

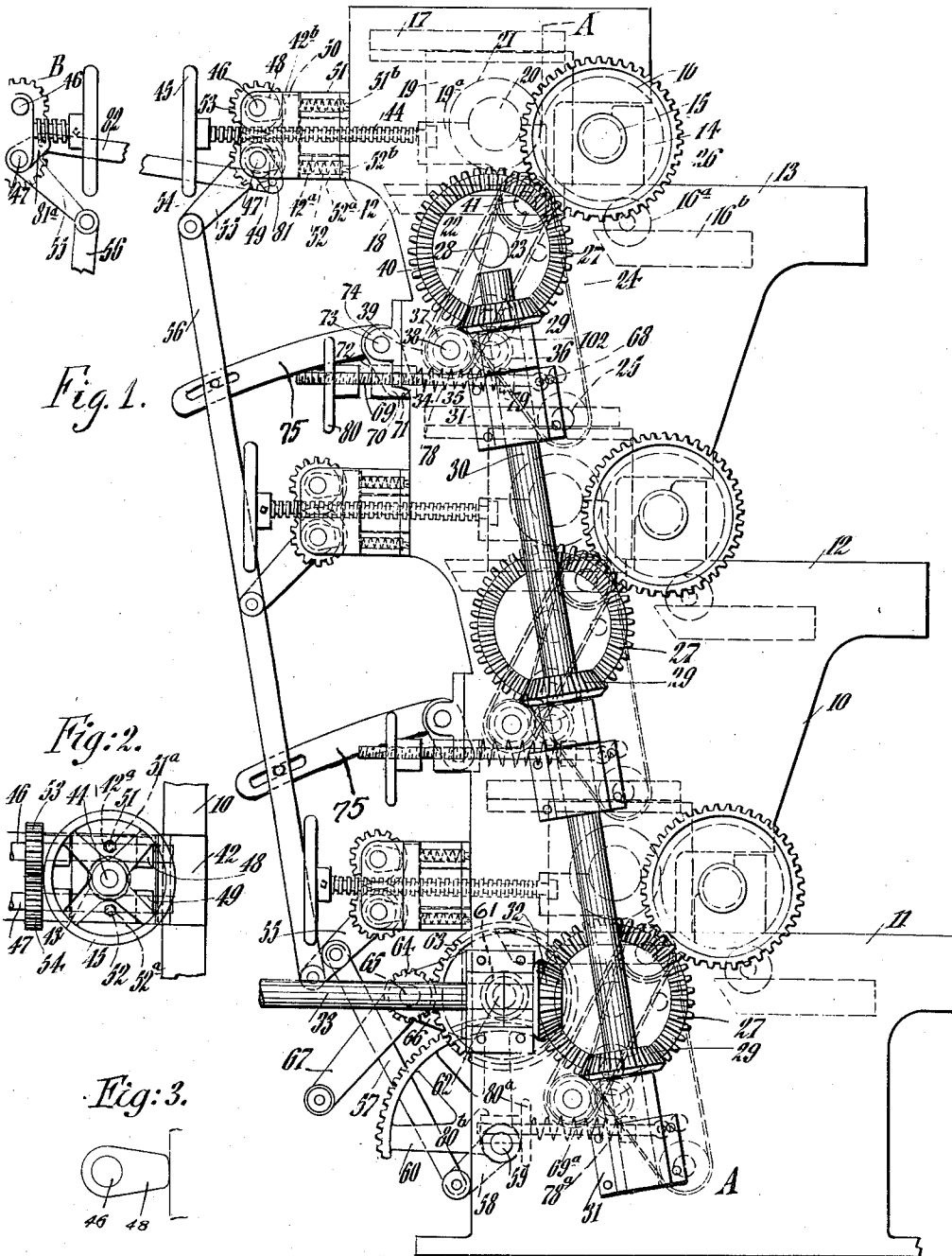
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C. F. DAUSMANN

PRINTING PRESS

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Inventor
Charles F. Dausmann

By his Attorney

C. P. Gaeffel

UNITED STATES PATENT OFFICE.

CHARLES F. DAUSMANN, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE PRISMATONE CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PRINTING PRESS.

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To all whom it may concern:

Be it known that I, CHARLES F. DAUSMANN, a citizen of the United States, and a resident of the borough of Brooklyn, county of Queens, city and State of New York, have invented certain new and useful Improvements in Printing Presses, of which the following is a specification.

The present invention relates to improvements in printing presses, particularly printing presses intended especially for rotary gravure color printing, and the present is a divisional application of my copending application for printing presses, Serial No. 315,603, filed August 6, 1919.

An object of the invention is to provide in such a press, means for accurately maintaining the register of colors between the prints, such means being adjustable so as to enable the imparting of several colors upon the paper or web passing through the press in such manner that the colors will be precisely superimposed. To this end I propose to provide in the present embodiment of my invention, a plurality of spaced print and impression rollers adapted respectively to impart a single color to the paper or web and between these a color registering blanket continuously moving with the web and adapted to tension the same.

A further object of the invention is to enable the release of the impression rollers and the blankets so that the tension upon the web will be relieved and the inserting of a new web in the press will be facilitated. I further propose to provide means for simultaneously, by a single manual operation, releasing all of the blankets and impression rollers, either of one printing couple or of two in the case of printing on both sides of a sheet.

With these and other objects in view, an embodiment of my invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto and the invention will be finally pointed out in the claims.

In the accompanying drawings,
Figure 1 is a side elevation of a printing press showing one embodiment of my invention incorporated therein, certain well

known parts of the press being omitted for the sake of clearness;

Figure 2 is a detail front view of the impression roller throw-off mechanism;

Figure 3 is an enlarged detail sectional view thereof.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, and more particularly to Figure 1 thereof, the press shown therein, comprises two side supports or standards 10 having a plurality of stepped horizontal shelf portions 11, 12 and 13, upon which are slidably mounted the bearings 14 in which the end of the shafts 15 of the printing cylinders 16 are journaled. In the present disclosure I have shown three printing sets adapted successively to impart three colors in superimposed relation upon the web A passing through the press. This is merely for illustrative purposes, however, and two, four or any desired number of printing sets may be provided as will be understood.

Upon the inner sides of the standards 10 and at one side of the printing cylinder there are secured slide bearing gibs 17 and 18 in which block members 19^a are slidable, said block members having cast thereon bearings 19 in which are journaled the ends of the shaft 20 of an impression roller 21 which bears upon the printing cylinder. The printing cylinder, it will be understood, is preferably of copper and has an etched intaglio printing surface, the impression roller cooperating therewith having a rubber covering yieldingly engaging the same. Ink is supplied to the printing cylinder by means of an inking roller 16^a rotating in an ink reservoir 16^b.

The bearing 19^a extends into a secondary bearing portion 22 in which is journaled the shaft 23 over which one end of the continuous blanket 24 passes, the other end passing over a shaft 25, the blanket extending from the pass between the impression and printing cylinder of one set to the pass of the impression and printing cylinder of the next set.

The shaft 15 of the printing cylinder of each set is provided at its end with a gear

26 which meshes with the spur teeth of a combined spur and beveled gear 27 journaled upon a stud shaft 28, the beveled teeth being engaged by a series of beveled pinions 29 mounted upon a shaft 30 journaled in bearings 31 and extending uprightly of the standard 10 at one side, the said shaft being driven from the lowermost combined spur and beveled gear which in turn is driven by the beveled pinion 32 of the horizontal driving shaft 33. Thus the printing cylinders are simultaneously and equally driven.

The spur teeth of the combined spur and beveled gear 27 are engaged by a pinion gear 34 provided upon the outer end of a shaft 35 journaled in the standard 10, the other end of the said shaft being provided with a pinion gear 36 meshing with a pinion gear 37 provided upon a stud shaft 38 and upon which shaft 38 there is provided a sprocket gear 39 connected by a sprocket chain 40 with a sprocket gear 41 mounted upon the end of the shaft 23 of the blanket, this transmission adapted to continuously move the blanket in the direction of movement of the web through the press.

Upon the inner end faces of the standards there are mounted brackets 42 extending between the standards and having at each end cylindrical passages 42^a in which are slidably mounted nuts or blocks 43 through which are threaded screws 44 connected at one end to the slide bearing 19 and provided at their other ends with hand wheels 45. Upon parallel shafts 46 and 47 extending between the upstanding end portions 42^b of the brackets, there are provided cams 48 and 49, the outer face portion 50 of the nut 43 being held constantly in engagement with the said cams by means of springs 51 and 52, disposed in sockets 51^a and 52^a formed in the brackets above and below the passages 42^a, the said springs being adjustable as to tension by means of set screws 51^b and 52^b. The said cams are provided with concentric portions of greatest distance from the axis of rotation, the said portions when engaged with the face portions 50 of the nut adapted to hold the impression roller in a predetermined constant position at any point of the engagement of said concentric portions with said face portions. Inter-meshing pinions 53 and 54 are provided upon the respective shafts 46 and 47 and the lower shaft 47 has mounted thereon an arm 55 which, upon being raised, will, through the rotation of the shafts 47, turn the cams 48 and 49 so that the springs 51 and 52 force the nut 43 carrying the screw 44 outwardly and thereby withdraw the bearing blocks 19 and the impression roller carried thereby out of engagement with the printing cylinder, the upper end of the blanket being also moved outwardly by this operation, the lower end being also moved

at the same time by means that will be presently more fully described.

The respective arms 55 of the printing sets are connected by a rod 56 so that movement of one of the arms will cause corresponding movement of the other and the throw-off of all of the impression rollers will be simultaneous and equal. The lowermost arm 55 is connected by a rod 57 to an arm 58 provided upon the shaft 59 of a segment gear 60 which meshes with a pinion 61 provided upon the shaft 62 of a gear 63, a pinion 64 provided upon a shaft 65 mounted in a bracket 66 meshing with the gear 63, a handle 67 being provided upon the shaft 65. By turning the handle 67, the train of gears 64, 63, 61 and 60 will swing the arm 58 upwardly thereby raising the rod 57 and the rod 56, causing the arms 55 to be swung and the cams 48 and 49 to be turned to release the impression roller.

The blanket is pivotally connected at 68 to a pressure screw 69 having its threaded portion extending through the plane bore of a poppet head 70 pivotally supported at 71 upon an arm 72 mounted upon a shaft 73 journaled in brackets 74, a lever 75 provided upon the shaft 73 having its slotted end 76 engaging a pin 77 of the connection rod 56. A spring 78 is disposed on the screw between the poppet head and a collar 79 and yieldingly holds the blanket in engagement with the web. A hand nut 80 engages the threaded end of the pressure screw 69, and is normally spaced from the poppet head. Turning of the hand nut 80 regulates the space between the nut and the poppet head. Upon movement of the rod 56, the lever 75 is swung upwardly thereby moving the head 70 outwardly, first releasing the tension upon the spring 78 and upon engagement with the nut 80 disengages the blanket from the web, this movement being simultaneous and substantially equal to the movement of the impression roller away from the printing cylinder. By turning the hand nut against the poppet head, tension on the web may be released as desired.

The press so far described is adapted for the printing upon one side of a web or paper. Upon occasion the paper is printed upon both sides by a continuous process which consists in providing in opposed relation to one press a similar press from which the web is carried in such manner that the unprinted surface of the paper issuing from one press is printed in the other press, and I have indicated at B a small portion of another press arranged in this relation. Upon the shafts 47 of the two presses there are provided respectively a downwardly extending arm 81 and an upwardly extending arm 81^a connected by means of a connection rod 82 so that operation of the rod 56 of one of the presses will simultaneously and

equally operate the other so that the impression rollers and the blankets of all of the sets of both presses will be simultaneously and equally moved away from the printing cylinders to release the web. In carrying out this operation the rod 57 of one press is disconnected.

The lowermost blanket not being above the pass of a printing set, is not swung outwardly at its lower end upon operation of the rod 56, but is independently provided with a pressure screw 69^a, a spring 78^a being provided thereon, which is adjustable as to tension by a hand nut 80^a pivotally supported in a bracket 80^b.

I have illustrated and described a preferred and satisfactory embodiment of my invention, but it is obvious that changes may be made therein within the spirit and scope thereof as defined in the appended claims.

I claim:

1. In a multicolor press, a plurality of print and impression rollers, manually adjustable means for urging the impression rollers out of engagement with the print rollers, means acting against said manually adjustable means for advancing the impression rollers against said print rollers, blankets normally urged into the line of the passes of said print and impression rollers, and operating means connected to all of said advancing means and to said blankets, whereby said impression rollers may be operated simultaneously and equally toward and from the print rollers and said blankets may be operated simultaneously and equally therewith into and out of line with the said passes of the rollers.

2. In a multicolor press, a plurality of print and impression rollers, independent means normally tending to throw off each impression roller from its print roller, a blanket for each pair of print and impression rollers, independent means for the blankets to normally urge the same into the line of the passes of the respective pairs of rollers, and operating means connected to all of said independent means, whereby said impression rollers and said blankets may be simultaneously and equally retracted from their respective print rollers and passes throughout the series.

3. In a multicolor press, a plurality of print and impression rollers, independent means normally tending to throw off each impression roller from its print roller and embodying adjusting elements, a blanket for each pair of print and impression rollers, independent adjustable means for the blankets to normally urge the same into the line of the passes of the respective pairs of rollers, and operating means connected to all of said independent means, whereby operation of said operating means is adapted to simultaneously and equally retract said impres-

sion rollers and said blankets from their respective print rollers and passes.

4. In a multicolor press, a plurality of print and impression rollers, a member between prints pressed against the web to place it under tension to register colors, means for withdrawing said impression rollers from engagement with said print rollers, means operatively connecting all of said withdrawing means to cause all of the said means to be operated simultaneously and equally, and means operatively connecting said impression roller withdrawing means to said tension means, whereby said tension means is withdrawn from said web when said withdrawing means is operated to withdraw said impression roller.

5. In a multicolor press, a plurality of printing and impression rollers, means for withdrawing said impression rollers from engagement with said printing rollers, means operatively connecting said withdrawing means to cause all of said means to be operated simultaneously and equally, and a member operatively connected to said withdrawing means and extending between prints and pressed against the web to place it under tension and maintain it under tension to register colors, withdrawal of said impression rollers being adapted to disengage said member from said web.

6. In a multicolor press, a printing couple comprising a printing roller and an impression roller, a device arranged for engagement with the web which is being printed at a point spaced from the printing couple, and common means for moving one of the elements of the printing couple with relation to the other and for operating said device.

7. In a multicolor press, a plurality of sets of printing couples, each comprising a printing roller and an impression roller, means located between the sets of couples for tensioning the web which is being printed, and common means for moving certain of the elements of the printing couples with relation to the other elements and for moving the tensioning means laterally of the web.

8. In a multicolor press, a plurality of sets of printing couples each comprising an impression roller and a printing roller, means located between the sets of printing couples for effecting registration of the printing couples on the web being printed, and means for simultaneously moving the elements of the printing couples out of operative relative to each other and withdrawing the registering means from the web.

9. In a multicolor press, a plurality of sets of printing couples, each comprising a printing roller and an impression roller, registering means located between the sets of printing couples movable with the web from one set of printing couples to another, and con-

trolling means operatively connected to certain of the elements of the printing couples and to the said registering means for withdrawing the registering means from the web.

- 5 10. In a multi-color press, a plurality of spaced sets of printing and impression rollers, means for withdrawing said impression rollers from engagement with said printing rollers, means operatively connecting
10 ing said withdrawing means to cause all of said means to be operated simultaneously and equally, and a member operatively connected to said withdrawing means and extending between spaced sets of printing and
15 impression rollers to coact with the web and maintain the same in register with the print-

ing rollers whereby the withdrawal of the impression rollers simultaneously moves said registering members out of operative relation to the web.

- 20 11. In a multi-color press, a printing couple comprising a printing roller and an impression roller, a web registering device, and common means for moving one of the elements of the printing couple with relation to the other and simultaneously positioning said registering device with respect
25 to the web.

In testimony, that I claim the foregoing as my invention, I have signed my name here-
30 under.

CHARLES F. DAUSMANN.