller 20 and the feed roller 22 to permit the passage of a sheet of paper therebetween and onto engagement with the pressure roller or platen 12. The carriage 9 has a tooth 23 thereon, which at this time engages the heel 24 of the pivotally mounted latch 25 and maintains this pivoted latch in its raised position as shown in Figure 1 of the drawings, against the tension of the spring 26.

The paper feeding roller 22 has a plurality of longitudinal grooves 23′ formed therein which receive the stop fingers 21 during the normal operation of the machine so that these fingers are so positioned that they will not interfere with the passage of the paper through the machine, however, at certain time, as will be hereinafter explained, these fingers are moved out of the grooves 23′ to form stops to prevent the passage of paper through the machine.

A sheet of paper as indicated at 28 is then introduced in the machine between the rollers 20 and 22 and as the cam 4 passes off the roller 14, the pivoted links 29 which carry this roller 14 as well as the roller 20 are moved on their pivots and permit the feeding roller 20 to engage the feeding roller 22, for feeding the paper through the machine. The roller 20 is moved into paper engaging position by means of the spring 30 connected to the arm 31 which is in turn connected to the pivoted link 29.

During the continued movement of the drum 1, or the operation of the machine the cam 3 moves out of engagement with the roller 6 which releases the pivoted lever 7 and permits the spring 11 to urge the carriage 9 to the right at which time the tooth 23 releases or moves out of engagement with the heel 24 of the latch 25. The latch 25 is then moved downwardly into the position as shown in Figure 3 of the drawings under the action of the spring 26 and it forms a stop for movement of the carriage by engagement with the abutment 34 carried by the frame of the carriage 9. This arrests the movement to the right of the carriage 9 and the movement of the carriage just described has been sufficient to bring the eccentric pressure roller or platen 12 in its raised position for proper engagement with the paper so that during the continued operation of the printing machine, the paper passing over the platen roller 12 will be printed by engagement with the type carried by the drum. The eccentric platen 12 and the various other parts remain in this position as shown in Figure 3 of the drawings during the continuation of the printing operation of the individual sheet and until the cam 4 engages the roller 14 and lifts the upper or pressure paper feeding roller 20 into its upper or open position and as shown in Figure 4 of the drawings for receiving an additional sheet of paper. However, the platen 12 remains in its upper or printing position until the cam 3 again engages the roller 6 and rocks the lever 7 to move the carriage 9 to the left against the tension of the spring 11. This movement to the left again rotates the platen 12 moving it into its open or spaced position, raises the latch 26 through the medium of the tooth 23, lowers the stop fingers 21, or rather permits the stop fingers to remain in their lowered positions, all for receiving paper and moving the various parts into the positions as shown in Figure 1 of the drawings.

The foregoing is the normal operation of the rotary printing machine, however should it so happen that during the operation of the machine papers not properly introduced at the time when all of the parts are positioned as shown in Figure 1, then to prevent the printing on the platen and subsequent printing on the reverse side of the paper, the following action of the various parts takes place.

As shown in Figure 5, when the cam 4 moves out of engagement with the roller 14, and no paper has been inserted in the machine, the stop fingers 21 move on their pivots, into the grooves 23′ in the roller 20 and form a barrier against the entrance of paper into the machine after the cycle of paper has started and consequently prevent the printing of a part of the desired subject matter on the paper, at which time the link 40 moves with the fingers 21 and places the stop or pin 41 beneath the head 42 on the arm 43. The arm 43 is carried by the latch 25 and when

the pin 41 engages beneath the head 42 it holds the latch 25 in its raised position out of the path of the abutment 34 and consequently permits the carriage 9 to return to the right of the frame, as shown in Figure 6 of the drawings when the cam 3 moves out of engagement with the roller 6. Since the latch 25 is held out of engagement with the abutment 34, the movement of the carriage to the right is not arrested as in the operation under normal conditions and moves the platen 12 into its lowermost position with respect to the drum, where all of the parts remain until the cam 4 again comes in contact with the roller 14 and forces the stop fingers 21 downwardly into the grooves 23 in the feed roller 22, which moves the link 40 to the left, on its pivot, releases the arm 43 and places the paper receiving members in position to receive paper, as shown in Figure 7 of the drawings, the only difference from the position of the parts at this time and the normal paper position being that the carriage 9 is at the right, which does not, however, influence in any way the subsequent operations of the machine, as the cam 3 again engages the roller 6 and moves the carriage to the left, as shown in Figure 1 of the drawings.

A spring 45 cooperates with the fingers 21 and tends to urge them upwardly. A screw 46 is carried by the arm 31 and engages the arm 40*a* at all times except at the intervals of operation as illustrated in Figures 2 and 5 of the drawings. At the intervals of operation as illustrated in Figure 2 of the drawings, the sheet of paper, passing between the rollers 20 and 22 holds the stop fingers 21 downwardly in the grooves 23′ against the tension of this spring 45. During the return movement of the carriage to the right at the time when no paper is in position, the adjustable screw 48 carried by the arm 31, and engaging the carriage maintains the paper feed open while the carriage is on its extreme right hand position and consequently any paper delivered to the machine can not be fed through as there is no pressure on the feed rolls.

A sheet stop 50 is provided for properly positioning the sheet of paper, and it has an arm 51 connected thereto, which is moved by the adjustable screw 52 carried by the arm 31 to move it into proper positions at the respective intervals during the operation of the machine.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown but that they may be modified widely within the invention as defined by the claims.

What is claimed is:

1. In a rotary printing machine, a printing drum, a platen, paper feeding rolls, means for moving said platen into inactive non-impression-receiving position and means for moving said paper feeding rolls into non-feeding position upon printing movement of the drum without paper in the machine, stop fingers, and means to move said stop fingers into paper stopping position to prevent feeding of paper into the machine during the interval between the starting of printing movement of the drum and the positioning of said paper feeding rolls in non-feeding position

2. In a rotary printing machine, a printing drum, a platen, paper feeding rolls, means for moving said platen into inactive non-impression receiving position and means for moving said paper feeding rolls into non-feeding position upon printing movement of the drum without paper in the machine, said means operative to automatically re-position the various parts for printing operation upon the completing of each printing cycle of the machine.

3. In a rotary printing machine, a printing drum, a platen, paper feeding rolls, means for moving said platen into inactive non-impression-receiving position and means for moving said paper feeding rolls into non-feeding position upon printing movement of the drum without paper in the machine, stop fingers, and means to move said stop fingers into paper stopping position to prevent feeding of paper into the machine during the interval between the starting of printing movement of the drum and the positioning of said paper feeding rolls in non-feeding position, said first and second named means operative to automatically re-position the various parts for printing operation upon the completing of each printing cycle of the machine.

4. In a rotary printing machine, the combination of a printing drum, an eccentrically mounted platen, a movable carriage, means for moving the carriage by rotation of the drum, means for moving the platen by movement of the carriage, a stop latch, and a tooth on the carriage for engagement with said latch to maintain it in unlatching position at predetermined times.

5. In a rotary printing machine, the combination of a printing drum, an eccentrically mounted platen, a movable carriage, means for moving the carriage by rotation of the drum, means for moving the platen by movement of the carriage, a stop latch, a tooth on the carriage for engagement with said latch to maintain it in unlatching position at predetermined times, and an abutment on said carriage for engagement with said latch upon release of the latch by said tooth to limit the movement of said carriage in a reversed direction to that in which it is moved by said drum operated means.

6. In a rotary printing machine, the combination of a printing drum, an eccentrically mounted platen, a movable carriage, means for moving the carriage by rotation of the

drum, means for moving the platen by movement of the carriage, a stop latch, a tooth on the carriage for engagement with said latch, an abutment on said carriage for engagement with said latch to maintain it in unlatching position at predetermined times, and an abutment on said carriage for engagement with said latch upon release of the latch by said tooth to limit the movement of said carriage in a reversed direction to that in which it is moved by said drum operated means, and paper arresting fingers for arresting feeding of paper into the machine at predetermined times, and means operated by movement of said paper arresting fingers for rendering said latch inactive.

In testimony whereof I affix my signature.

RODOLPHE F. BONSCH.