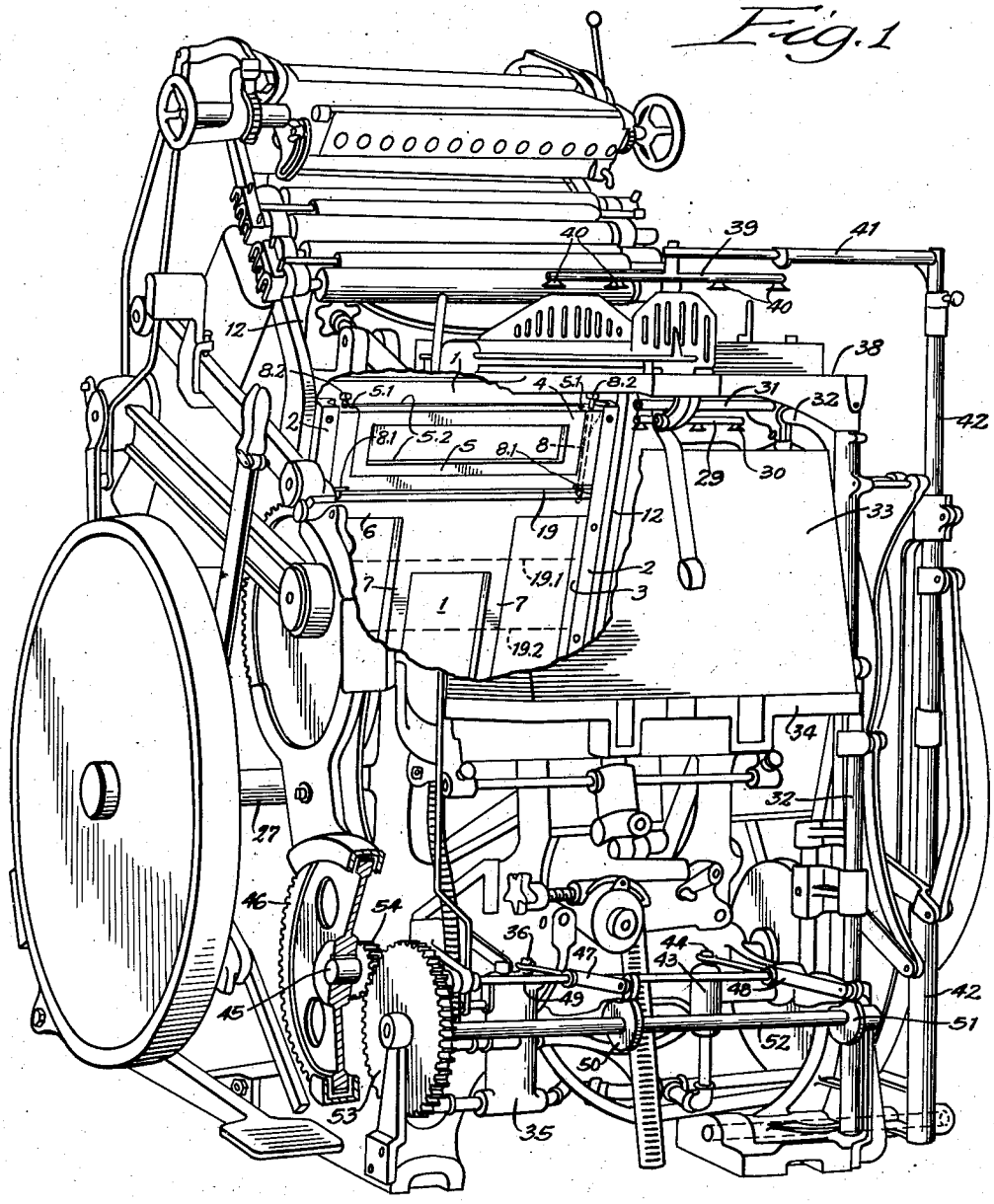
Oct. 28, 1947. R. L. FRIEL 2,429,874

PRINTING PRESS

Filed Dec. 21, 1944 2 Sheets-Sheet 1

Fig. 1



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Fig. 3

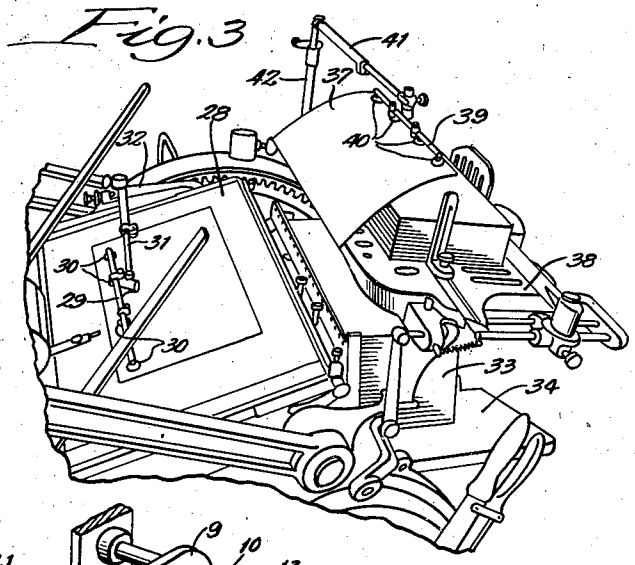
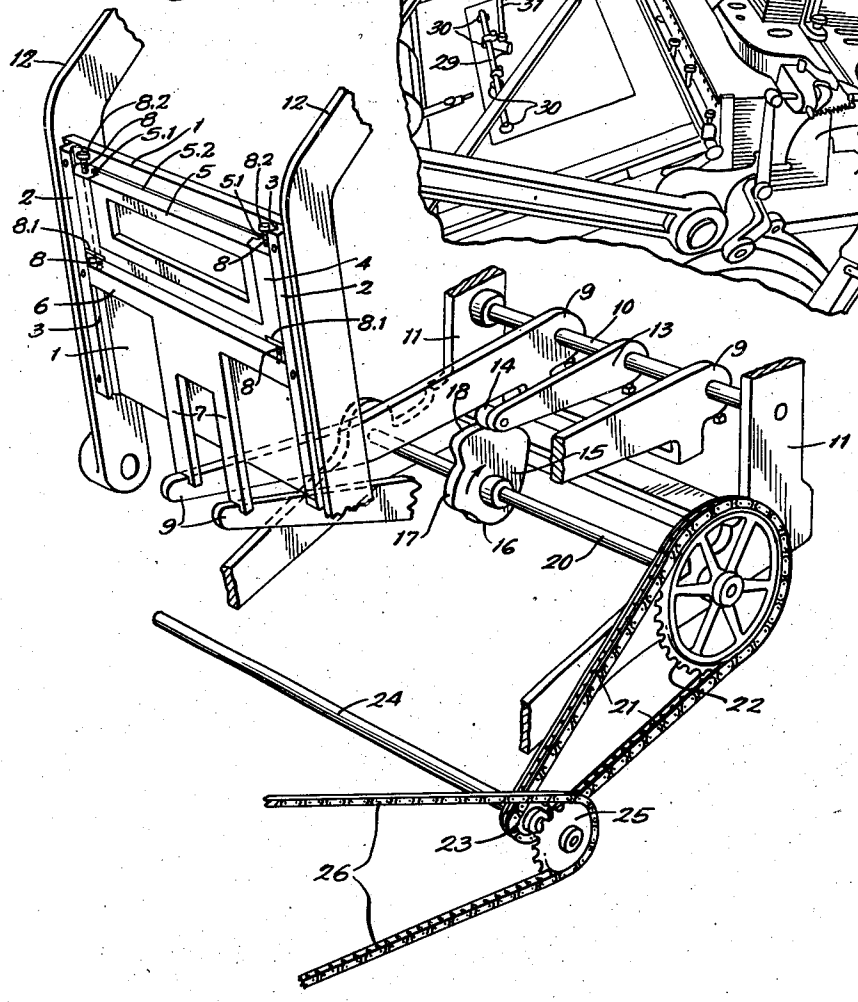


Fig. 2



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PRINTING PRESS

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3 Claims. (Cl. 101—287)

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This invention relates to self-feeding automatic presses and is particularly directed to modifications of the chase supporting and feed-control devices, to adapt the same to making multiple duplications of imprints of the same type matter on each sheet of paper in the course of a single run of the press.

The main objects of this invention are to provide in self-feeding automatic printing presses improved mechanism for supporting and shifting the type chase or equivalent printing plate; to provide improved means for coordinating the type matter with respect to the platen so that successive impression engagements that are made by relative movement of the type matter and platen will be made at different locations within the area of the platen surface and to control the sheet feeding mechanism in such manner that each sheet fed to the press will receive a plurality of such impressions; and to provide improved devices, for accomplishing the aforesaid objects, in the form of attachments that can be readily applied to existing printing presses whereby, by simple adjustments, the press may be adapted for making either single or multiple imprints per sheet.

A specific embodiment of this invention is illustrated in the accompanying drawings in which;

Figure 1 is a perspective front view of a self-feeding automatic printing press modified in accordance with the present invention, some of the parts being partly broken away for clearness of illustration, and to disclose parts that are otherwise hidden.

Fig. 2 is a fragmentary detail in perspective of the chase shifting mechanism.

Fig. 3 is a fragmentary perspective view showing the relation of the platen of the printing press with respect to the stock magazine, the delivery table and the paper-feed and delivery bars.

In the form shown in the drawings, the bed 1 of the press has rigidly mounted thereon a pair of parallel guide bars 2 whose inwardly facing edges are planed to form V-shaped guideways 3 between which is slidably mounted a U-shaped slide frame 4 which supports the type-carrying chase 5. The side bars of the frame 4 are rabbeted to receive projecting flanges 5.1 on the margins of the chase 5, which consists of a frame with a thin backing plate 5.2. The slide frame 4 is supported by a vertically slidable elevator bar 6 which has a pair of depending arms 7 and which together with its arms 7 is vertically slidable over the bed 1 between the bars 2.

Slight adjustment between the elevator bar 6 and the chase supporting frame 4 can be had by

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means of set screws 8 which extend longitudinally through the upright arms of the frame 4 and rest on the elevator bar 6. The set screws 8 are threaded into nuts 8.1 set into the frame 4. The set screws 8 have heads 8.2 by which they are turned for accurate adjustment of the height of the chase 5.

The arms 7 are supported by lever arms 9 which are fast on a countershaft 10 journaled on frame bars 11 which are rigidly attached to and in effect a part of the main supporting frame of the press.

A third lever arm 13 is fast on the shaft 10 and carries a roller 14 which rides on a cam 15 having dwell surfaces 16, 17 and 18 at different elevations. The radii of these dwell surfaces are proportioned with respect to the arms 13 and 9 so that the chase will be supported at three different elevations represented in Figure 1 by the line 19, being the bottom of the chase 5, and the broken lines 19.1 and 19.2.

The cam shaft 20 is driven by a sprocket chain 21 and sprockets 22 and 23 from a countershaft 24 which in turn is driven by a sprocket wheel 25 and sprocket chain 26, by a sprocket wheel on the main drive shaft 27 of the press. The dimensions of the various sprocket wheels are such that the shaft 24 will make one revolution during each printing operation of the press and the shaft 20 will make a fractional part of a revolution for each printing operation of the press.

Thus the chase will be moved cyclically to the three successive positions indicated by the lines 19, 19.1 and 19.2 and back from the position 19.2 to the position 19 so that in the particular embodiment shown, the type matter that is set up in the chase 5 will be impressed in these three different locations repeatedly in the same order in successive operations of the machine.

In the particular machine shown, the platen 28 rocks from a position in which it is shown in Fig. 3 to a position parallel with the face of the type matter in the chase 5 prior to each impression contact with the type and rocks back to the position in which it is shown in Fig. 3 between each printing impression.

The paper-feed mechanism comprises a feed bar 29 provided with suction tips 30 for lifting the paper sheets. The feed bar 29 is adjustably mounted on an arm 31 carried by a rocker arm 32 which, by means of appropriate mechanism not illustrated in detail, causes the feed bar 29 to pick up a sheet from the stock pile 33 of the stock magazine 34 and carry it to its proper position on the platen as illustrated in Fig. 3.

The elements 29, 31 and 32 are hollow and the suction is controlled by a valve 35, Fig. 1, which renders vacuum cups active or inactive according to the position of the stem 36 on the valve 35. Similarly, the delivery of a printed sheet 37 from the platen to the delivery table 38 is accomplished by means of a delivery bar 39 equipped with sucker tips 40 and carried by an arm 41 on the extensible rocker arm 42 and likewise controlled by a valve 43 having an operating stem 44, whereby the sucker tips are rendered active or inactive, according to the needs of the press.

Normally in the existing press, the valve stems 36 and 44 are operated by mechanism, not shown, actuated by cams on shaft 45 driven by a gear 46 which makes one revolution during each printing operation of the press.

In order to adapt the operation of the valves 35 and 43 to the multiple printing impressions to be accomplished by the shifting of the chase through its cycle of positions hereinbefore described, the valve operating mechanism actuated by the cam on the shaft 45 is supplemented by levers 47 and 48 which are fulcrumed on shaft 49 and actuated by cams 50 and 51 on a counter shaft 52 driven by a gear 53 which meshes with a pinion 54 on the shaft 45. The cams 50 and 51 thus function to prevent the valves 35 and 43 from activating the sucker tips of delivery and feed bars 39 and 29, except at the completion of the whole series of imprints on any sheet.

The ratio of the gear 53 and pinion 54 is such as will correspond with the number of printing positions of the chase 5 which in the present instance is three, so that the shaft 52 makes one revolution for each three revolutions of the shaft 45. The cams 50 and 51 are so shaped and positioned on the shaft 52 that the suction tips 30 and 40 of the paper-feed and delivery bars will be activated only once for each three successive printing operations of the press and a sheet 37 will be removed from the platen after it has received the three successive imprints corresponding to the different positions of the chase.

As a printed sheet 37 is removed from the platen by the delivery bar 39, a fresh sheet will be delivered from the stock pile 33 to the platen by the feed bar 29.

The operation of the device shown is as follows:

During the operation of the machine, the driving mechanism causes the platen 28 to rock to the position in which it is shown in Fig. 3 between each printing impression and while in that position, the feed bar 29 and delivery bar 30 make the necessary movements to remove the printed sheet from the platen and supply a new sheet; but the valves 35 and 43 activate the sucker tips only at times when the platen is in the position shown in Fig. 3, after the sheet has had three successive imprints made thereon. Between these intervals, the cam 15 causes the chase 5 to pass cyclically through its three positions in one direction and then back to the starting point.

Although the foregoing description and drawings are specific to a single embodiment of this invention, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. In a printing press of the Gordon type, a chase-holding slideway, a chase slidable along said slideway to a plurality of successive printing positions, a platen movable to and from printing relation with said chase in all said positions, mechanism for intermittently shifting said chase cyclically through said successive printing positions and back, in timed relation to repeated movements of said platen, pneumatic sheet-feeding means to withdraw and supply printing sheets from and to said platen, and means coordinated with said cyclic movements of the chase to activate said sucker tips at one stage only in each cycle of movements of said chase.

2. In a printing press of the Gordon type, a chase-holding slideway, a chase slidable along said slideway to a plurality of successive printing positions, a platen movable to and from printing relation with said chase in all said positions, mechanism for intermittently shifting said chase cyclically through said successive printing positions and back, in timed relation to repeated movements of said platen, pneumatic sheet-feeding means comprising normally inactive sucker tips for lifting the sheets, and valve-operating timing means geared to said chase-shifting mechanism whereby said sucker tips are activated at one stage only in each cycle of movements of said chase.

3. In a printing press of the Gordon type, a slidable chase shiftable cyclically to a plurality of positions, a lever controlling the position of said chase, a cam actuating said lever and having successive dwell surfaces for holding said chase stationary in its successive positions and having an intermediate surface acting on said lever to cause the return of said chase from one limit to the other limit of its movement, a platen, sheet-feeding means comprising sheet-lifting sucker tips, means for supplying vacuum to activate said sucker tips including valve means, cam means controlling said valve means, said first-named cam and said cam means being operatively connected so as to cause said cam means to cut off the vacuum from said sucker tips while said chase control lever is coacting with said dwell surfaces of its said cam and to supply such vacuum when said lever is coacting with said intermediate surface of its said cam.

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