

March 16, 1926.

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MEANS FOR WASHING LITHOGRAPHIC PRINTING SURFACES

Filed July 11, 1924.

3 Sheets-Sheet 1

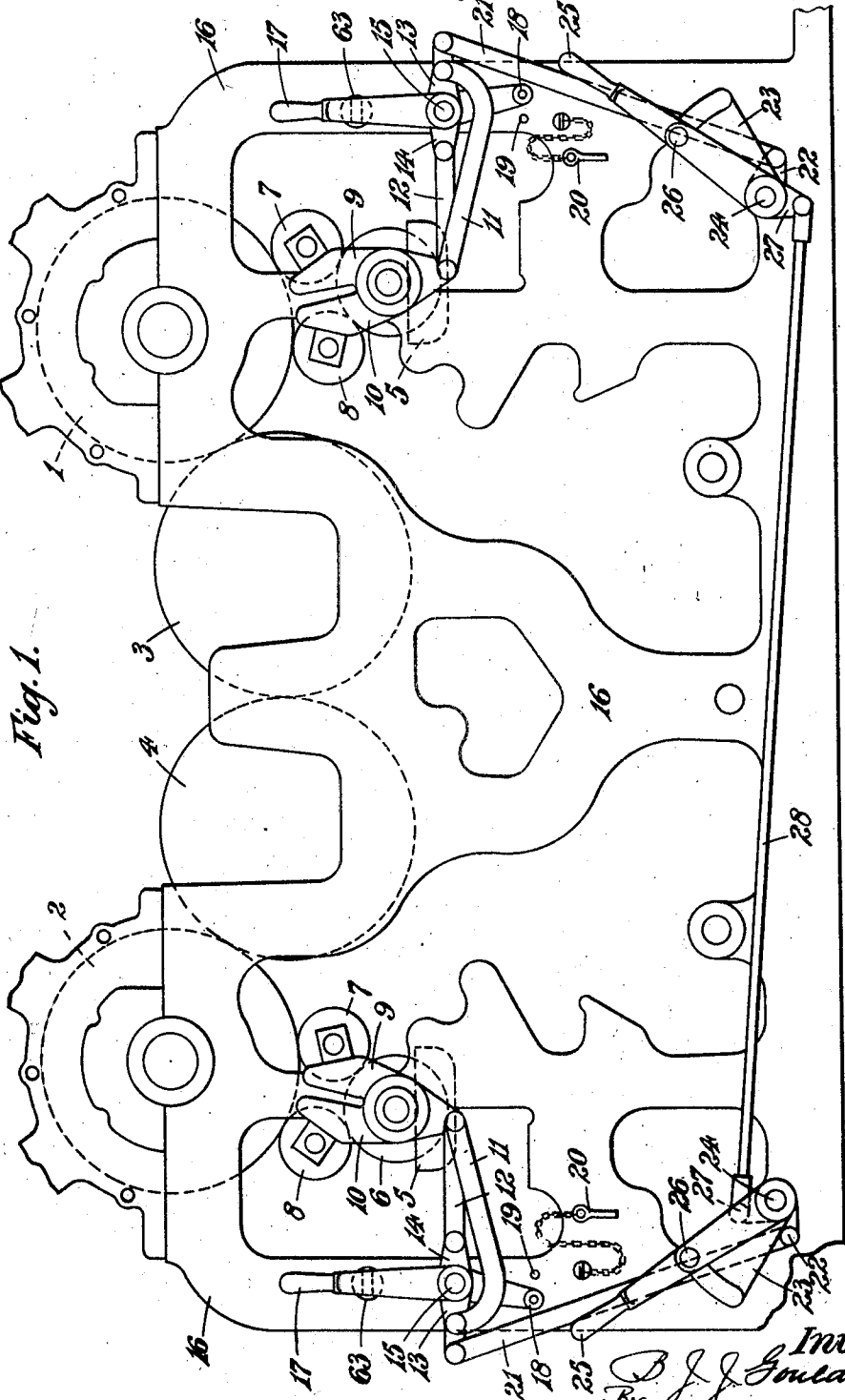


Fig. 1.

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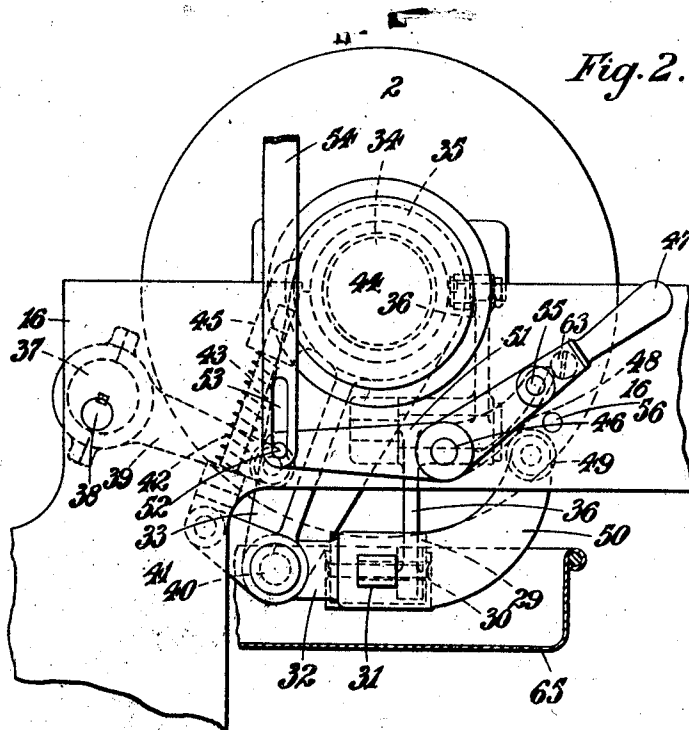
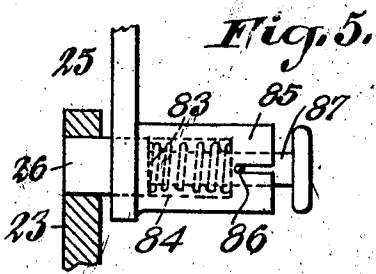
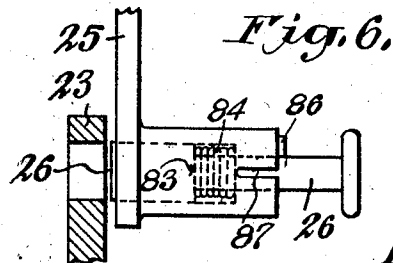
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 3.

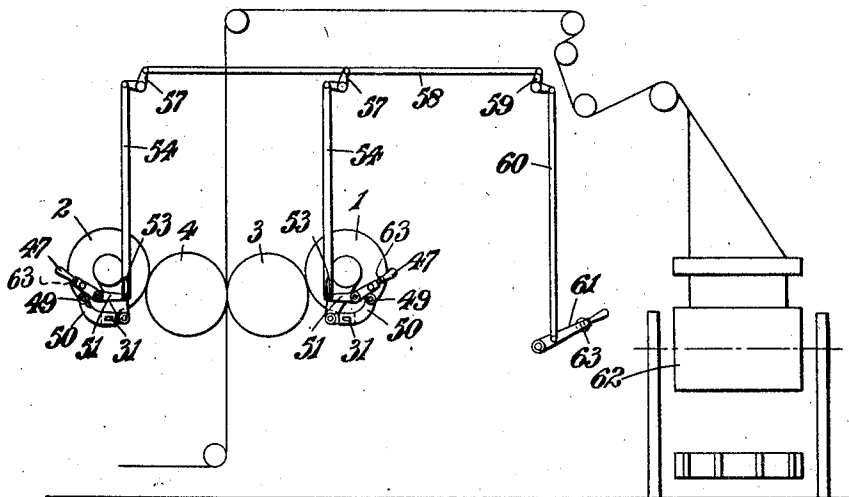
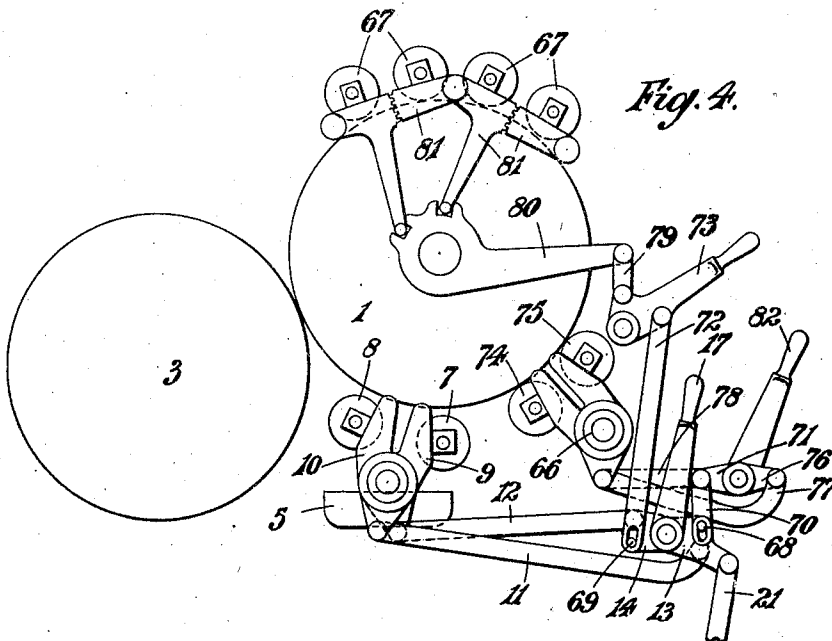


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MEANS FOR WASHING LITHOGRAPHIC PRINTING SURFACES.

Application filed July 11, 1924. Serial No. 725,324.

To all whom it may concern:

Be it known that I, BENJAMIN JOSEPH JOHN GOULDING, a British subject, and resident of Linotype and Machinery Works, Altrincham, in the county of Chester, England, have invented new and useful Improvements in or Relating to Means for Washing Lithographic Printing Surfaces, of which the following is a specification.

10 This invention relates to means for washing lithographic printing surfaces. It is particularly applicable for use in connection with litho rotary presses and has for its object to facilitate the employment in such
15 presses of power operated washing rollers, discs or pads.

Various forms of such rollers, discs or pads constitute the subject matter of separate co-pending application for Letters Patent Serial No. 717488, filed June 3rd 1924, and it is to be understood that in carrying out the present invention, any of the said forms which are applicable to any particular case, may be employed, consequently the term "washing roller" as hereinafter used,
25 is to be deemed to include, where the context admits, any such power operated washing devices, and except where otherwise stated, the mechanism for operating said devices may be the same as that described in the said application for Letters Patent.

In a lithographic printing press constructed according to the present invention, a plurality of plate cylinders are employed, each
35 provided with plate washing mechanism comprising a trough for containing the cleaning fluid and a washing roller to which the fluid is transferred from the trough, and means are provided whereby the respective
40 plate washing mechanisms may be brought into and out of operation either individually, or a plurality thereof collectively.

The invention further includes the association of the means for controlling the
45 washing mechanisms with means for controlling other organs of the press, so that the washing mechanism and any such other organs as it may be necessary or convenient to operate or render inoperative during the
50 washing process, may be, if desired, subject to a common control.

The accompanying drawings illustrate the invention as applied to a rotary offset printing press having two plate cylinders. Figure 1 being a side elevation showing the

pertinent parts of one constructional form of the invention;

Figure 2 a side elevation partly broken away showing another constructional form;

Figure 3 a diagrammatic side elevation of a machine embodying the arrangement shown in Figure 2;

Figure 4 a side elevation exemplifying the connection of the washing mechanism control with that of other organs of the
65 press, and

Figures 5 and 6 are detail views showing a spring plunger used for alternatively connecting certain of the mechanisms.

Like reference numerals appearing in the
70 different figures, indicate that the parts identified by them are similar to or correspond with each other.

Referring first to Figure 1, the press therein illustrated comprises two plate cylinders 1, 2, and two transfer cylinders 3, 4, the plate cylinders being each provided with plate washing mechanism. According to the constructional form shown, each such mechanism consists of a trough 5 for containing the cleaning fluid, a trough roller or drum 6 suitably geared (by means not shown in the drawings) to the driving mechanism of the press and mounted with its axis parallel to that of the respective plate cylinder, and two washing rollers 7, 8, also mounted with their axes parallel to that of the plate cylinder, in bearings carried respectively by arms 9, 10, at each side of the machine adapted to be independently rocked about the axis of the trough roller 6 so as to move the rollers into and out of contact with the associated plate cylinder 1 or 2. The arms 9, 10, at each side are connected by links 11, 12, respectively, to diametrically opposed arms 13, 14, keyed to a shaft 15 extending across the machine and mounted in the machine frame 16 at its respectively opposite ends. On one end of the shaft 15 is rigidly secured a hand-lever 17 by which it may be rocked, while an arm 18 also fast to the same end of the shaft 15 enables the washing mechanism to be locked in the "off" position, said arm, for this purpose, being provided with a hole adapted to register with a hole 19 in the machine frame, for receiving, when so registered, a locking pin 20 which then engages both of the said holes. If desired, mechanism for varying the pressure of the rollers 7, 8, on the plate cylinder and for
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axially reciprocating those rollers, such as that described in the before mentioned co-pending application, may be included in the present arrangement.

According to the present invention, each of the arms 13 at one side of the machine is extended and has pivoted to it the upper end of a link 21, the other end of which is pivotally connected to an arm 22 fast to the boss of a sector 23 loosely mounted on a shaft 24. On this same shaft 24 there is also loosely mounted a hand-lever 25 provided with a spring plunger 26 and with an arm 27, the former of which is adapted to engage a recess in the sector 23 so as to lock said sector to the hand-lever 25. The arms 27 of both mechanisms are connected together by a link 28. A convenient arrangement of the spring plunger 26 is shown in Figures 5 and 6, wherein the plunger is provided with a shoulder 83 upon which bears, as represented in dotted lines, one end of a helical spring 84 whose other end engages with the adjacent end of a cylinder 85 fast to the aforesaid hand lever 25. The plunger is provided with a radially extending pin 86 adapted to engage a recess 87 in the end of the cylinder 85, as shown in Figure 5, and also, after the plunger has been disengaged from the sector 23 by a slight turn of the plunger, to bear against the outer end of the cylinder 85 to hold the plunger in its disengaged position. A slight turn of the plunger in the reverse direction brings the pin 86 into register with the recess 87 and allows the spring 84 to force the plunger into engagement with the sector 23, as shown in Figure 5. When it is desired to operate both of the washing mechanisms conjointly, each of the spring plungers 26 is engaged with the respective sector 23 so that the motion of the respective hand-lever 17 is transmitted through the associated arm 13, link 21 and sector 23 to the respective hand-lever 25 and thence through the link 28 to the washing mechanism appropriate to the other cylinder. When, however, it is desired to operate either of the washing mechanisms independently of the other, this can be effected by disconnecting either of the spring plungers 26 from the respective sector 23.

Figures 2 and 3 illustrate the present invention as applied to non-rotatable pads 29 movable parallel with, and circumferentially over the surface of the plates. Such pads may be of the general construction described in the above-mentioned co-pending application, i.e. (see particularly Figure 2) they may be carried in blocks 30 secured to a bar 31, of rectangular section, extending parallel with the axis of the plate cylinder, and supported at its ends with a capacity for longitudinal movement, in a pair of arms 32 pivotally attached to arms 33 which are

themselves pivoted so as to be capable of swinging about the axis of the cylinder shaft 34. Longitudinal movement is imparted to the bar 31 by a groove cam 35 fast to the shaft 34, engaging a lever 36 pivoted to a bracket on one of the arms 33, and the circumferential movement of the bar 31 is obtained from eccentrics 37 fast on a transverse shaft 38 and transmitted through eccentric rods 39 pivoted to the arms 33, said shaft being rotatably mounted in bearings in the frame 16 and rotated through suitable gearing by the driving mechanism of the machine.

It is not herein deemed necessary to illustrate the mechanism at both ends of the plate cylinder as the duplication of the parts at the end thereof opposite to that shown in Figure 2, will be well understood from the more detailed description and illustration given in the specification of the application for Letters Patent previously referred to, and moreover they constitute no part of the present invention. For the purpose of attaining the results aimed at by the present invention, however, the construction in question is modified as herein next described.

The arms 32 carrying the bar 31 are fast to a shaft 40 journaled in the arms 33, which shaft has fast on it at one end an arm 41 which is acted upon by a compression spring 42 encircling an axially movable rod 43 pivoted to the said arm and entering a recess 44 in a sleeve 45 on the respective arm 33, and against which sleeve the compression spring bears so that it tends to turn the shaft 40 anti-clockwise as viewed in Figure 2, and thus to maintain the pads 29 in contact with the plate cylinder 1. A short shaft 46 is mounted in the frame 16 at the respective end of the cylinder 1, and has keyed to it at the outer side of that frame, a hand-lever 47, and carries at the inner side of said frame an arm 48 having an arcual track against which bears a roller 49 pivoted on an extension 50 of the arm 32, said roller being maintained in contact with the arcual track through the action of the spring 42. The shaft 46 has also secured to it at the outer side of the frame 16 an arm 51, the free end of which carries a pin 52 engaging a slot 53 in a link 54 for a purpose herein-after described.

In the position of the parts shown in Figure 2 the pads 29 are in contact with the plate cylinder 2 and during the circumferential movement imparted to them by the eccentrics 37, the roller 49 will track on the arcual surface of the arm 48, which surface is then concentric with the axis of shaft 34. When however, it is desired to move the pads 29 out of contact with the plate cylinder, the hand-lever 47 is depressed and the said parts may then be retained in the respective positions thus assumed, by pass-

ing a pin through a hole 55 in the lever 47 and into a recess 56 in the machine frame the said hole and recess being at that juncture in co-axial register. The arm 48 is thus depressed and through it, the arm 32 against the action of the spring 42, so that the pads 29 are held away from the plate cylinder in their "off" position, although the swinging movement of the arms 33 may be continued, because the roller 49 will remain in contact with the arm 48.

Figure 3 shows diagrammatically the connections by which a plurality of washing mechanisms constructed as last described, may be operated both independently and conjointly. During the independent operation as above described, the pin 52 moves in the slot 53 of the link 54 appertaining to the respective washing mechanism. The upper end of each link 54 is pivoted to one arm of a bell crank lever 57, whose other arm is pivoted to a horizontal rod or link 58 which in turn, is connected through a bell crank lever 59 and link 60, to an operating hand lever 61 pivoted to the machine frame in a position conveniently near the folding mechanism 62.

In Figure 3 the washing mechanisms are shown in operative position, and it will be readily understood that the depression of the hand lever 61 will, through the connections just described, result in the raising of the arms 51 and the consequent movement of the pads 29 to their respective inoperative positions in which latter they may be retained by a detent pin applied to the hand lever 61 in a manner similar to that hereinbefore described in connection with the hand levers 47 of the individual washing mechanisms.

It is advisable that the throwing-in of the washing mechanisms either individually or collectively, should be accompanied by a signal to enable pressmen other than the one effecting such operation, to exercise efficient control of the operations of which they are in charge, and the invention therefore includes an annunciator for this purpose, which annunciator in the examples shown, is operated electrically by press button contacts 63 located on the machine frame in convenient positions to be engaged by any of the hand levers 47, 61 of the last-described constructional form, or either of the hand levers 17 of the arrangement illustrated in Figure 1. When these levers are moved to their "on" positions they effect the closing of a circuit which operates, for example, an audible or a visible indicator to advise the pressmen that the washing mechanisms are in operation.

In the constructional form of the invention illustrated in Figures 2 and 3 the washing fluid is supplied to each of the pads 29 from a trough 65 beneath the respective

plate cylinder, which trough is of sufficient size to permit the pads 29 to be immersed in the fluid in said trough.

A further feature of the invention, which consists in associating the control of the washing mechanisms with that of other organs of the press, is exemplified in Figure 4, wherein the control lever 17 of a washing mechanism, such as that shown in Figure 1, is represented as adapted to operate that washing mechanism either independently, or conjointly with a damping mechanism such as that identified as a whole in Figure 4 by the reference numeral 66 and an inking mechanism similarly identified by the reference 67.

In this arrangement the arms 13, 14, of the washing mechanism control, are provided with studs 68, 69 the former engaging a slotted link 70 pivoted to an arm 71 of the damping roller control mechanism, the latter engaging a slotted link 72 pivoted to the hand-lever 73 of the inking roller control mechanism. In the positions in which the parts are shown in Figure 4, the inking and damping mechanisms are in operative contact with the plate cylinder 1 and the washing rollers 7, 8, are in their inoperative positions. When, however, the latter are put into operation, the studs 68, 69, engage with the respective ends of the slots of the links 70, 72, and transmit the movement of the arms 13, 14 respectively to the arm 71 and lever 73, thereby moving the damping and inking mechanisms to their inoperative positions; this will be readily apparent when it is understood that the damping rollers 74, 75, are operated by the arms 71, 76, through the links 77, 78, in the same manner as the washing rollers 7, 8, are operated through the links 11, 12, and the inking rollers are moved into and out of contact with the plate cylinder 1 through the link 79, lever 80 and pivoted plates 81 which carry the bearings of these last-named rollers. When, therefore, the hand lever 17 is operated to bring the washing rollers 7, 8, out of contact with the plate cylinder 1, the movement of the studs 68, 69, within the slots of the links 70, 72, prevents the bringing into operation of the damping mechanism 66 and inking mechanism 67 which can subsequently be brought into operation independently as required by the hand levers 82, and 73 respectively.

In order to provide for a contingency in which a limited washing might require to be effected without disconnecting the inking and damping mechanisms, the studs 68, 69, may be made withdrawable so as to render all three mechanisms independently operable.

It is to be understood that, wherever the construction admits of it and such a change would be beneficial any of the before de-

scribed hand-operated levers may be substituted by foot-operated devices, and for that reason the following claims are to be read as including all of such devices.

5 Having described my invention, I declare that what I claim and desire to secure by Letters Patent is:—

1. In a lithographing printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, and means operative to bring the washing devices into and out of operation either individually or a plurality of thereof collectively.

2. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively and an annunciator adapted to give a signal when said means are operated to bring the washing devices into operation.

3. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, inking rollers and tripping mechanism therefor appropriate to each plate cylinder, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively and means adapted to operate said tripping mechanisms simultaneously with the bringing into operation of the washing devices.

4. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, inking rollers and tripping mechanism therefor appropriate to each plate cylinder, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively, means adapted to operate said tripping mechanisms simultaneously with the bringing into operation of the washing devices and an annunciator adapted to give a signal when the first-named means are operated to bring the washing devices into operation.

5. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a

fluid trough and a plate washing device adapted to receive fluid from the trough, inking rollers and tripping mechanism therefor appropriate to each plate cylinder, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively and means adapted to operate said tripping mechanisms either simultaneously with or independently of the bringing into operation of the washing devices.

6. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, inking rollers, damping rollers and tripping mechanisms for the inking and damping rollers appropriate to each plate cylinder, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively and means adapted to operate said tripping mechanisms simultaneously with the bringing into operation of the washing devices.

7. In a lithographic printing press, the combination with a plurality of plate cylinders of plate washing mechanism appropriate to each plate cylinder comprising a fluid trough and a plate washing device adapted to receive fluid from the trough, inking rollers, damping rollers and tripping mechanisms for the inking and damping rollers appropriate to each plate cylinder, means operative to bring the washing devices into and out of operation either individually or a plurality thereof collectively and means adapted to operate said tripping mechanisms either simultaneously with or independently of the bringing into operation of the washing devices.

8. In a lithographic printing press, the combination with a plate cylinder of a fluid trough, a plate washing device adapted to receive fluid from the trough, means operative to bring the washing device into and out of operation, inking rollers, tripping mechanism for the inking rollers and means adapted to operate said tripping mechanism simultaneously with the bringing into operation of the washing device.

9. In a lithographic printing press, the combination with a plate cylinder of a fluid trough, a plate washing device adapted to receive fluid from the trough, means operative to bring the washing device into and out of operation, inking rollers, tripping mechanism for the inking rollers and means adapted to operate said tripping mechanism either simultaneously with or independently of the bringing into operation of the washing device.

10. In a lithographic printing press, the combination with a plate cylinder of a fluid

- trough, a plate washing device adapted to receive fluid from the trough, means operative to bring the washing device into and out of operation, inking rollers, damping rollers, tripping mechanisms for the inking and damping rollers and means adapted to operate said tripping mechanism simultaneously with the bringing into operation of the washing device. 15
- 10 11. In a lithographic printing press, the combination with a plate cylinder of a fluid trough, a plate washing device adapted to receive fluid from the trough, means operative to bring the washing device into and out of operation, inking rollers, damping rollers, tripping mechanisms for the inking and damping rollers and means adapted to operate said tripping mechanisms either simultaneously with or independently of the bringing into operation of the washing device. 20
- In testimony whereof I have affixed my signature hereto.

BENJAMIN JOSEPH JOHN GOULDING.