United States Patent

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[33] **Germany**
[31] **Sch 38 741**

Continuation-in-part of application Ser. No. 745,577, July 17, 1968, Continuation-in-part of application Ser. No. 621,229, Mar. 7, 1967, now abandoned.

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[54] CENTRAL CONTROL SYSTEM FOR INK DUCT ADJUSTING SCREWS ON PRINTING PRESSES

6 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** **101/181,** 101/207, 101/365

[51] **Int. Cl.** **B41f 5/16,** B41f 31/04

[50] **Field of Search** ..... 101/181, 183, 205–209, 350, 351, 363, 365; 339/33, 18 C; 200/46; 317/119

[56] **References Cited**

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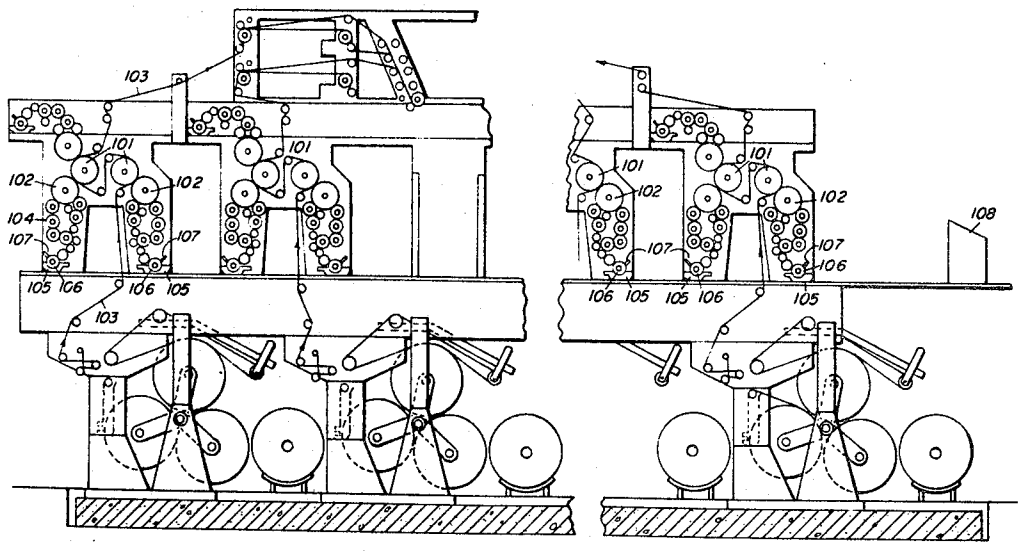
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Primary Examiner—J. Reed Fisher
Attorney—Jones and Lockwood

ABSTRACT: In printing newspapers or the like where the number of pages that are printed by plates are frequently rearranged in various positions on the rotary printing cylinders it becomes a problem to provide for adjustment of the inking of each individual plate. The inking plate is positioned with respect to a duct roller by screws spaced along the plate. These screws may be screwed in and out by a pair of endless belts that are pushed against the screw to rotate it for "in" or "out" adjustment. A solenoid mechanism operated by an electromagnet pushes the belt running by a particular screw into engagement with the screw to turn it as desired. One of the pair of belts is for turning it in one direction and the other is for turning the screw in the opposite direction. There is provided a control at the central control station for turning on and off a particular motor driving a pair of belts for a particularly positioned plate for a certain page. The control may be a push button type of switch that when first pressed down turns on the motor and when pressed down a second time stops the motor. Along each belt there are electromagnets that press the belt against a screw for that electromagnet causing the belt to tangentially engage the screw and frictionally turn it. Each of the respective screw electromagnets of which there are two for each screw are connected in an electrical control circuit in parallel to a respective double throw switch. Movement of the switch in one direction causes energization of the proper electromagnet to screw the screw in while movement of the toggle switch in the other direction causes the energization of the companion electromagnet to cause the screw to be screwed out. In order to maintain the same push button for the same page number plate regardless of where the plate is positioned on the printing cylinders for a set up of printing, there is provided a key, code means or patch means. Such a means is interposed in the control circuits leading from the motor push buttons and power supply so when connected as desired for a particular printing page set up, the operator on pressing the push button for plate motor No. 1, for example, controlling the inking mechanism belts for plate 1, causes that motor to be actuated. The operator then moves the desired toggle switch in the desired direction and the electromagnet acts to press the moving belt for that electromagnet against the adjusting screw for that portion of the inking blade. When another set up of printing is desired, the push buttons for the motors are rewired for the respective plate positions and the inking mechanism therefore by utilization of the code or patch wiring means for the particular desired set up. The respective push buttons for controlling the motors remain the same for the respective plates irregardless of where the plates are positioned.



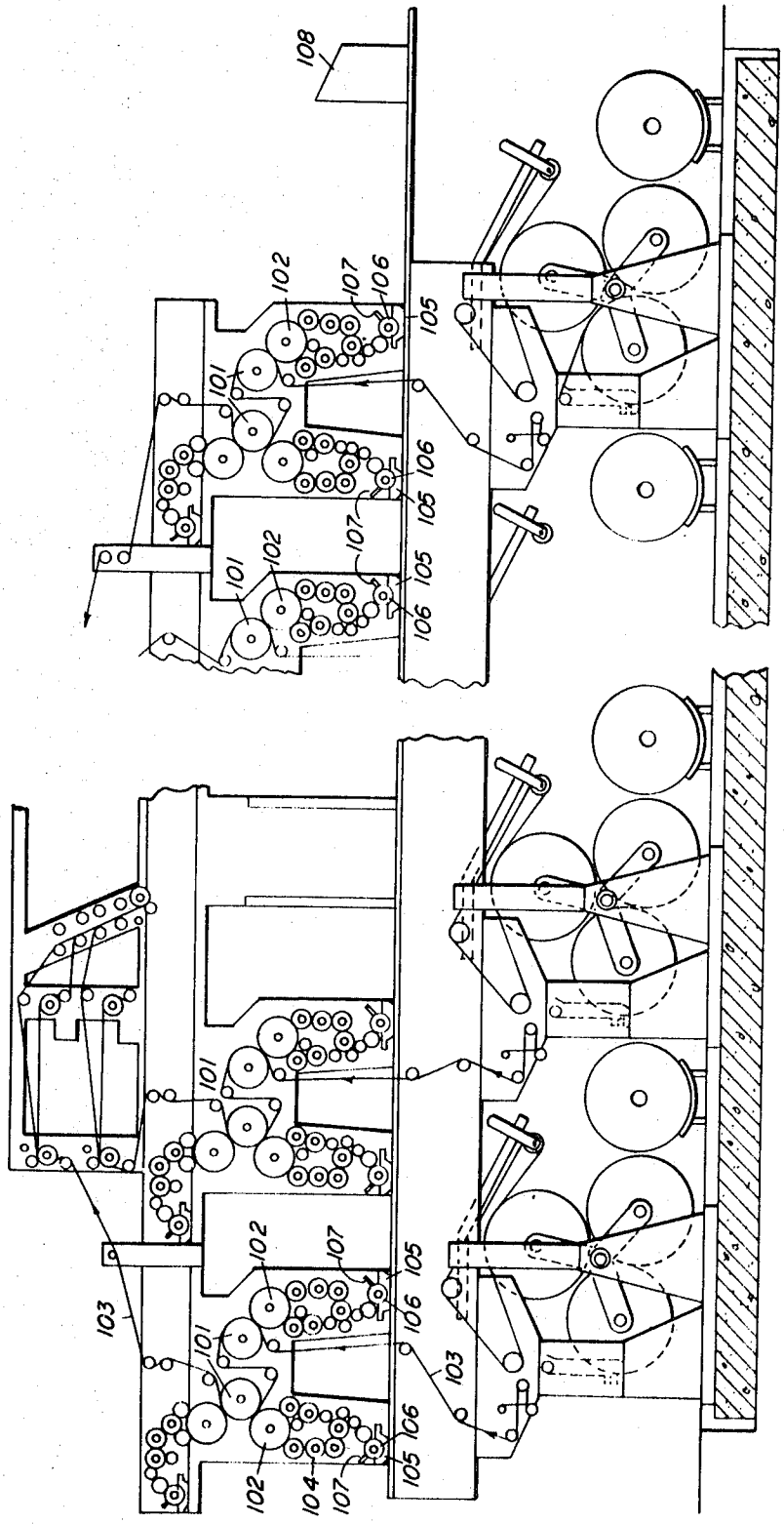
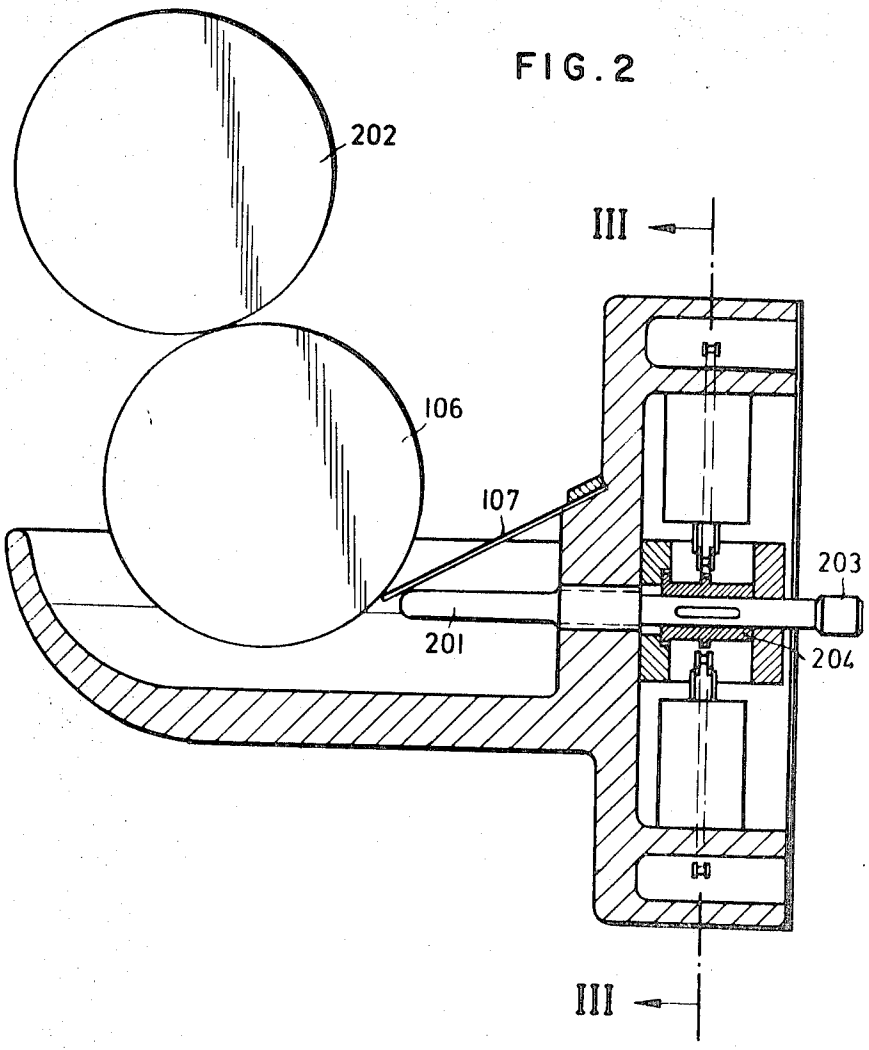


FIG. 1

FIG. 2



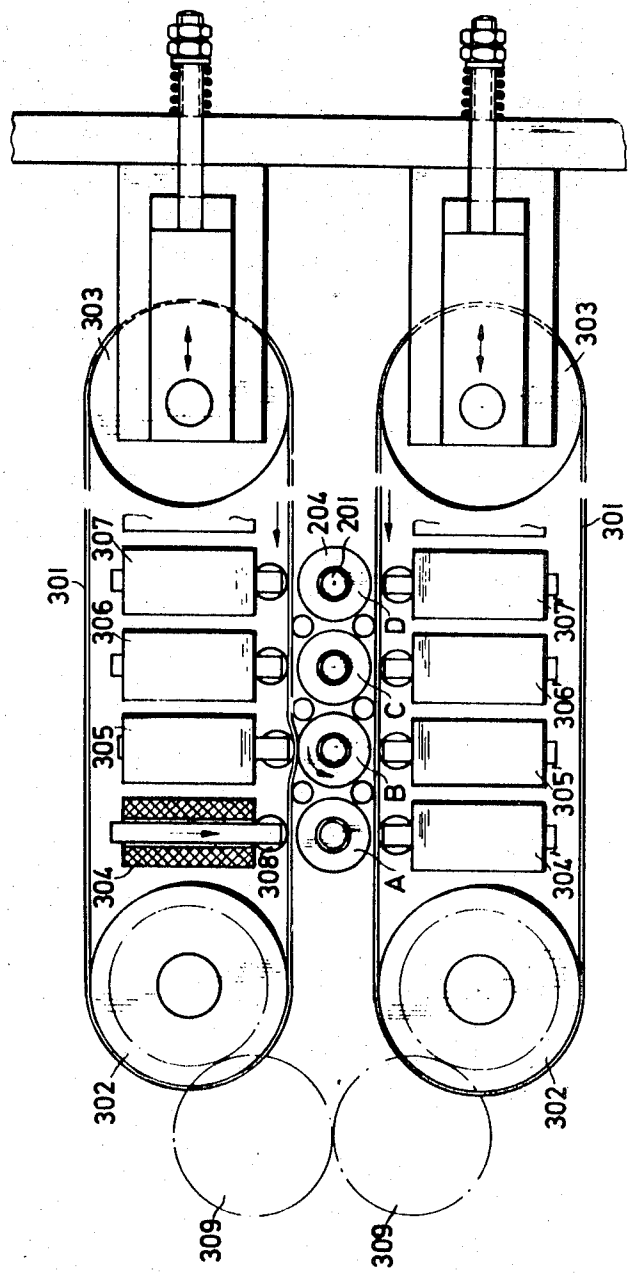


FIG. 3

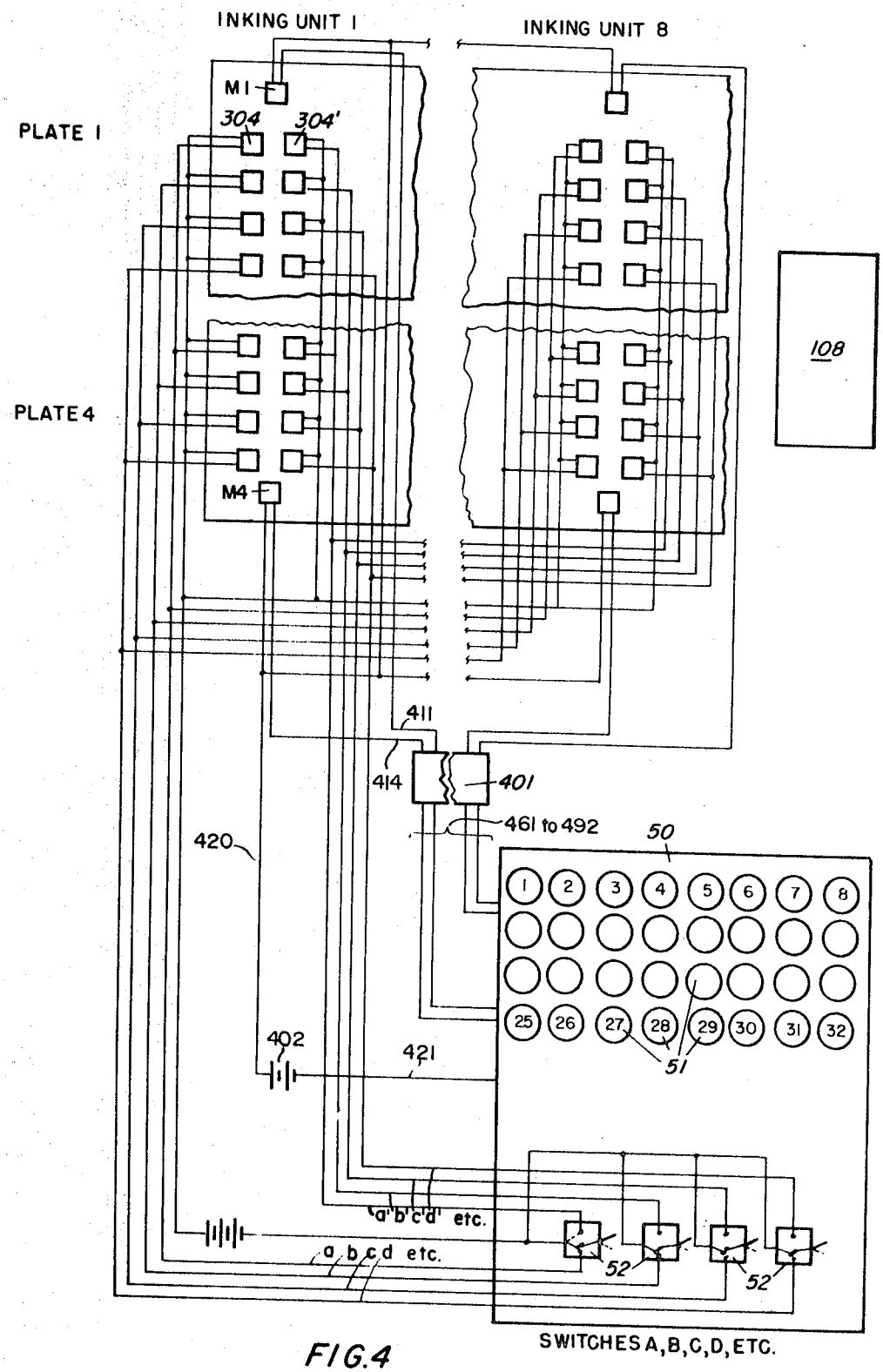

INKING UNIT 1
INKING UNIT 8
M1
304
304'
PLATE 1
PLATE 4
M4
108
411
414
401
461 to 492
50
420
1
2
3
4
5
6
7
8
25
26
27
28
29
30
31
32
51
402
421
a' b' c' d' etc.
a b c d etc.
52
52
SWITCHES A, B, C, D, ETC.

FIG. 4

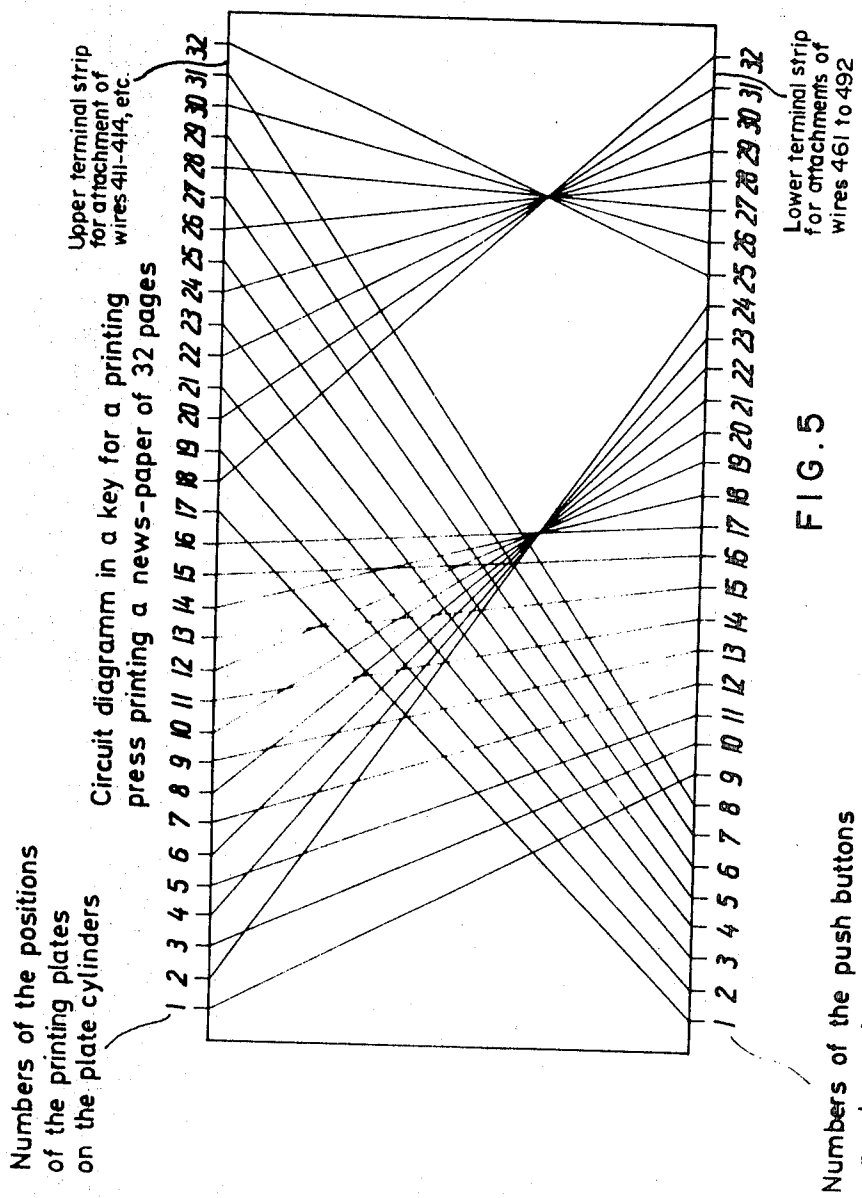

Circuit diagramm in a key for a printing press printing a news-paper of 32 pages
Numbers of the positions of the printing plates on the plate cylinders
Upper terminal strip for attachment of wires 411-414, etc.
Lower terminal strip for attachments of wires 461 to 492
Numbers of the push buttons = numbers of pages
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

FIG. 5

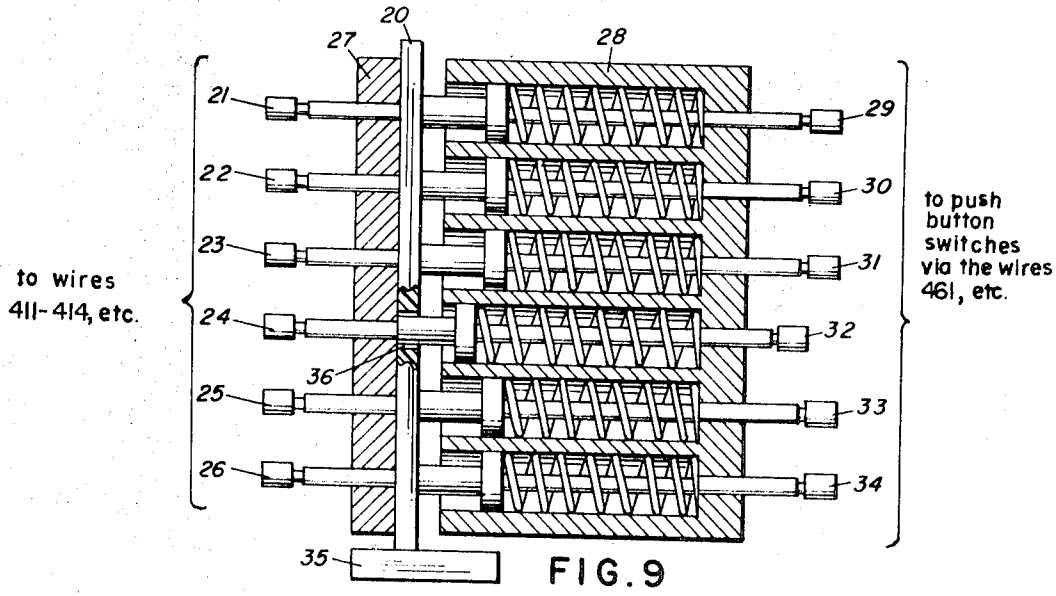

20
27
28
21
22
23
24
25
26
29
30
31
32
33
34
36
35
to wires 411-414, etc.
to push button switches via the wires 461, etc.

FIG. 9

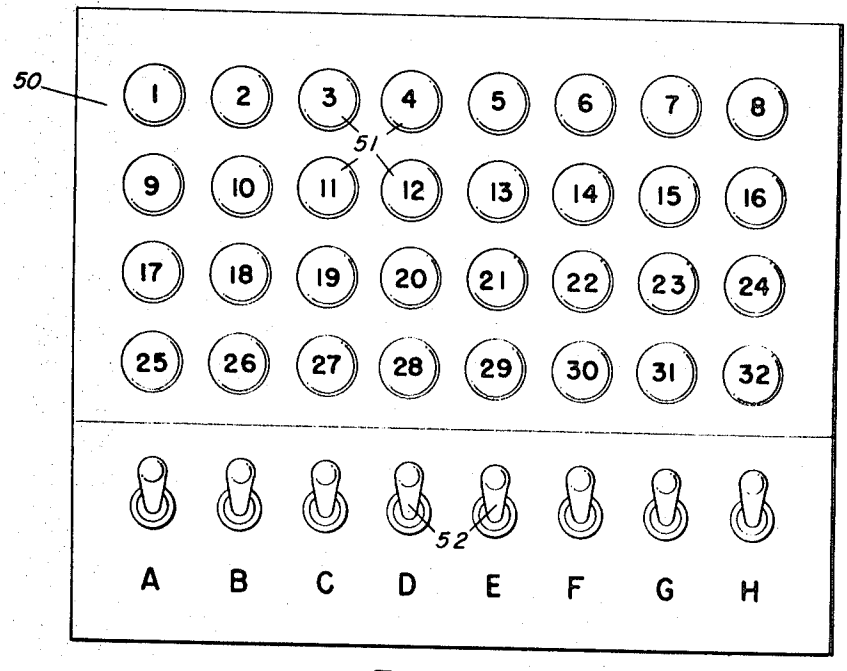

50
1
2
3
4
5
6
7
8
51
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
52
A
B
C
D
E
F
G
H

FIG. 6

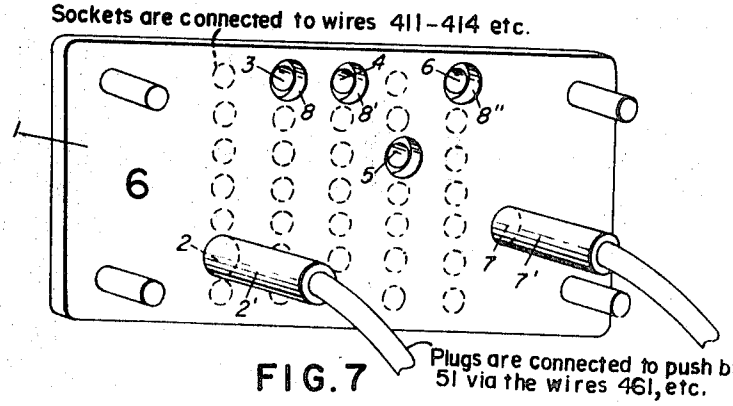

Sockets are connected to wires 411-414 etc.
1
6
3
4
6
8
8'
8"
5
2
2'
7
7'
Plugs are connected to push button switches 51 via the wires 461, etc.

FIG. 7

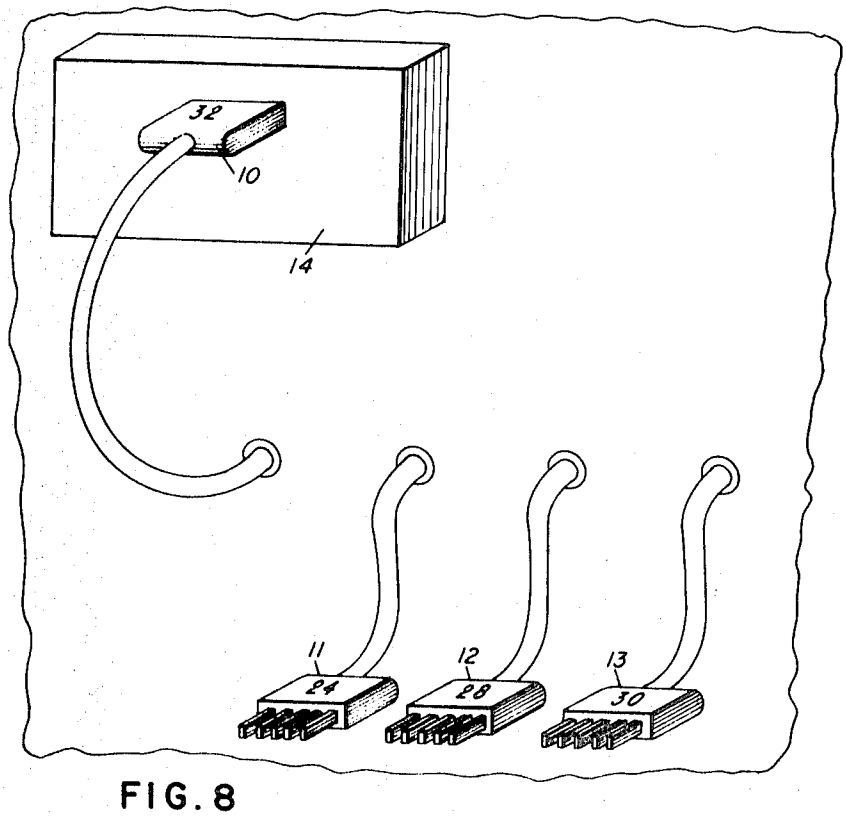

32
10
14
11
12
13
24
28
30

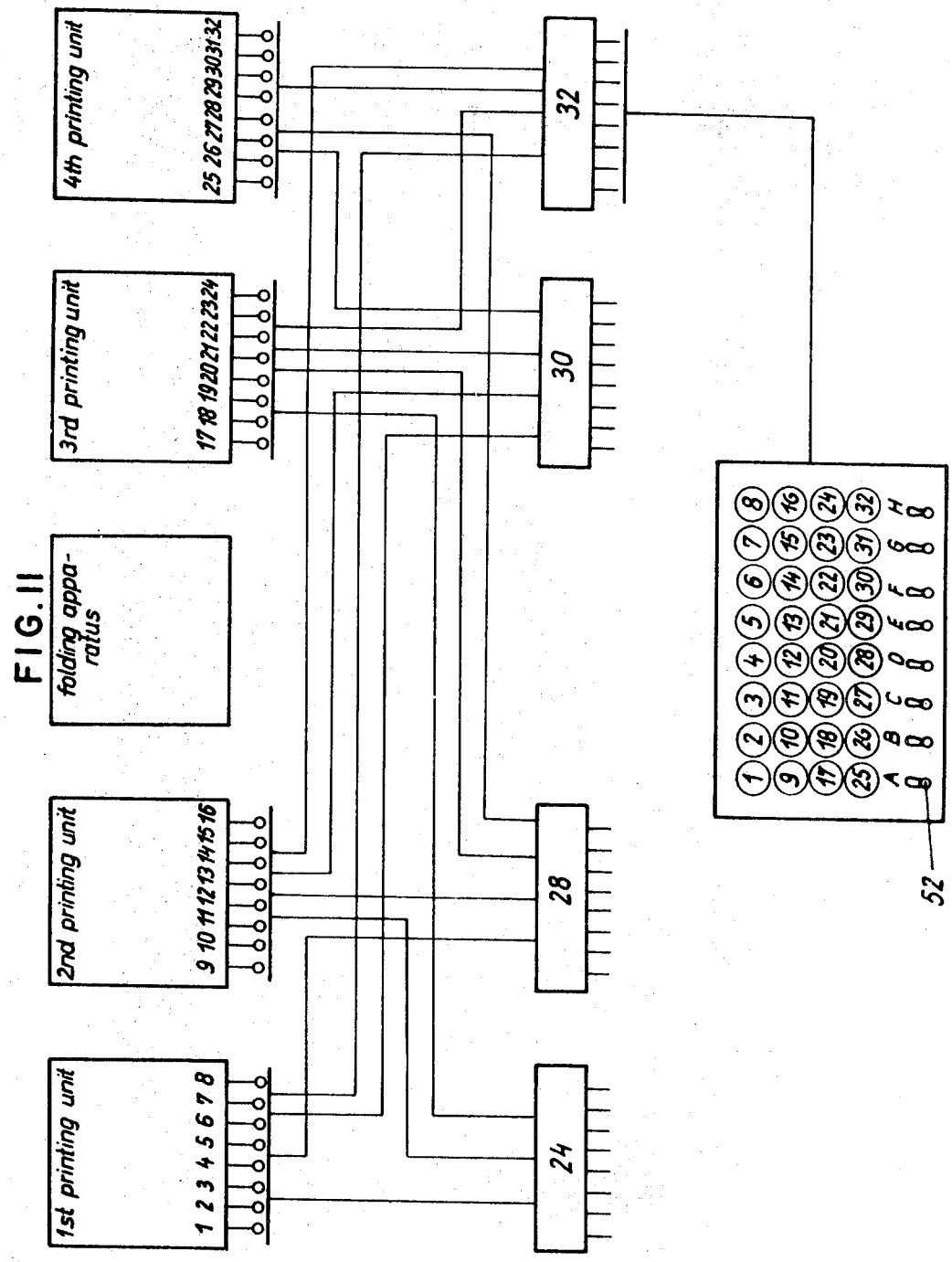
FIG. 8

FIG. 10

Layout of the printing plates of the corresponding pages on the forme cylinders

according to a number of pages	of the 1st printing unit	of the 2nd p. u.	of the 3rd p. u.	of the 4th p. u.
6			1, 6 2, 5 3 4	
24	5, 20 6, 19 7, 18 8, 17	9, 16 10, 15 11, 14 12, 13	1, 24 2, 23 3, 22 4, 21	
28	9, 20 10, 19 11, 18 12, 17	13, 16 14, 15	1, 28 2, 27 3, 26 4, 25	5, 24 6, 23 7, 22 8, 21
30	9, 22 10, 21 11, 20 12, 19	13, 18 14, 17 15 16	1, 30 2, 29 3, 28 4, 27	5, 26 6, 25 7, 24 8, 23
32	9, 24 10, 23 11, 22 12, 21	13, 20 14, 19 15, 18 16, 17	1, 32 2, 31 3, 30 4, 29	5, 28 6, 27 7, 26 8, 25

FIG. II


4th printing unit
25 26 27 28 29 30 31 32
3rd printing unit
17 18 19 20 21 22 23 24
folding apparatus
2nd printing unit
9 10 11 12 13 14 15 16
1st printing unit
1 2 3 4 5 6 7 8
32
30
28
24
52

CENTRAL CONTROL SYSTEM FOR INK DUCT ADJUSTING SCREWS ON PRINTING PRESSES

This is a continuation-in-part application of copending application Ser. No. 745,577, filed July 17, 1968,as a continuation-in-part of then copending application Ser. No. 621,229, filed March 7, 1967, both of the applications now abandoned.

BACKGROUND OF THE INVENTION

On web-fed rotaries of printing presses, especially those with several printing couples, printed matter can be produced with any optional and variable number of pages.

In case day by day newspapers of an equal number of pages are printed on such machines, it is easy to centralize the control switches for the duct adjusting screws of the individual inking arrangements on one central desk and group them neatly.

In case, however, newspapers of a number of pages varying from run to run are required, then the plate for a certain page is mounted at another position of the plate cylinder or even on another plate cylinder according to the total number of pages.

For operators who operate the inking arrangement of a printing press with, for example, a daily varying number of pages, the danger exists to a high degree of confusing the control switches for the large number of duct adjusting screws on the individual printing couples.

SUMMARY

It is common practice nowadays to install the controlling switches for the automatic ink duct adjusting screws at each individual printing couple of the web-fed rotary. This, however, has disadvantages. If it is assumed that a 32-page newspaper is to be printed in double production, the press having four-plate wide plate cylinders, then eight cylinder couples would be necessary each printing four pages recto and four pages verso. If, however, the ink duct adjusting screws of any page have to be readjusted due to bad printing results, the operator will have to go to the respective cylinder couple to readjust the respective ink duct adjusting screws. If screws of a further page have to be adjusted he will also have to go to this second cylinder couple which could be at the far end of the press. A lot of time is therefore consumed to carry out the various operations. If the number of pages is changed or only the web is guided in another way in order to print a differently arranged paper, then the plate for a certain page could be on a different plate cylinder. The operator will consequently always have to think carefully where to find the plate for which the screws have to be adjusted. Since some newspapers often daily change their number of pages or thread the web differently, the operator of modern web-fed rotaries will have to give his full attention to this. Nevertheless, it cannot be avoided that mistakes do occur.

It is one object of the invention to provide a printing press in which the above-mentioned disadvantages are avoided. This printing press will according to the invention not comprise a plurality of split up controlling desks for the controlling switches for the ink duct adjusting screws but a central control desk with the necessary control. It is moreover another object of the invention to provide a panel on a central control desk which allows the control of all ink duct adjusting screws of the entire machine from this central control desk. By means of this it is avoided that the operator will have to go to each printing couple. Furthermore, it is an object of the invention to devise the machine such that the operator does not have to think about the position of the respective printing plate for which the corresponding ink duct adjusting screws have to be adjusted. This means will make it possible to locate the respective printing plate by pressing a pushbutton which is achieved according to the invention through intelligently interconnecting automatically the associated electric circuits with a provided code means. A code means being a means providing an arrangement of control circuits for certain page sets upon the printing cylinders and various threading of the webs. Having switched on said button, he can operate the switches with which the adjusting means of the ink duct adjusting screws are put in operation.

According to the invention, means are provided for this purpose to quickly and safely interconnect the electric wires coming from the ink duct adjusting means and being coordinated on the central control desk with the switches mounted in the control desk. This connection, however, must also be fast and safely convertible to other requirements, i.e. different number of pages or web threading.

According to the invention means are herewith used that are actually known, which, however, for this purpose are novel in combination with the printing press. Means for quickly and intelligently interconnecting the wires could be any electrical means.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments according to the invention will now be described by way of example with reference to the accompanying drawings but it is clearly to be understood that the invention is by no means limited to the details of this embodiment.

FIG. 1 shows a web-fed rotary printing press having a central control desk, from where the press is started and stopped and from where its rate of revolution is regulated;

FIG. 2 shows a sectional view of an ink fountain and the duct roller having an ink knife which can be adjusted by means of ink duct adjusting screws;

FIG. 3 is an elevational view along section line III—III of FIG. 2 of the ink duct adjusting device being controlled by electromagnets, four pairs of eight pairs of electromagnets are illustrated;

FIG. 4 is a circuit diagram of the printing press and its central control desk;

FIG. 5 is a circuit diagram of a provided code means;

FIG. 6 shows a central control desk for a press with eight printing couples and with four plates each arranged side by side on the plate cylinder;

FIG. 7 shows a plug-in panel, i.e. code means, which is partially plugged;

FIG. 8 shows a number of interconnected multiple plugs, i.e. code means, one of which is plugged into a multiple plug socket;

FIG. 9 shows a cross section of a connector device, i.e. code means, having inserted therein a punched card with a punched hole through which a corresponding electrical connection is set up;

FIG. 10 is a layout of the printing plates of the corresponding pages on the form cylinders of four printing units for newspapers of six 24, 28, 30 and 32 pages; and

FIG. 11 is a schematic representation of the plate numbering in a press for 32 pages.

Throughout the description, like reference numbers refer to similar parts.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The web-fed printing machine shown in FIG. 1 has eight impression cylinders **101** and eight plate cylinders **102**. The web **103** runs between the impression cylinder **101** and its corresponding plate cylinder **102**. The plate cylinders **102** are inked by the inking unit **104** taking ink from the ink trough **105** by means of the duct roller **106**, the amount of ink being regulated by the ink knife **107**. The operator of the press starts same by means of the switches (not shown) on the control desk **108** and sets the rotating rate thereof.

FIG. 2 shows in enlarged scale the ink knife **107** in contact with the duct roller **106**. By means of the ink duct adjusting screws **201** disposed along the inking knife **107** with short spaces inbetween, the distance between inking knife **107** and duct roller **106** can be adjusted so that the right amount of ink is conveyed to the next ink roller **202** of the inking unit. The ink duct adjusting screws **201** can be turned by means of the hold **203** or the friction wheel **204**. The adjusting screws **201** are usually mounted at the cylinder couple at such high or low level that they are not very easily accessible for the operator. For this reason these screws are equipped with a remote con-

trol operating electrically. So far it was common practice to have the control desks for readjusting the ink duct adjusting screws located beside each cylinder couple or printing unit. To readjust the ink duct adjusting screws, the operator would have to go to the printing unit on which plate cylinder the printing plate is mounted of which the ink duct adjusting screws **201** are to be readjusted.

The known electrical readjusting device of the ink duct adjusting screws **201** functions as follows: On screw **201** is secured as mentioned said friction wheel **204**. Above and below the adjusting screws **201** there are small belts **301** running over pulleys **302** and **303**. Both pulleys **302** are driven by gears **309** such that they rotate in the same direction. The gears are driven by an electric motor, not shown in FIG. **3**, but appearing in FIG. **4** at M1 and M4. Each ink fountain of a plate cylinder carrying four plates across the width comprises four pairs of belts, four gearings and four electromotors, i.e. one drive means for each plate. If the ink duct adjusting screws **201** for one plate, for instance the left one, of a plate cylinder are to be readjusted, only one motor is turned on whilst the other motors remain switched off whereby the other belts also remain idle.

The belt motion is communicated to the friction wheel **204** by means of friction generated by electromagnets **304**, **305**, **306**, **307** and **304'**, **305'**, **306'** and **307'** respectively. If for instance electromagnet **304** is actuated, roll **308** located at the magnet core of electromagnet **304** is pressed in the direction of the friction wheel **204** below of the respective ink duct adjusting screw **201** with the result that the belt **301** running between roll **308** and friction wheel **204** moves tangentially along friction wheel **204** in that run of the belt direction of movement. The ink duct adjusting screw **201** is also turned therewith screwing itself with its thread into the threaded bore whereby the position of the ink knife **107** relative to the duct roller **106** is changed as well as the amount of ink conveyed by the duct roller **106**. When it becomes necessary to turn the ink duct adjusting screws **201** in the other direction this can be carried out through actuating electromagnet **304'**. Thereby, the lower belt **301'** running in the other direction is brought in contact with the friction wheel **308** with the result that the ink duct adjusting screw **201** turns in the other direction.

Each inking blade **107** for the duct roller **106** for each printing plate has eight adjusting screws A, B. C, D, E, F, G and H, only A, B, C and D are illustrated in FIG. **3**. The respective pair of solenoids or electromagnets **304** and **304'**, as for screw A, are respectively operated by single-pole double-throw toggle switch A of the switches **53**, see FIGS. **4** and **6**, on the central control panel **50** located at the central control desk **108**. The actuation of the switches A–H is ineffective to cause the adjusting screws to rotate unless the motor driving the pair of belts **301** for that blade's adjusting screws is energized. One of the pushbutton switches **51**, labeled **1** to **32** inclusive in FIG. **6**, one for each printing plate, actuates the motor for the blade for a particular printing plate. A selected code means **401**, see FIG. **4**, is interposed in the motor circuits for a particular set up of positioning of printing plates. This of course governs the motors for turning the screws to adjust the blade **107** for that printing plate's duct roll **106**. This code means **401** can be likened to a particular "patch board" in connecting up electrical circuitry of one entity to electrical circuitry of another entity.

FIG. **4** shows a simplified circuit diagram of such a printing press with the extreme end units No. **1** and No. **8** illustrated. It is a schematic presentation of the electromagnets and the drive motors of the control for the ink duct adjusting screws which are connected with the switch panel on the central control desk by means of electric wires. The electromagnets are connected respectively with two-way switches **52** by means of wires (*a*, *b*, *c*, *d*, etc.) (*a'*, *b'*, *c'*, *d'*, etc.). The number of ink duct adjusting screws which is eight for each plate equals the number of two-way switches, which is likewise eight. In the embodiment described, see also FIG. **6**, eight adjusting screws are assumed. These correspond to eight two-way switches **52** (four of the eight shown in FIG. **4**) having the designation A to H as in FIG. **6**. Since the electromagnets only act on the respective ink duct adjusting screws **201** when the motor is switched on, all electromagnets of the adjusting screw A are connected with the two-way switch A, the electromagnets of the adjusting screws B are connected with the two-way switch B, and so on. Thus, the two-way switches **52** can be operated at random without producing an adjustment as only when a drive motor is switched on, can adjustment take place since at that time both belts are running. There are a total of 32 plates mounted on the plate cylinders of the printing press for which 32×8=256 adjusting screws are provided and, as stated, for each plate, one drive motor is associated for adjusting the ink duct adjusting screws thereof.

If now the ink duct adjusting screws C and D of the plate for page 13 are to be adjusted, the operator first has to switch on the drive motor for the belt for adjusting screws for plate **13** by pressing pushbutton **13** of the pushbuttons **51** shown in FIG. **4** in switch panel **50** at the control desk **108**. For actuating the adjusting screws C and D, the operator then tilts the two-way switches **52**, namely C and D. He tilts them upwards if more ink is required because then the electromagnets **306** and **307**, corresponding with C and D, as shown in FIG. **3** are actuated. If less ink is required, the switches are tilted downwards actuating the magnets **306'** and **307'** whereby the ink duct adjusting screws turn in the other direction. Through the period of time during which the switches A to H are actuated, the intensity of adjustment of the ink duct adjusting screws **201** can be selected. After the adjustment of the screws of the plate for page 13 has been completed, the drive motor may be turned off. Therefore, either a central "off" switch is provided on the switch panel **50** as in FIG. **6**, or else the switches are adequately equipped for the motor to be disengaged when the switch is pushed for a second time. It can also be observed in FIG. **4** as to how the wires running from the motors to the switches **1** to **32** are combined in the code means **401**. FIG. **4** shows that from the motors of the generally known inking adjustment mechanism, marked with M1 to M4 etc., and provided for each inking unit **1–8**, one wire each **411–414** etc., is lead to the code means **401** and one wire **420** to the current source **402**. From the pushbuttons **51**, a number of wires **461–492** corresponding to the number of the pushbuttons **51** are led to the code means **401**. The second poles of the pushbuttons are connected to the current source **402** by means of the wire **421** in such a way that upon pressing one of the pushbuttons **51**, marked from **1–32**, one of the wires **461** to **492** is energized. By means of the code means **401** this one wire is connected to the motor required via one of the wires **411** to **414** etc., so that the required motor is running as long as the corresponding button is pushed. Some forms that code means **401** may take are illustrated in FIGS. **7**, **8** and **9** described hereinafter.

FIG. **5** shows on an enlarged scale how the incoming wires **461–492** from the pushbuttons **51** are conveniently interconnected with the outgoing wires **411–414**, etc. by the code means **401** so that random numbers of newspaper pages and web threadings may be selected by means of exchanging one code means for another. By this means, there is achieved, according to the invention, that upon activating, for instance, the ink duct adjusting screws for plate **1** always one and the same pushbutton, i.e. button **1**, can be pushed irrespective of the question as to which plate cylinder plate the plate for this page is mounted. FIG. **5** shows a code means including a successively numbered upper terminal strip connected with the drive motors for the ink duct adjusting screws as described. The lower terminal strip is also successively numbered. These terminals are connected by wires **461** to **492**, see FIG. **4**, with the terminal strip on panel **50**, FIG. **4**, for the pushbuttons having corresponding numbers. For example, pushbutton number **1** is for plate **1** which prints page 1 is interconnected at position **17**, upper terminal, through wire **411** to motor M1. Pushbutton **32** for plate **32** which prints page 32 is connected to position **18**, upper terminal which is in turn connected to plate motor M32. If a newspaper having 16 pages were printed

on this press, then the numbers 17 to 32 of the bottom terminal strip would not be connected through to the pushbuttons 17 to 32 since pages 17 to 32 are not printed. The position of plates 1 to 16 as opposed to the position of plates 1 to 16 of a 32-page newspaper is, however, quite different so that the wires will have to run completely different from the bottom pushbutton connected terminal strip to the upper terminal strip in FIG. 5 which is in turn connected to the motors driving the belts for the screws of the plate inking mechanism. According to the invention, the code means can be carried out by various arrangements for making the circuit connections such as, for examples, as shown in FIGS. 7, 8 and 9.

For code means 401 three embodiments of the invention are shown by way of example which are represented in FIGS. 7–9. According to FIG. 7, the sockets 2–7 are connected to the wires 411 to 414, etc., coming from the motors, i.e., in the first column from the left, the upper socket 2 is preferably connected to the first motor of the inking unit accommodating the first plate, the second socket to the second motor of the inking unit also accommodating the first plate, etc., so that consequently the first plug 2′ is always put into the sockets of the first column. The template 1 prepared respectively for a newspaper of a certain number of pages releases the correct socket of a row. The plugs 2′ to 7′, etc., are connected to the pushbuttons 51 via the wires 461, etc. The template 1 facilitates a fast and secure plugging.

The embodiment according to FIG. 9 is quite similar to the example according to FIG 7. The functions of the plugs 2′ to 7′, etc., are taken over by the contacts 29 to 34, etc., which are partly connected electrically to each other, i.e., the number of the contacts connected to each other is equal to the number of the possible positions of the plates. If it is, for example, possible to have four plate positions of plate 1, then, for example, the contacts 29 to 32 are connected to each other and applied to the switch No. 1 of the pushbuttons 51 in FIG. 4 by means of one of the wires 461 to 492. The contacts 21 to 24 are connected via one wire each 411 to 414, etc., to one motor each of the inking units accommodating probably plate 1. By means of one of the four punched cards 20 shown in this example, the connection of the correct contact of the four contacts 29–32 is made possible and safe by means of the correct contact of the four contacts 21–24. A similar procedure is taken in the example shown in FIG. 8. In the multiple socket unit 14 shown there, the number of the individual sockets is consequently equal to the number of motors of the inking adjusting mechanisms. The sockets are connected individually by means of the wires 411 to 414, etc., to the existing motors. All plugs 10–13 have the same number of single plugs as sockets are provided at the multiple socket unit 14. The five in number prongs on the plugs are symbolistic as for plug 10 there would actually be provided 32 projecting prongs and in the socket unit receiving plug 10 there are 32 individual sockets having conductors 411–414, etc., leading to the 32 motors. From pushbutton 1 of the pushbuttons 51 in FIGS. 4 and 6, all four multiple plugs 10–13 are connected to wires, i.e., to the plugs which lead to the single sockets in the multiple socket unit 14 which are connected to the motors corresponding to the possible positions of plate 1. For a 32-page newspaper, as shown in FIG. 5, it is made clear which connections have to be made in plug 10. In a newspaper of less pages, for example in plug 11 for 24 pages, eight contacts must be left free, i.e., the contacts 25 to 32.

On a normal punched card a maximum of 80 columns with 12 holes each can be punched, i.e., a maximum of 960 holes. With a printing press for the production of copies having a maximum of 96 pages, 960/96=10 possible positions per plate can be covered. Incase of fewer pages the number of the possibilities will increase correspondingly.

FIG. 6 shows a control panel 50 which can be used together with one of the forms of code means construction, such as shown in FIGS. 7, 8 and 9. In the upper part, e.g., 32 illuminated pushbuttons 51 are arranged which are all flashing up if a 32-page newspaper is to be printed by using one of the prepared code means of the three mentioned various methods. If, e.g., it is intended to regulate the duct adjusting screws of plate 17, the press operator has to actuate pushbutton 17 which leads to a motor M17 for driving the belts of the adjusting screw mechanism for plate 17. Owing to this the lines to the duct adjusting screws are activated electrically which correspond to the position of plate 17. By shifting one of the control levers, e.g., 52, of the control lever marked with E for a switch, the ink of the respective inking arrangement, namely here a solenoid to push the particular belt against an adjusting screw, controlled by lever E can be moved to the desired position, i.e., plate 17 in this example described.

In FIG. 10, the layout shown deals with newspapers of six, 24, 28, 30 and 32 pages. As shown, the first, second and fourth printing unit is left free when printing a newspaper of six pages. The newspaper of six pages is printed on the third unit. The positions of the plates in the third printing unit for the first to the fourth page remains the same for the printings of six, 24, 28, 30 and 32 pages, even the penultimate and ultimate page, only that they are this time the page five and the page six. This increases, of course, the number of the positions of the pages five and six from two to three. This layout also shows how the representation in the illustration in FIG. 5 came about.

FIG. 11 supplements the layout shown in FIG. 10 and is the schematic representation of the plate numbering in a press for 32 pages.

By using the central control system for duct adjusting screws according to the invention, the operators of the printing press are not compelled anymore to remember first of all how many pages are comprised by the newspaper which is just being printed and which special position is occupied by the plate in question. These relations are determined by the code means used, guaranteeing thus an easy and secure central control of the duct adjusting screws.

What is claimed is:

1. Web-fed rotary printing machine comprising in combination, web feed means,

impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder, an inking unit for each printing plate including an inking knife for the ink duct and a plurality of adjusting screws each having a friction wheel,

means to rotate the friction wheel and its screw in opposite directions comprising a pair of belts driven by a single motor and having runs of each belt adjacent diametrically opposite positions on each friction wheel and oppositely positioned solenoids to push a run of each belt against the friction wheel to selectively turn it in opposite directions,

electrical circuit means connected to each solenoid and leading to a single central control panel having switch means to operate any selected solenoids, electrical circuit means connected to each motor and leading to said single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor to drive said belts for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motors to accommodate a change in the number and positioning of printing plates for rearranging the circuits to said motors interposed in said electrical circuit means connecting said motors with said motor switch means in said single central control panel,

said code means for changing the motor circuits including a plug-in panel means having sockets connected by conductors respectively to each motor with a template or plate overlying the same having a selected arrangement of holes for a change in the number and positioning of printing plates for plugging therethrough control lines from said switch means arranged in a fixed arrangement of printing plate page numbers for a particular plate page position and the motor corresponding therewith for the inking unit, whereby a change in the number of printing plates and their relative positioning and web threading

may be made so that said single central control panel motor switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.

2. Web-fed rotary printing machine comprising in combination, web feed means,

impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder, an inking unit for each printing plate including an inking knife for the ink duct and a plurality of adjusting screws each having a friction wheel,

means to rotate the friction wheel and its screw in opposite directions comprising a pair of belts driven by a single motor and having runs of each belt adjacent diametrically opposite positions on each friction wheel and oppositely positioned solenoids to push a run of each belt against the friction wheel to selectively turn it in opposite directions,

electrical circuit means connected to each solenoid and leading to a single central control panel having switch means to operate any selected solenoids, electrical circuit means connected to each motor and leading to said single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor to drive said belts for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motors to accommodate a change in the number and positioning of printing plates for rearranging the circuits to said motors interposed in said electrical circuit means connecting said motors with said motor switch means in said single central control panel,

said code means for changing the motor circuits including a multiple plug socket having wires leading to a selected arrangement of motors for each group of sockets corresponding with a number and positioning or printing plates and multiple plugs with wires leading to said switch means arranged in a fixed arrangement of printing plate page numbers, the individual plugs of which are wired correspondingly of which one multiple plug each can be plugged optionally into one of the multiple plug socket groups, whereby a change in the number of printing plates and their relative positioning and web threading may be made so that said single central control panel motor switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.

3. Web-fed rotary printing machine comprising in combination, web feed means,

impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder, an inking unit for each printing plate including an inking knife for the ink duct and a plurality of adjusting screws each having a friction wheel,

means to rotate the friction wheel and its screw in opposite directions comprising a pair of belts driven by a single motor and having runs of each belt adjacent diametrically opposite positions on each friction wheel and oppositely positioned solenoids to push a run of each belt against the friction wheel to selectively turn it in opposite directions,

electrical circuit means connected to each solenoid and leading to a single central control panel having switch means to operate any selected solenoids, electrical circuit means connected to each motor and leading to said single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor to drive said belts for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motors to accommodate a change in the number and positioning of printing plates for rearranging the circuits to said motors interposed in said electrical circuit means connecting said motors with said motor switch means in said single central control panel,

said code means for changing the motor circuits includes means for scanning punched cards and a punched card receivable therein, said card being in effective position within the code means so that the punched holes are scanned automatically and electrical interconnection with the desired motor circuits is made by setting up the connection of the circuit control lines leading from the motor switches on the central control panel to the respective inking unit motors for the plate positions, said means for scanning has wires leading from contact means to a selected arrangement of motors for a particular group corresponding with a number and positioning of printing plates, wires leading to a fixed arrangement of contacts from said switch means arranged in a fixed arrangement of printing plate page numbers and whose contacts are oppositely positioned to said first-mentioned contacts, electrical connecting means interposed between said opposite contacts and making circuit contact in accordance with the particular punch card being scanned, whereby a change in the number of printing plates and their relative positioning and web threading may be made so that said single central control panel motor switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.

4. In a web-fed rotary printing machine having impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder,

an inking unit for each printing plate including ink duct adjusting screws rotated by a motor drive means adjacent friction wheel means on the screws and solenoid means cooperating with said motor drive means causing a respective motor drive means to engage the screw friction wheel to rotate the same, the improvement of

electrical circuit means connected to each solenoid means and leading to a single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor drive means for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motor drive means to accommodate a change in the number and positioning of printing plates and for rearranging the circuits to said motor drive means interposed in said electrical circuit means connecting said motor drive means with said switch means in said single central control panel,

said code means for changing the motor circuits includes a plug-in panel means having sockets connected by conductors respectively to each motor with a template or plate overlying the same having a selected arrangement of holes for a change in the number and positioning of printing plates for plugging therethrough control lines from said switch means arranged in a fixed arrangement or printing plate page numbers for a particular plate page position and the motor corresponding therewith for the inking unit, whereby a change in the number of printing plates and their relative positioning and web threading may be made so that said single central control panel motor drive means switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.

5. In web-fed rotary printing machine having impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder,

an inking unit for each printing plate including ink duct adjusting screws rotated by a motor drive means adjacent friction wheel means on the screws and solenoid means cooperating with said motor drive means causing a respective motor drive means to engage the screw friction wheel to rotate the same, the improvement of

electrical circuit means connected to each solenoid means and leading to a single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor drive means for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motor drive means to accommodate a change in the number and positioning of printing plates and for rearranging the circuits to said motor drive means interposed in said electrical circuit means connecting said motor drive means with said switch means in said single central control panel,

said code means for changing the motor circuits includes a multiple plug socket having wires leading to a selected arrangement of motors for each group of sockets corresponding with a number and positioning of printing plates and multiple plugs with wires leading to said switch means arranged in a fixed arrangement of printing plate page numbers, the individual plugs of which are wired correspondingly of which one multiple plug each can be plugged optionally into one of the multiple plug socket groups, whereby a change in the number of printing plates and their relative positioning and web threading may be made so that said single central control panel motor drive means switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.

6. In a web-fed rotary printing machine having impression cylinders and cooperating plate cylinders, said plate cylinders having a plurality of printing plates across the cylinder,

an inking unit for each printing plate including ink duct adjusting screws rotated by a motor drive means adjacent friction wheel means on the screws and solenoid means cooperating with said motor drive means causing a respective motor drive means to engage the screw friction wheel to rotate the same, the improvement of

electrical circuit means connected to each solenoid means and leading to a single central control panel having switch means arranged in a fixed arrangement of printing plate page numbers to turn on and off a selected motor drive means for a particular printing plate inking unit,

a code means for mutually exchanging the wires to said motor drive means to accommodate a change in the number and positioning of printing plates and for rearranging the circuits to said motor drive means interposed in said electrical circuit means connecting said motor drive means with said switch means in said single central control panel,

said code means for changing the motor circuits includes means for scanning punched cards and a punched card receivable therein, said card being in effective position within the code means so that the punched holes are scanned automatically and electrical interconnection with the desired motor drive means circuits is made by setting up the connection of the circuit control lines leading from the motor switches on the central control panel to the respective inking unit motor drive means for the plate positions, said means for scanning has wires leading from contact means to a selected arrangement of motors for a particular group corresponding with a number and positioning of printing plates, wires leading to a fixed arrangement of contacts from said switch means arranged in a fixed arrangement of printing plate page numbers and whose contacts are oppositely positioned to said first-mentioned contacts, electrical connecting means interposed between said opposite contacts and making circuit contact in accordance with the particular punch card being scanned, whereby a change in the number of printing plates and their relative positioning and web threading may be made so that said single central control panel motor drive means switches will still represent the sequence of plate pages regardless of the positioning and number of the page printing plates.