Feb. 23, 1926. 1,574,570

B. J. J. GOULDING

APPARATUS FOR GUMMING LITHOGRAPHIC PRINTING SURFACES

Filed July 11, 1924

Fig. 1.

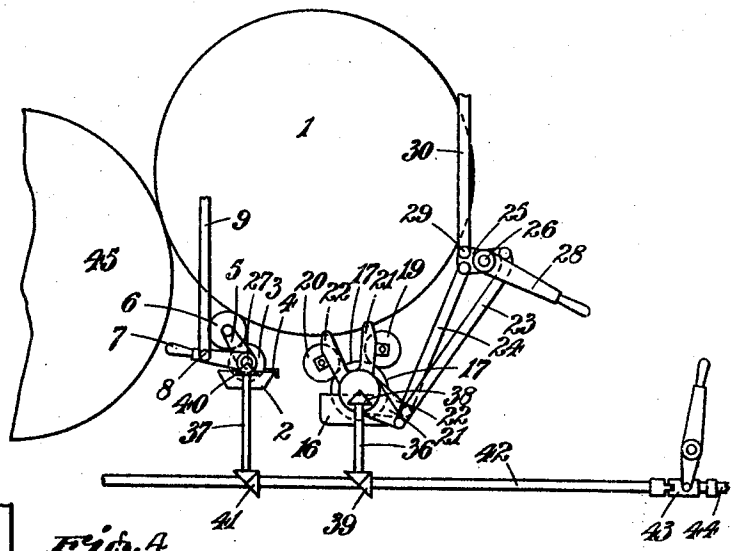


Fig. 4.

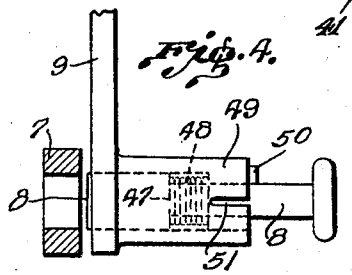


Fig. 2.

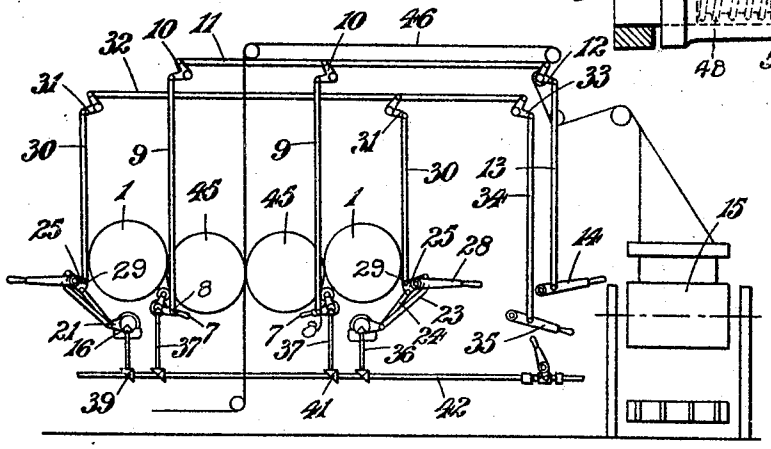
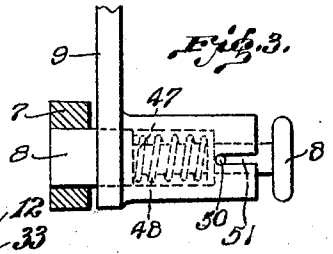


Fig. 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN JOSEPH JOHN GOULDING, OF ALTRINCHAM, ENGLAND, ASSIGNOR TO LINOTYPE AND MACHINERY LIMITED, OF LONDON, ENGLAND, A BRITISH COMPANY.

APPARATUS FOR GUMMING LITHOGRAPHIC PRINTING SURFACES.

Application filed July 11, 1924. Serial No. 725,322.

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 Apparatus for Gumming Lithographic Printing Surfaces, of which the following is a specification.

This invention relates to apparatus for gumming lithographic printing surfaces, and as it is particularly applicable for use in connection with litho rotary printing presses, it is herein described as applied to such presses.

As is well known in connection with such presses, when a necessity arises to stop printing for more than a very short time, the printing surfaces must be covered with a coating of gum, particularly in the case of aluminum or zinc printing plates which are especially subject to damage through oxidization when standing, unless so protected. The gumming operation, as heretofore practised, has been done manually by the operator, by means of a sponge saturated in a gum solution wiped over the plate, it being necessary to run the machine very slowly or turn it by hand for this purpose. In connection with a press employing a number of such plates, this method, besides being slow and requiring considerable manual labour, involves a serious risk of some of the plates becoming oxidized before the protective coating of gum can be applied.

The object of the present invention is to facilitate the gumming by reducing the time and manual labour occupied by the operation, and to enable the gumming to be effected by power-operated mechanism.

With this object in view, it is proposed, according to the invention, to employ for the gumming operation, one or more power-operated rollers or pads having operative surfaces formed of an absorbent resilient material, and which are adapted to be brought into contact with the surface of the printing plate.

The invention includes, in connection with a press comprising a plurality of plate cylinders, means whereby the respective gumming mechanisms may be brought into operation either individually, or a plurality thereof collectively.

The invention will be described with reference to the accompanying diagrammatic drawings, of which:—

Figure 1 represents in side elevation a plate cylinder with one constructional form of the invention applied thereto,

Figure 2 similarly represents an offset perfecting unit the two plate cylinders of which are each provided with mechanisms according to the invention, arranged for independent or conjoint operation, and

Figures 3 and 4 are detail views showing a construction of spring plunger used for alternatively connecting certain of the mechanisms.

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

According to the arrangement illustrated in Figure 1, gum solution is applied to the plate cylinder 1 from a trough 2 located beneath that cylinder, by rollers 3 and 6. The roller 3 rotates in the trough 2, being geared to the driving mechanism of the press as hereinafter more particularly described, and its shaft 27 is provided with an arm 5 at each end adapted to be rocked about the axis of that shaft and rotatably carrying the roller 6, which is in peripheral contact with the roller 3. The rocking of the arms 5 about the axis of the shaft 27, enables the roller 6 to be brought into and out of contact with the plate on the cylinder 1, such rocking being conveniently effected by means of a hand lever 7 integral with, or operatively fast to, one of the said arms.

A doctor or scraper 4 is preferably provided in conjunction with the roller 3 to regulate the amount of gum solution picked up by that roller.

Suitable connections permitting of conjoint, as well as independent, operation of different gumming mechanisms, in connection with a press employing a plurality of plate cylinders, are illustrated in Figure 2. According to the arrangement there shown, each of the levers 7 is pivotally connected by a spring plunger 8 to the lower end of a link 9 whose upper end is pivoted to one

arm of a bell-crank lever 10, the other arm of which is pivoted to a horizontal link 11 common to all of said bell-crank levers. A convenient arrangement of the spring plunger 8 is shown in Figures 3 and 4, wherein the plunger is provided with a shoulder 47 upon which bears, as represented in dotted lines, one end of a helical spring 48 whose other end engages with the adjacent end of a cylinder 49 fast to the aforesaid link 9. The plunger is provided with a radially extending pin 50 adapted to engage a recess 51 in the end of the cylinder 49, as shown in Figure 3, and also after the plunger has been disengaged from the lever 7 by a slight turn of the plunger, to bear against the outer end of the cylinder 49 to hold the plunger in its disengaged position. A slight turn of the plunger in the reverse direction brings the pin 50 into register with the recess 51 and allows the spring 48 to force the plunger into engagement with the lever 7, as shown in Figure 3. The link 11 is connected through a bell-crank lever 12 and link 13 with a hand lever 14 pivoted to the machine frame in a position conveniently adjacent to the folding mechanism 15, by which lever all the gumming mechanisms may be simultaneously thrown into or out of operation. In the event, however, of any individual gumming mechanism being required to operate independently of the others, such independent operation may be permitted by disconnecting the respective lever 7 from the respective link 9 by withdrawing the appropriate spring plunger 8.

For the purpose of cleaning the gum off a plate preparatory to restarting printing, the ordinary damping mechanism might be employed in cases where there is only a thin film of gum to be washed off, without interfering with the subsequent damping. In order, however, to provide for contingencies in which the use of the damping mechanism would be inadvisable, the present invention includes the provision of a special cleaning apparatus for this purpose.

According to the constructional form illustrated, this cleaning apparatus consists of a water trough 16, a trough roller 17 rotating therein, and a pair of rollers 19, 20 in permanent peripheral contact with the trough roller 17. The rollers 19, 20 are adapted to be brought into and out of contact with the gummed plate on the respective cylinder 1, for which purpose they are rotatably supported in angle levers 21, 22, independently rockable about the axis of the trough roller 17. The angle levers 21, 22, are connected by links 23, 24 respectively to diametrically opposed arms of a lever 25 which is secured to a shaft 26 mounted in the machine frame, on which shaft is fixed a hand-lever 28 by which it may be rocked. The shaft 26 extends across the machine, and the levers 21, 22, links 23, 24 and lever 25, are duplicated on the side of the machine opposite to that illustrated in the drawings. From the foregoing, it will be seen that upward movement of a lever 28 from the position in which that represented in Figure 1 is shown, to the position in which corresponding levers are shown in Figure 2, will bring the rollers 19, 20, into contact with the plate on the respective cylinder 1.

In the case of a plurality of cleaning mechanisms requiring to be alternatively independently or conjointly operated, an arrangement similar in construction and operation to that above-described in connection with the gumming mechanism, may be provided. Thus, in the example illustrated, one arm of each lever 25 is held by a spring plunger 29 substantially of the same construction as that illustrated in Figures 3 and 4 in connection with the plunger 8, in pivotal engagement with a vertical link 30, which latter is connected by bell-crank lever 31, horizontal link 32, bell-crank lever 33 and vertical link 34, with a hand-lever 35.

It is desirable that the trough rollers 3 and 17 should not rotate when the gumming and gum cleaning mechanisms are out of operation, and this result may be conveniently obtained by, for example, the means next described. In said example, the rollers 17 and 3 are driven respectively through vertical shafts 36, 37 by bevel gears 38, 39 and 40, 41, from a horizontal shaft 42, which, by a clutch 43 can, at will, be operatively connected to and disconnected from a driving shaft 44.

45 represent the two transfer cylinders from which the web 46 receives the perfecting impressions previously received by them from the plate cylinders 1; these parts, however, constitute no part of the present invention.

If desired, the rollers 6, 19 and 20, or any of them, may be reciprocated axially, and also, if desired, the control of the gumming and gum-cleaning mechanisms may be associated with that of any other of the organs of the press which it may be considered desirable to bring into and out of operation simultaneously with and through the act of bringing those mechanisms themselves into or out of operation.

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

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

1. In a lithographic printing press, the combination with a plurality of plate cylin-

ders of gumming apparatus appropriate to each plate cylinder comprising a gum-solution trough, a power operated roller adapted to receive gum solution therefrom and means adapted to bring the roller into and out of contact with a plate on the plate cylinder, and mechanism operative to bring such apparatus into and out of operation either individually or a plurality thereof collectively.

2. In a lithographic printing press, the combination with a plate cylinder of a gum-solution trough, a power-operated roller adapted to receive gum solution from the trough, means adapted to bring said roller into and out of contact with a plate on the plate cylinder, a cleaning fluid trough, a cleaning roller adapted to receive fluid from said cleaning fluid trough and means adapted to bring said cleaning roller into and out of contact with a plate on the plate cylinder.

3. In a lithographic printing press, the combination with a plurality of plate cylinders, gumming apparatus appropriate to each plate cylinder comprising a gum-solution trough and a power operated roller adapted to receive gum solution from said trough, and gum-cleaning apparatus appropriate to each plate cylinder comprising a cleaning fluid trough and a cleaning roller adapted to receive fluid from said cleaning-fluid trough, of means operative to bring the gumming rollers into and out of contact with plates on the respective plate cylinders either independently or collectively and means operative to bring the gum-cleaning rollers into and out of contact with plates on the respective plate cylinders either independently or collectively.

In testimony whereof I have affixed my signature hereto.

BENJAMIN JOSEPH JOHN GOULDING.