

July 29, 1941.

G. H. HIGGINS ET AL

2,250,534

PRINTING MACHINE

Filed Feb. 19, 1938

2 Sheets-Sheet 1

Fig. 1.

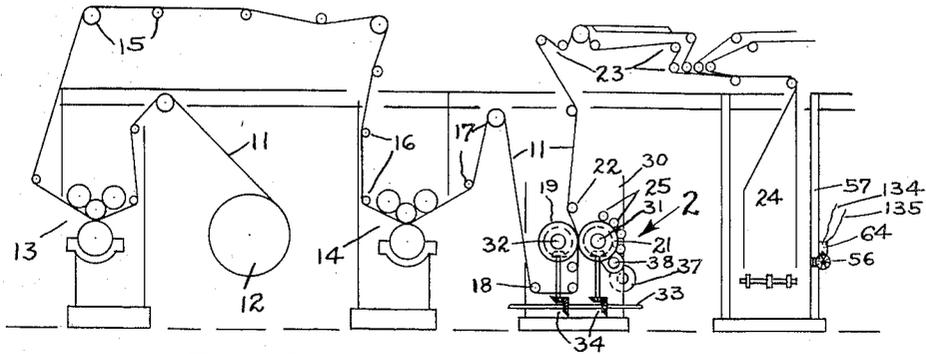


Fig. 2.

Fig. 3.

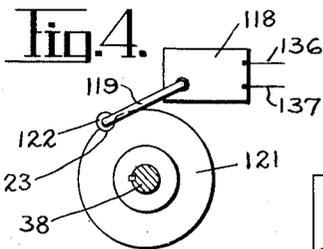
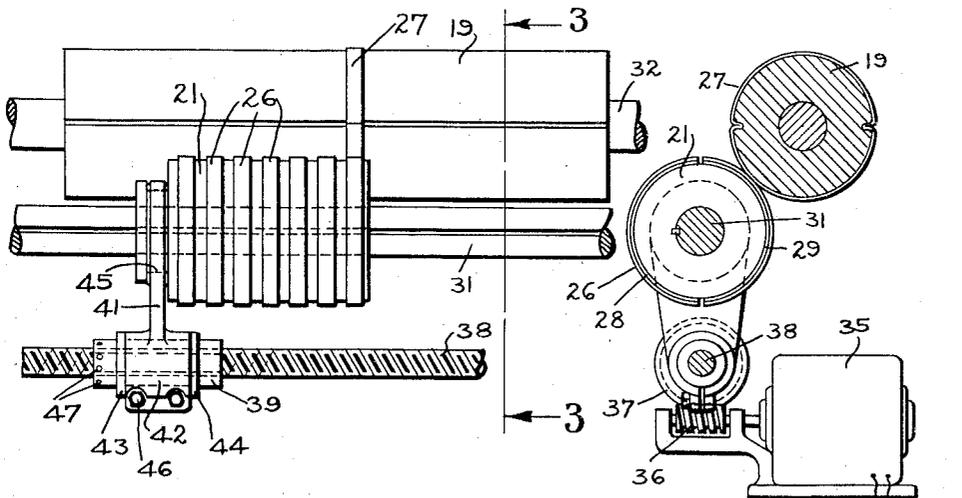
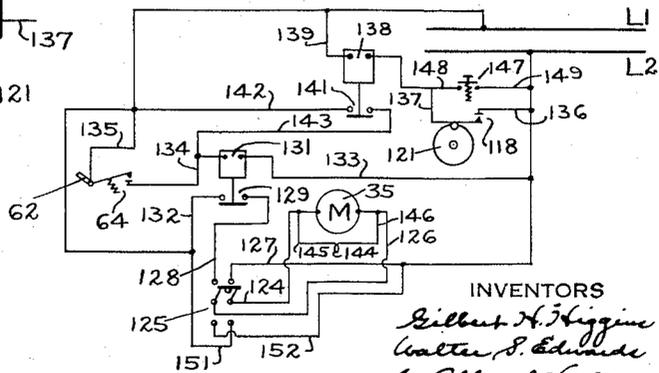


Fig. 10.



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2 Sheets-Sheet 2

Fig. 5.

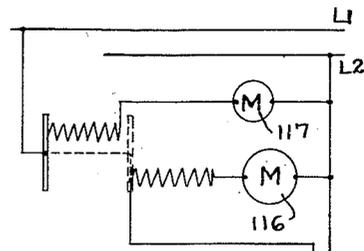
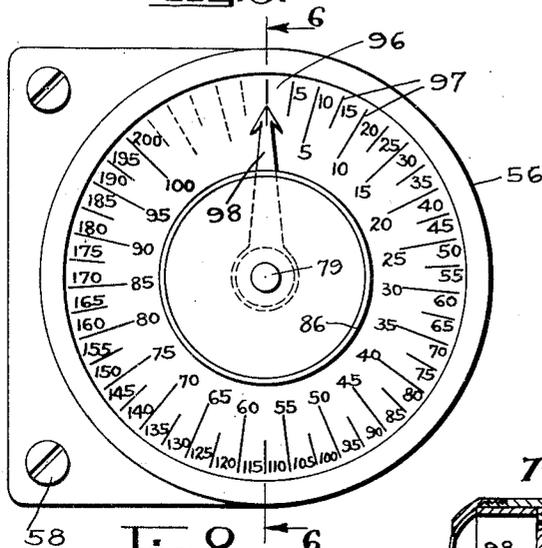


Fig. 6.

Fig. 8.

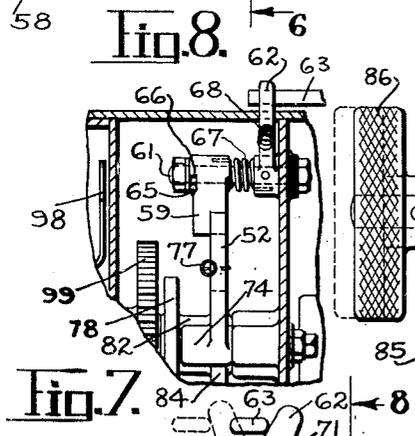


Fig. 7.

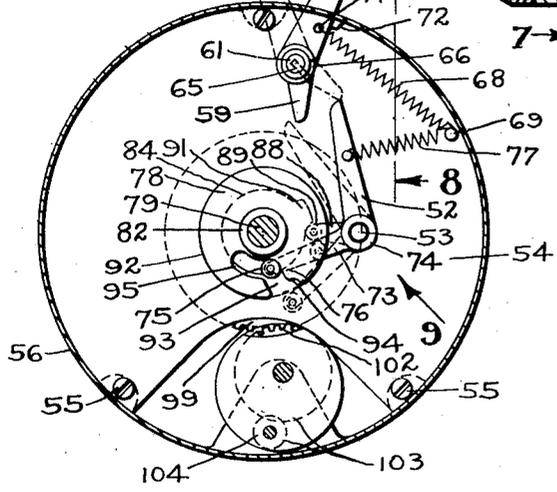
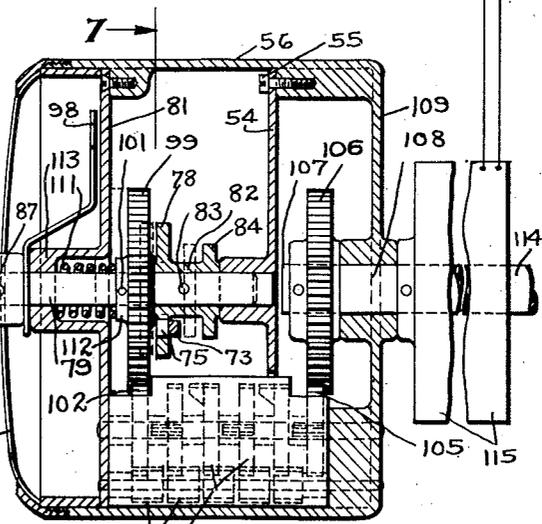
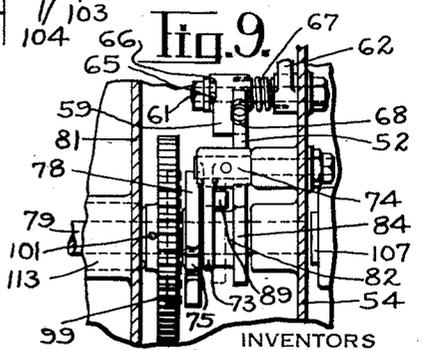


Fig. 9.



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# UNITED STATES PATENT OFFICE

2,250,534

## PRINTING MACHINE

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Application February 19, 1938, Serial No. 191,352

19 Claims. (Cl. 101—92)

This invention relates to improvements in printing machines and more particularly to an imprinting mechanism for a printing machine whereby a form for printing a heading or other imprinted matter may be positioned for printing on a running web a determined number of times corresponding to the desired number of products requiring such imprinting, and then another form may be automatically positioned to be printed, without stopping the printing machine, in which the device is incorporated.

An imprinting mechanism is particularly useful in printing different headings on separate batches of products, the body of each of which is the same but which require different headings. For instance, the rotogravure sections of different newspapers may all be printed alike except for the headings, and with the device of this invention a heading on the front sheet of the product may be printed for one newspaper, and when the desired number of sections has been printed, another heading will be automatically positioned for printing for another newspaper, without stopping the press. The device is also useful for printing advertising pamphlets, fashion sheets, and the like, where the dealer's name and address is imprinted, and the same advertising matter is to be used by several dealers.

One object of this invention is to provide an imprinting mechanism adapted to perform the above stated functions in cooperation with a printing machine.

Another object is to provide in an imprinting mechanism for printing headings on a running web, means to selectively dispose each of a plurality of printing forms for different headings, in printing position.

A further object is to provide in an imprinting mechanism having means to dispose printing forms for different headings selectively in printing position, mechanism to control the operation of this means to cause the change-over from one heading to another without stopping the printing machine with which the device cooperates.

A still further object is to provide means to control an imprinting mechanism of the above nature and which is adapted to time its operation in accordance with the number of products desired.

It is also an object of this invention to provide an imprinting mechanism of generally improved construction, whereby the same will be simple, durable and inexpensive in construction, as well

as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed.

An embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 diagrammatically illustrates a printing machine in which an imprinting mechanism embodying the principles and features of this invention has been incorporated;

Figure 2 is an enlarged face view of the imprinting mechanism looking in the direction of arrow 2 in Figure 1, but omitting for the sake of clearness, the inking mechanism associated and carried with the imprinting cylinder;

Figure 3 is a section on line 3—3 of Figure 2;

Figure 4 is a detail end view of a control cam;

Figure 5 is a face view of a product counting and control mechanism;

Figure 6 is a vertical sectional view taken through the mechanism shown in Figure 5, and generally along line 6—6 of that figure;

Figure 7 is a sectional view taken on line 7—7 of Figure 6;

Figure 8 is a fragmentary sectional view taken on line 8—8 of Figure 7;

Figure 9 is a fragmentary sectional view looking in the direction of arrow 9 in Figure 7; and

Figure 10 is an electric circuit diagram of the operating controls.

The printing machine illustrated in Figure 1 is adapted to print upon a web 11 running into the machine from a web roll 12, first on one side of the web by means of a first printing unit 13, then by means of rollers 15 and 16, to feed and guide the web 11 from the unit 13 to a second printing unit 14 to have it printed on the other side, and then, by means of rollers 17 and 18, to feed it between cooperating cylinders 19 and 21 of the imprinting mechanism of this invention. From the cylinders 19 and 21, the printed and imprinted web is then guided by rollers 22 and 23 into position to be associated with other webs, which are then folded in a folding mechanism 24.

The imprinting mechanism of this invention includes the impression cylinder 19 and the form cylinder 21 with suitable inking mechanism including rollers 25 associated and carried with the form cylinder 21 in the usual manner. Herein, the form or imprinting cylinder 21 is shown in Figure 2 as being provided with a plurality

of annular printing faces 26, each being capable of printing a different heading upon the web as it is fed between the cylinders 19 and 21, in cooperation with an annular impression pad 27 on the cylinder 19. In Figures 2 and 3, seven heading printing faces 26 are shown formed on one plate 28 on the cylinder 21, and seven more are indicated as being formed on another plate 29 thereon and an impression pad 27 is provided on each side of the cylinder 19 in position to cooperate with the selected heading face, for imprinting on products which are not collected. By omitting a section of the impression pad 27 on the cylinder 19 and its cooperating plate 28 or 29 on the cylinder 21, the mechanism would be adapted to imprint on products that are to be collected.

As shown in Figure 2, only one heading printing face 26 will cooperate with the impression pad 27 at a time and this same heading will continue to be printed until the cylinder 21 is moved axially relatively to the cylinder 19 an amount equal to the distance from the center of one printing face 26 to the center of the adjacent one. While the drawings illustrate only one cylinder 21 as cooperating with the cylinder 19 to imprint a heading on the web portion constituting one sheet of a product, it will be understood that one or more additional cylinders 21 may be provided for portions of the web running over other portions of the cylinder 19 if it is desired to print headings thereon.

As the cylinder 21 is adapted to print only relatively narrow headings, it will be long enough to carry only the desired number of headings, either more or less than the seven shown, and will consequently be considerably shorter than the cylinder 19. In order to enable the cylinder 21 to be moved axially to position each heading printing face 26 either selectively or in sequence, as desired, it is mounted upon a shaft 31 which extends between the usual machine side frames, indicated at 39 in Figure 1, of the printing machine. The cylinder 21 is keyed to the shaft 31 in such a manner as to be rotatable therewith while being freely slidable therealong. The shaft 31 and the shaft 32 of the cylinder 19 are rotated in unison by being driven from a shaft 33 suitably driven from the source of power for the printing machine by the usual gearing as indicated at 34 in Figure 1. It will be understood that the inking mechanism, including the inking rollers 25 will be carried along the shaft 31 with the cylinder 21, these being associated, if desired, as shown in patent to Halliwell No. 1,549,869, issued August 18, 1925.

The means to axially move the cylinder 21 along its shaft 31 to dispose the selected heading printing face 26 in line with the cooperating impression pad 27 on the cylinder 19, includes an electric motor 35, Figures 3 and 10, which through a worm 36 on the motor shaft and a worm wheel 37 is adapted to rotate a threaded shaft 38, also extending between the usual machine side frames 39 and to an end of which the worm wheel 37 is keyed. The pitch of the threads on the shaft 38 is preferably made equal to the spacing between the centers of the printing faces 26 so that one revolution of the shaft 38, by the motor 35, will advance the cylinder 21 to dispose the next heading printing face in printing position.

The cylinder 21 is connected to the shaft 38 to be axially moved thereby, by an internally threaded cylindrical sleeve 39 mounted on the shaft 38, 75

and an arm 41 adapted to be clamped to the sleeve 39 by a split sleeve 42 formed thereon and disposed between spaced apart collars 43 and 44 on the sleeve 39. The arm 41 is bifurcated to embrace a reduced hub portion 45 extending from one end of the cylinder 21. By the above structure, the cylinder 21 may be axially adjusted to align the faces 26 with the pad 27, by first unclamping the split clamp sleeve 42 from the sleeve 39 by loosening the clamp screws 45, and then turning the sleeve 39 on its shaft 38 by means of wrench holes 47.

In addition to the operation of the motor 35 to properly dispose a face 26 relatively to the pad 27, it is desirable to control the operation of the imprinting unit, or cylinders 19 and 21, in accordance with the number of copies or products desired, having each particular heading. Herein is shown cooperating mechanism, including electrical controls for the motor 35, whereby the operation of the cylinders 19 and 21, in respect to the number of a particular heading printed thereby, and the operation of the motor 35 to change the heading by axially moving the cylinder 21, may be timed and controlled.

Mechanism for counting the number of headings printed by the cylinders 19 and 21 and for timing the operation of the motor 35 to move the cylinder 21 is depicted in Figures 4 to 9 inclusive, and as shown in Figures 5 and 6, is provided with a dial with a cooperating index finger that may be manually set at the numeral corresponding with the number of copies on which the heading in printing position is to be printed. As the printing machine runs, the index moves backward toward the zero point, its position during the run always indicating the additional copies required to complete the desired number.

The counting mechanism includes an arm 52 pivoted on a pin 53 supported on a partition plate 54 secured by screws 55 within a casing 56. The casing 56 is adapted to be secured upon a machine frame portion 57, preferably adjacent the folding mechanism 24 by screws 58 (Figures 1 and 5). The arm 52 is adapted to engage a trip arm 59 pivotally mounted on a shaft 61 supported on the partition plate 54, and which actuates an electric switch actuating arm 62, also pivotally mounted on the shaft 61. The arm 62 is adapted to engage the operating lever arm 63 of a spring opened switch 64, mounted on the machine frame member 57 adjacent the casing 56. The trip arm 59 is connected to the shaft 61 for slight lost rotative movement relatively thereto by a pin 65 in the shaft 61 cooperating with the arm 59 in a recess 66. The arm 59 is maintained against the pin 65 by a spring 67 coiled about the shaft 61 and having its ends secured respectively to the arms 59 and 62.

A spring 68 is connected to a post 69 supported on the plate 54 and a post 71 on the arm 62, to urge the arm 62 against a stop 72 to permit the lever arm of the switch 64 to be moved by its spring into open position. The free end of the arm 59 is adapted to lie in the path of swinging movement of the free end of the arm 52 to be engaged thereby when it is swung in one direction to operate the lever arm 63 of the switch 64 to close it, and then to be released, after a short interval, to permit the switch 64 to open.

Another arm 73, also pivoted upon the pin 53, and connected through a hub or sleeve 74 to the arm 52 to swing the same, has a roller 75 mounted upon its free end 76. A spring 77 connected

to and extending from the arm 52 to the post 69, secured to the plate 54, is tensioned to constantly urge the arm 52 into switch actuating or closing position, and the roller 75 against a cam 78 mounted upon a shaft 79 extending between and journaled in a casing cover plate 81 and the plate 54. The cam 78 is shown formed on one end of a sleeve 82 secured to the shaft 79 by a pin 83. Another cam 84 is shown formed on the other end of the sleeve 82. The shaft 79 is extended beyond the cover plate 81 and through a glass lens 85 and has a manipulating knob 86 secured thereto by a pin 87. Arrangement is herein shown whereby rotation of the shaft 79 by the knob 86 clockwise, as shown in Figure 7 will, by means of the cam 84, rock the arm 73 to swing the arm 52 against the tension of the spring 77, to set it in position to actuate the arm 63 of the switch 64, to close the same and through it the circuit in which this switch is located.

The means whereby the above setting of the arm 52 in switch actuating position is accomplished by the cam 84 is herein shown as including an arm 88 formed on and extending from the sleeve 74 and having a roller 89 upon its end adapted to ride on the cam 84. The cam 84 is provided with a camming lug 91 which, when the cam is rotated as above referred to, through the arm 88 rotates the sleeve 74 and with it the arms 52 and 73 into the dotted position shown in Figure 7. As herein shown it is necessary to slide the shaft 79 axially to the left as shown by dotted lines in Figure 6 to position the cam 84 in respect to the arm 88, so that the roller 89 will be disposed in the rotative path of the lug 91 when the cam is rotated by the knob 86 through the shaft 79. Such axial movement of the shaft 79 also moves the cam 78 in respect to the arm 73 so that the roller 75 is disposed out of the path of the periphery of this cam and whereby the arm 73 may be swung into the dotted position above referred to. After the shaft 79 has been rotated to move the lug 91 past the roller 89 the shaft may be moved axially, to the right in Figure 6, whereupon the roller 75 on the arm 73 will be retained in set position as shown by the above referred to dotted lines in Figure 7.

While the roller 75 is disposed and riding on the periphery 92 of the cam 78, the shaft 79 may be rotated counter-clockwise, as shown in Figure 7, and as soon as the roller 75 drops into a cut-out 93 provided in the cam 78, the arms 52 and 73 will swing into the position shown in full lines in Figure 7 and the switch 64 will be momentarily closed. To retard this action and hold the switch 64 closed a short interval of time, a step 94 is provided in the cut-out 93 which step 94 is engaged by the roller 75 as it enters the cut-out. This step 94 acts to temporarily cause the arms 52 and 73 to pause in their swinging movement and through them to hold the switch 64 in closed position a short interval of time. Continued rotation of the shaft 79 counter-clockwise after the roller 75 has dropped into the cut-out 93 is permitted by providing a slot 95 in the cam 78. Holding the switch 64 closed for a determined interval of time as above described maintains the motor 35 running during this interval, to axially move the cylinder 21 in respect to the cylinder 19 to position another printing face 26 in printing relation with the pad 27.

The casing 56 is provided with a dial face 96 having suitable indicia 97 thereon corresponding to the maximum number of copies, or products

which may be printed from one heading. A pointer 98 secured to the knob 86 swings over the face 96 and cooperates with the indicia 97, to indicate the setting of the switch actuating arm 52 by the cam lug 91 and the position of the roller 75 relatively to the cut-out 93 in the cam 78. Obviously, rotation of the shaft 79 counter-clockwise will cause the cam 78 and the roller 75 to release the arm 52 as above described, and therefore, by rotating the shaft 79 in proportion to the number of products being imprinted, the arm 52 may be controlled to effect the closing of an electric circuit by the switch 64, to start the motor 35 and axially slide the cylinder 21 to dispose another face 26 in printing position, after the desired number of product headings have been printed by the previously positioned face. In view of this, the pointer 98 may be set at an indicia mark 97 corresponding to the number of products desired imprinted, before the arm 52 actuates the switch 64 to close it.

As herein shown, two rows of indicia marks 97 are provided, the outer row indicating the number of products printed, when the sheets constituting the same are not collected, and the inner row indicating the number of products when the sheets are collected before folding them. It will be understood that when printing uncollected products, it is the usual practice to print from forms that extend substantially half-way around the printing cylinder and duplicate forms are used, thus printing two identical products during each cylinder revolution. With such an arrangement, two pads 27 will be employed and duplicate printing faces 26 will be positioned on opposite sides of the cylinder 21. For collected products, the printing forms likewise extend substantially half-way around the cylinder, but the two forms are different, one printing one portion of the product, and the other printing another portion which is collected and folded with the first portion to form a complete product. For this arrangement, a heading is usually printed on only one of each pair of sheets and a single pad 27 and a single face 26 will be employed. When two pads 27 are used, the inner row of indicia marks 97 are observed and when only one pad 27 is used, the outer row is observed.

The shaft 79 obviously must be slowly rotated in a counter-clockwise direction (see Figure 7), to permit the pointer 98 to make substantially one revolution while a desired number of products is being printed, for instance 200,000. Herein, the shaft 79 is rotated by a gear 99, secured to the shaft 79 by a pin 101 so that the gear 99 will be unmeshed from a gear 102 when the knob 86 is manipulated by pulling it outwardly to reset the mechanism. The gear 99 is driven by the last gear 102 of a series of reduction gears 103 and pinions 104 arranged in the well known manner of the common rotation counters, such as those of the "Veeder" type, the first one 105 of the series of gears 103 being drivingly connected to a gear 106 secured to the end 107 of a shaft 108 extending beyond the casing end plate 109.

The shaft 79, with the gear 99, the sleeve 82 carrying the cams 78 and 84, and the knob 86 is constantly urged to the right as shown in Figure 6 by a spring 111 coiled about the shaft 79 and reacting between the hub 112 of the gear 99 and the interior surface of a bearing boss 113 provided on the casing cover 81. The outer end 114 of the shaft 108 is drivingly connected to the drive of the printing machine by a mag-

netic clutch 115, whereby it will be driven in synchronism with the cylinders 19 and 21. The magnetic clutch 115 is shown connected in parallel with the circuit of the printing machine operating motor 116 (see Figure 6), which motor 116 constitutes a means to effect the producing speed of the machine. As shown in Figure 6, the motor 116 is the main full speed machine driving motor, while another motor 117 is the slow speed driving motor which is used only when starting the machine and before actual production, and also for preparing the machine for production. Herein, the magnetic clutch 115 is energized only when the motor 116 is placed in operation to operate the machine in the actual production of products. It will be understood that the clutch 115 may be arranged to be actuated by any other product controlling means so that an actual count of, and control by, the products being delivered will be obtained. By means of a clutch arrangement, constituted by the gear 99 and the gear 102, the shaft 79 may be pulled axially by the knob 86 to disconnect the driven gears 103 therefrom, when it is desired to set the mechanism for the operation of counting the products to be imprinted and of controlling the electric circuit including the switch 64 as above described.

Another switch 118 (see Figures 4 and 10) is mounted on a machine frame 30 adjacent to one end of the threaded shaft 38 in position to have its operating arm 119 affected by a timing disc 121 secured on one end of the shaft 38. The switch operating arm 119 is provided with a roller 122 adapted to drop into a notch 123 formed in the periphery of the disc 121, when a face 26 is disposed in printing position in respect to the pad 27 by the axial movement of the cylinder 21 by the motor 35.

Referring now to the electric circuit diagram shown in Figure 10, the switch 64 and the switch 118 are shown in control of the operation of the motor 35, so as to cause it to be operated to axially move the cylinder 21 with respect to the cylinder 19 and position another printing face 26 in cooperating relation with the pad 27 on the cylinder 19, after the desired number of headings have been imprinted by the face 26 then in operating position, and then to stop the motor. As herein shown, the motor 35 is connected by a conductor 124 to one hinge clip of a double throw switch 125 and by a conductor 126 to the other hinge clip of the switch 125, which is normally closed in the "up" position. One upper jaw clip of the switch 125 is connected by a conductor 127 to the line wire L2 and the corresponding upper jaw clip is connected by a conductor 128 to a switch 129 operated by a solenoid 131. The other terminal of the switch 129 is connected by a conductor 132 to the line wire L1. The solenoid 131 is connected by a conductor 133 to the line wire L2 and by a conductor 134 to one terminal of the switch 64. The other terminal of the switch 64 is connected by a conductor 135 to the line wire L1, whereby closing of the switch 64 will start the motor 35 to axially move the cylinder 21 by energizing the solenoid 131 to close the switch 129. The switch 64 is maintained closed as hereinbefore described to insure sufficiently long operation of the motor 35 to rotate the timing cam 121 and cause the switch 118 to close.

One terminal of the switch 118 is connected by a conductor 136 to the line wire L2, and the other by a conductor 137 to one terminal of a

solenoid 138, the other terminal of which is connected to the line wire L1 by a conductor 139. The solenoid 138 actuates a switch 141 which has one of its terminals connected by a conductor 142 to the line wire L1 and the other by a conductor 143 to the solenoid 131. A signal lamp or bell 144 is connected by conductors 145 and 146 in parallel with the motor 35, so as to indicate when the latter is energized and in operation to move the cylinder 21. It will be understood by those versed in the art that if desired arrangements can be made to maintain the signal light energized after the cylinder moving operation has been completed to show the attendant that the mechanism has not been reset.

As shown in Figure 10, the switches 64 and 118 are normally open and therefore the motor circuit is normally open, due to the solenoid 131 being de-energized. This condition exists when the counting and control mechanism is set for a desired number of products and the printing cylinders 19 and 21 are in operation and printing. At the completion of the desired number of imprints, the roller 75 on the arm 73 drops into the cut-out 93 and the switch 64 is momentarily closed to complete the circuit to the solenoid 131, which in turn closes the switch 129 to start the motor 35 to move the cylinder 21. At this time, the electric signal lamp, or bell 144 is energized to indicate to the machine attendant that the cylinder moving operation has started and that the imprinting of the required number of headings has been completed, so that he will watch the delivered products to ascertain when the new headings start, and will also reset the mechanism in the casing 56 by manipulation of the knob 86 for the desired number of the headings to be imprinted by the newly positioned face 26.

As the threaded shaft 38 rotates to move the cylinder 21, the roller 122 is lifted from the cam notch 123, closing this switch 118, whereupon the solenoid 138 is energized. Energization of the solenoid 138 closes the switch 141 to maintain the solenoid 131 energized and the motor 35 in operation, which motor operation will continue until the switch 141 is again opened by the movement of the roller 122 into the notch 123, when the shaft 38 has completed one revolution, at which time the next succeeding printing face 26 on the cylinder 21 will be in printing position. During the period of motor operation to move the cylinder 21, the signal light 144 is maintained energized and when this operation is completed indicates this condition to the attendant by becoming de-energized, due to the opening of the switch 129.

When it is desired to continue the operation of the motor 35 to move the cylinder 21 to dispose a face 26, other than the next succeeding one, in printing position, a push button switch 147 is actuated to maintain a circuit including conductors 148 and 149 across the switch 118, to continue energization of the solenoids 131 and 139. By means of the switch 147, any one of the faces 26 may be selected. After all of the heading faces 26 have been printed, the cylinder 21 may be returned to its original position by reversing the motor 35. This is accomplished by opening the switch 125 and closing it in the "down" position. One of the "down" jaw clips of the switch 125 is connected by a conductor 151 to the line wire L1 and the other is connected by a conductor 152 to the line wire L2.

The closing of the switch in the "down" position energizes the motor 35 for operation in the "reverse" direction, and causes the cylinder 21 to move from right to left. It is obvious to one versed in the art that suitable limit switches may be used to prevent movement of the cylinder 21 beyond its working range in either direction, but in order to avoid complication they are not shown herein.

The pointer 98, which constantly rotates counter-clockwise while the cylinders 19 and 21 are printing headings, reaches the zero point at the same time the roller 75 reaches the cut-out 93 to cause actuation of the arms 59 and 62 to close the switch 64 and start the axial movement of the cylinder 21. The machine attendant, observing that the indicating lamp 144 is energized, watches for, and removes the few products delivered while the cylinder 21 is being moved and resets the pointer 98 to the number of products required to be imprinted by the next face 26, disposed in printing position. In the interim, the pointer 98 may have moved beyond the zero mark on the dial 96 and newly printed copies may have been delivered. Indicating marks 153 are provided beyond the zero mark, between it and the marks 97 indicating the maximum number, whereby the attendant may estimate the number of imprinted products having been delivered, and when resetting the pointer 98 to the number desired, he may reset it short of the mark 97 indicating this number, in accordance with this estimate.

The operation of a printing machine having the imprinting mechanism of this invention incorporated therein includes, the forming of a plurality of annular printing faces 26 upon plates and mounting them on a form cylinder 21 and the provision of suitable cooperating annular impression pads 27 on the impression cylinder 19. The web 11 is then threaded through the entire machine at slow speed by operation of the motor 117. The pointer 98 is then set at the indicia mark 97 corresponding with the number of products to be imprinted by the face 26 with the heading first selected, and the motor 116 is started, whereby the magnetic clutch 115 will be energized to apply rotation to the shaft 108 and, through the gearing 103 and gear 99, to the shaft 79, the direction of rotation of the shaft 79 being counter-clockwise with reference to Figures 5 and 7.

Manual axial and rotative movement of the shaft 79 from the zero mark to set the pointer 98 to count a desired number of products, rotates the cam 84 clockwise moving the arms 52 and 73 from the position shown in full lines in Figure 7 to the dotted position, so that the cam 78 may engage the roller 75 of the arm 73, and maintain the arm 52 in a position where it can engage the arm 59 to effect operation of the switch 64 when the pointer 98 is returned to the zero mark on the dial by completion of the printing of the desired number of impressions. The movement of the pointer 98 to the zero mark also moves the roller 75 into position to drop into the cut-out 93, thereby permitting movement of the arm 73 to the full line position shown in Figure 7.

The cylinder moving motor 35 is then started, as above described, to dispose another face 26 in printing position. By the use of the above described imprinting mechanism, the printing machine can be continuously operated at high speed while headings are being imprinted and

during the axial movement of the cylinder 21. The change-over from one heading to another may be effected without the slightest interruption of machine operation, and with but comparatively few copies or products being wasted, the number being much less than the number wasted when such a change-over requires stopping and starting of the machine with its attendant loss of time.

While there has been disclosed in this specification one form in which the invention may be embodied, it will be understood that it may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, and it will be further understood that each and every novel feature and combination present in or possessed by the mechanism herein disclosed forms a part of the invention included in this application.

What we claim is:

1. In a web printing machine, an imprinting mechanism including, a form cylinder carrying a plurality of forms axially spaced apart along its periphery, an impression cylinder having an impression surface adapted to cooperate with one of said forms, said cylinders being substantially of the same diameter, means to rotate said cylinders in unison and at substantially the same speed, means to axially move said form cylinder with respect to the impression cylinder to bring the several forms selectively into engagement with the said impression surface, and means adjustable in accordance with the number of products to be printed by a selected form, to control the cylinder moving means.

2. In a web printing machine, an imprinting mechanism including, a form cylinder carrying a plurality of printing forms axially spaced apart along its periphery, an impression cylinder having an impression surface adapted to cooperate with any selected one of said forms, said cylinders being substantially of the same diameter, means to rotate said cylinders in unison and at substantially the same speed, power driven mechanism to axially move said form cylinder relatively to said impression cylinder to dispose a selected form into printing cooperation with said impression surface while the printing machine is in operation, and control means to time the action of said power driven mechanism.

3. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different printing forms axially spaced apart along its periphery, an impression cylinder having an impression surface arranged to cooperate with any selected one of said forms to print products, means to rotate said cylinders at substantially the same speed, power driven means to axially move said form cylinder relatively to the impression surface to dispose any printing form in printing cooperation therewith, and means to control the actuation of said cylinder moving means, said control means being operable to start the actuation of said cylinder moving means when a desired number of products have been printed by the previously selected form.

4. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different forms axially spaced apart along its periphery, an impression cylinder having an impression surface to cooperate with any one of said forms to print products, means to rotate said cylinders at substantially the same speed, power driven means to axially move said

form cylinder relatively to said impression cylinder to dispose any one of said forms in printing position with respect to said impression surface, and settable means to control the number of products printed by the selected form and to control the means for moving the form cylinder axially.

5. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different forms axially spaced apart along its periphery, an impression cylinder having an annular impression surface in cooperation with a first selected one of said forms to print products, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder to dispose another one of said forms in printing relation with said impression surface, and control means adjustable in accordance with the number of products to be printed, to control the actuation of the power driven cylinder moving mechanism.

6. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different forms axially spaced apart along its periphery, an impression cylinder having an annular impression surface in cooperation with a first selected one of said forms to print products, means to rotate said cylinders at substantially the same speed, automatically-operated power driven mechanism to axially move said form cylinder to dispose another one of said forms in printing relation with said impression surface, and settable means to count the number of products being printed and to actuate said form cylinder moving mechanism to present another of its forms in printing position after a desired number of products have been printed by the first selected form.

7. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of annular printing forms thereon, an impression cylinder having an annular impression surface adapted to cooperate with only one of said forms, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder relatively to the impression cylinder to selectively dispose one of the forms in printing relation with said impression surface, controlled power driving means for said mechanism, a starting control for said driving means, means to actuate said control when a desired number of forms has been printed, a stopping control for said driving means, and means to actuate said stopping control when the desired form is in printing position.

8. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of annular printing forms thereon, an impression cylinder having an annular impression surface adapted to cooperate with only one of said forms, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder relatively to the impression cylinder to selectively dispose one of the forms in printing relation with said impression surface, controlled power driving means for said mechanism, a starting control for said driving means, means adapted to be set to actuate said control means to start the mechanism when a desired number of forms have been printed, a mechanism stopping control for said driving means, and means to actuate said stopping control when the desired form is in printing position.

9. In a web printing machine, an imprinting

mechanism including, a form cylinder having a plurality of annular printing forms thereon, an impression cylinder having an annular impression surface adapted to cooperate with only one of said forms, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder relatively to the impression cylinder to selectively dispose one of the forms in printing relation with said impression surface, controlled power driving means for said mechanism, a starting control for said driving means, means adapted to be set to actuate said control means to start the mechanism when a desired number of forms have been printed, and means actuated by said control means when said cylinder moving means is started to indicate when the mechanism is in operation.

10. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of annular printing forms thereon, an impression cylinder having an annular impression surface adapted to cooperate with only one of said forms, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder relatively to the impression cylinder to selectively dispose one of the forms in printing relation with said impression surface, controlled power driving means for said mechanism, a starting control for said driving means, means adapted to be set to actuate said control means to start the mechanism when a desired number of forms have been printed, means actuated by said control means when said cylinder moving means is started to indicate when the mechanism is in operation, a mechanism stopping control for said driving means, and means to actuate said stopping control when the next succeeding form is in printing position.

11. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different forms axially spaced apart along its periphery, an impression cylinder having an annular impression surface in cooperation with a first selected one of said forms to print products, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder in one direction to dispose said forms successively in printing relation with said impression surface, control means adjustable in accordance with the number of products to be printed, to control the actuation of the power driven cylinder moving mechanism, and means to move said form cylinder in the other direction toward its initial position.

12. In a web printing machine, an imprinting mechanism including, a form cylinder having a plurality of different forms axially spaced apart along its periphery, an impression cylinder having an annular impression surface in cooperation with a first selected one of said forms to print products, means to rotate said cylinders at substantially the same speed, power driven mechanism to axially move said form cylinder in one direction to dispose said forms successively in printing relation with said impression surface, settable means to count the number of products being printed and to actuate the form cylinder moving mechanism to present another of its forms in printing position after a desired number have been printed by the positioned form, and means to move said form cylinder in the other direction toward its initial position.

13. In a printing machine, an imprinting mechanism including, a first cylinder having an impression surface, a second cylinder having a plurality of axially spaced apart printing forms thereon, means to rotate said cylinders in unison and at substantially the same speed, means to move said second cylinder axially with respect to the first cylinder to dispose a selected one of said printing forms in printing position relatively to the impression surface on said first cylinder including an electric motor, start and stop controls for said motor, a start control actuating means adjustable in accordance with the number of imprints desired to be made and to actuate said start control to start the motor when such a number of imprints have been made, and a stop control actuating means to actuate said stop control to stop said motor when the selected printing form is in printing position.

14. In a printing machine, an imprinting mechanism including, a first cylinder having an impression surface, a second cylinder having a plurality of axially spaced apart printing forms thereon, means to rotate said cylinders in unison and at substantially the same speed, means to move said second cylinder axially with respect to the first cylinder to dispose a selected one of said printing forms in printing position relatively to the impression surface on said first cylinder including an electric motor, start and stop controls for said motor, a start control actuating means driven in synchronism with said cylinders and being adjustable in accordance with the number of imprints desired to be made and to actuate said start control to start the motor when such a number of imprints have been made, and a stop control actuating means driven by said motor to actuate said stop control to stop said motor when the selected printing form is in printing position.

15. In a printing machine, an imprinting mechanism including, a first cylinder having an impression surface, a second cylinder having a plurality of axially spaced apart printing forms thereon, means to rotate said cylinders in unison and at substantially the same speed, means to move said second cylinder axially with respect to the first cylinder to dispose a selected one of said printing forms in printing position relatively to the impression surface on said first cylinder including an electric motor, start and stop controls for said motor, a start control actuating means adjustable in accordance with the number of imprints desired to be made and to actuate said start control to start the motor when such a number of imprints have been made, a stop control actuating means to actuate said stop control to stop said motor when the selected printing form is in printing position, an electric motor for driving the machine, and means, actuated only when said machine motor is operated, to drive the starting control actuating means for said cylinder moving motor.

16. In a printing machine, an imprinting mechanism including, a first cylinder having an impression surface, a second cylinder having a plurality of axially spaced apart printing forms thereon, means to rotate said cylinders in unison and at substantially the same speed, means to

move said second cylinder axially with respect to the first cylinder to dispose a selected one of said printing forms in printing position relatively to the impression surface on said first cylinder, including an electric motor, start and stop controls for said motor, a start control actuating means adjustable in accordance with the number of imprints desired to be made and to actuate said start control to start the motor when such a number of imprints have been made, a stop control actuating means to actuate said stop control to stop said motor when the selected printing form is in printing position, and means to cause said motor to continue in operation after said stop control is in motor stopping position whereby any succeeding printing form may be selected.

17. In a web printing machine, an imprinting mechanism including a pair of cooperating cylinders, one of said cylinders having a plurality of different printing forms on its periphery and spaced apart lengthwise thereof, the other of said cylinders having a raised annular impression surface thereon for cooperation with any one of said printing forms, means to rotate said cylinders at substantially the same speed, and power driven mechanism timed by operation of the machine, to move the form cylinder axially to selectively position any one of said printing forms into cooperating relation with said impression surface.

18. In a web printing machine, an imprinting mechanism including a pair of cooperating cylinders, one of said cylinders having a plurality of different printing forms on its periphery and spaced apart lengthwise thereof, the other of said cylinders having a raised annular impression surface thereon for cooperation with any one of said printing forms, means to rotate said cylinders at substantially the same speed, power driven mechanism timed by operation of the machine, to move the form cylinder axially to selectively position any one of said printing forms into cooperating relation with said impression surface, said mechanism including a rotatable threaded rod, and a threaded member connected to the axially movable cylinder and cooperating with said threaded rod to be moved thereby as it is rotated.

19. In a printing machine, an imprinting mechanism including, a form cylinder having a plurality of different printing forms axially spaced apart along its periphery, an impression cylinder having an impression surface adapted to cooperate with any one of the said forms to print products, means to rotate the said cylinders at substantially the same peripheral speed, mechanism to axially move the form cylinder to dispose any one of the forms in printing cooperation with the impression surface, control means adjustable in accordance with the number of products to be printed to vary the time when the said cylinder moving mechanism is to operate, and means to automatically stop the operation of said cylinder moving mechanism after a printing form has been moved into printing position.

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