July 18, 1950 H. A. PRITCHARD 2,515,355

PERFECTING OFFSET PRESS

Filed July 13, 1945 2 Sheets-Sheet 1

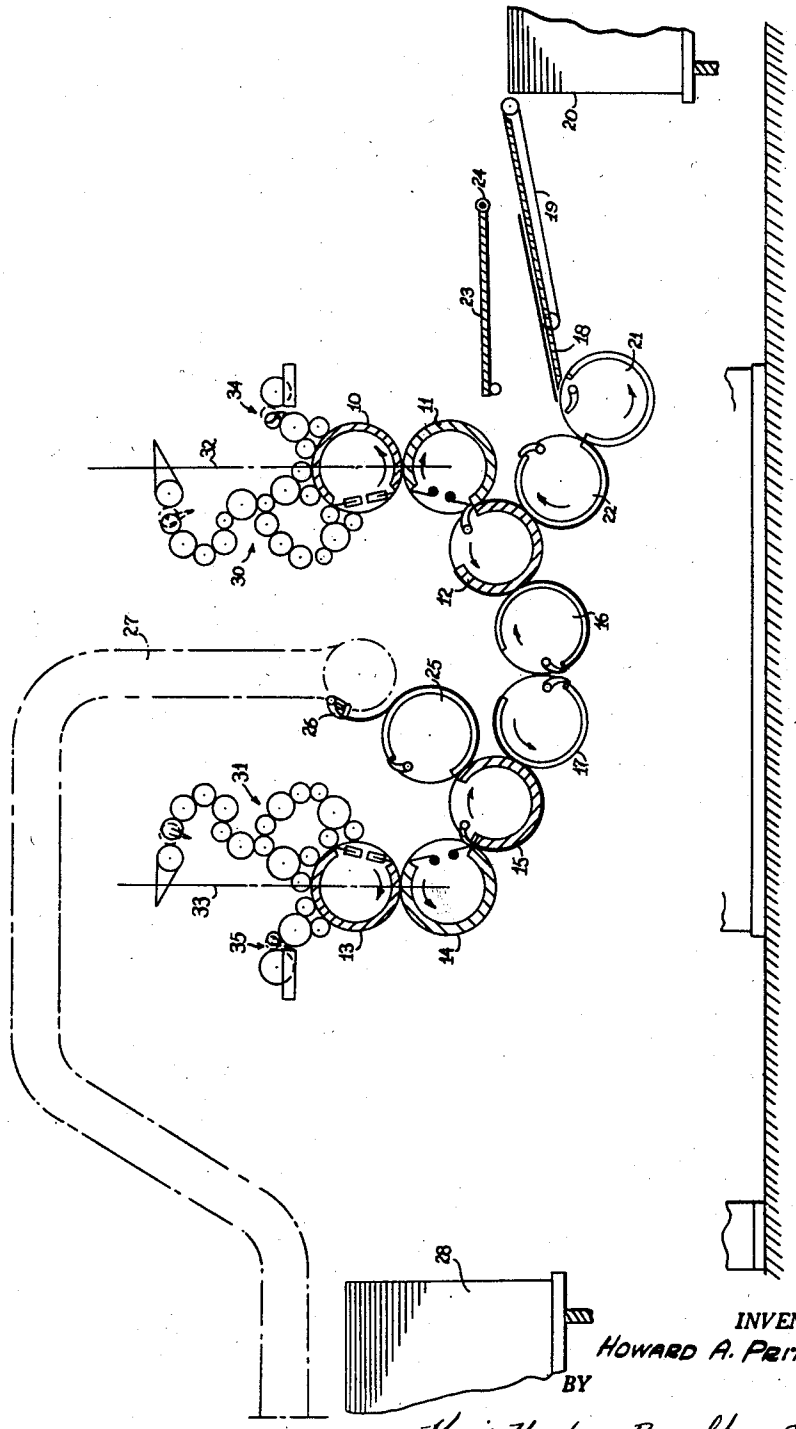


Fig. 1

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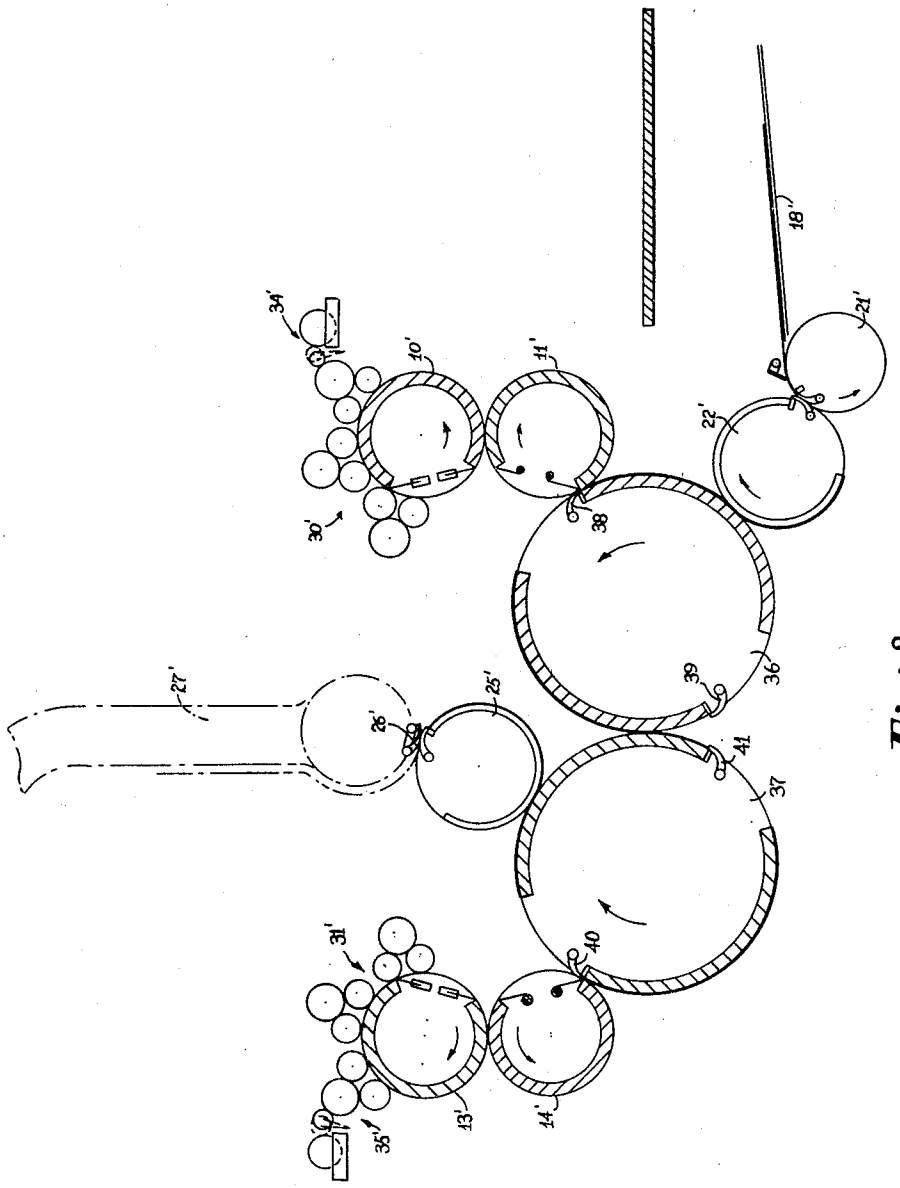


Fig. 2

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PERFECTING OFFSET PRESS

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4 Claims. (Cl. 101—142)

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This invention relates to improvements in perfecting offset presses and has to do primarily with the arrangement of the plate and blanket cylinders of the two printing units symmetrically, and such disposition of other parts that relatively large areas of those cylinders are exposed on the outer sides of the units for most convenient access by the operators, the invention providing also that each pair of plate and blanket cylinders shall turn in the same direction relative to the adjacent working space for the convenience of the men working on the press.

One of the objects of the invention is the provision of a press in which the cylinders of the two units are so disposed and so interconnected by the driving means that two operators may be engaged simultaneously in performing identical work upon the two units, thereby facilitating and expediting the preparation of the machine for printing.

Another object is the provision of a perfecting press of the character stated wherein the inkers may be disposed above the plate cylinders, in other words in their most advantageous positions, and yet leave the plate cylinder and blanket cylinder adequately accessible.

Other objects and features of novelty will appear as I proceed with the description of those embodiments of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Fig. 1 is a diagrammatic view partially in side elevation and partially in vertical section of an offset perfecting printing press embodying my invention, and

Fig. 2 is a similar view wherein the impression cylinders of the two printing units are of double size and are so disposed and operated as to transfer sheets directly from one of said cylinders to the other.

Referring first to Fig. 1; 10, 11 and 12 represent the plate, blanket and impression cylinders respectively of a first printing unit, cylinder 10 being disposed above cylinder 11, preferably with their axes in substantially the same vertical plane. The axes of the three cylinders cut the points of an isosceles triangle the base or longest side of which faces inwardly or in the direction of the other unit of the press.

The plate, blanket and impression cylinders 13, 14 and 15, respectively, of the second unit are disposed at the same level as the corresponding cylinders 10, 11 and 12, and are disposed with respect to each other in an arrangement

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which is symmetrical with that of the latter cylinders. Consequently, the base or longest leg of the triangle, the points of which are cut by the axes of the cylinders 13, 14 and 15, faces in the direction of the similar leg of the triangle first mentioned.

In order to space the two printing units apart far enough to provide sufficient room between them and to reverse the sheets for printing on the opposite sides, I employ two transfer cylinders 16 and 17. The cylinders 12, 15, 16 and 17 are all provided with conventional sheet grippers and gripper operating means of known character in order that the sheets printed on one side may be accurately transferred and the second printing caused to occupy a position on the sheet corresponding to that of the first printing.

The means which I employ for feeding sheets to the press is so constituted as to deliver sheets to the grippers of cylinder 12 at a point below the axis of that cylinder and on the side thereof which is nearest the blanket cylinder 11. For this purpose I have shown herein diagrammatically a feed table 18 over which sheets are carried by tapes 19 from a pile 20. After the usual front and side registration by means not shown, the sheets are taken by the grippers on a feed cylinder 21 and transferred therefrom to the grippers of a second feed cylinder 22 which delivers them to the grippers of impression cylinder 12.

An operator's platform 23 may be disposed above the feed table in convenient relation to the cylinders 10 and 11, and if desired may be hinged at one end upon a cross rod 24 in order that when it is not in use it may be swung up out of the way to expose to view and render accessible the feed table and the sheets moving thereover

After the sheets have received an imprint from the second unit they are taken by grippers on a transfer cylinder 25 and transferred to traveling grippers 26 on a chain delivery 27 which carries the sheets upwardly and then over the top of the second unit and down to a delivery pile 28.

The inkers for the first and second units of the press are indicated generally by the reference numerals 30 and 31. They are disposed above the respective plate cylinders 10 and 13, but substantially upon the inner sides of planes through the axes of cylinders 10 and 11 of the one unit and 13 and 14 of the other, these planes being indicated in the drawings by the lines 32 and 33 respectively. This disposition of the inkers

enables them to partake of the well-known advantages of inkers arranged over the plate cylinders, while at the same time permitting the dampening mechanisms 34 and 35 to be disposed well above the axes of the plate cylinders. Hence the outer surfaces of the two pairs of cylinders 10, 11 and 13, 14 are almost fully exposed and therefore easily reached and worked upon by the operators. Furthermore, by reason of the disposition of the various cylinders and the arrangement of their driving connections the two pairs of cylinders 10, 11 and 13, 14 occupy the same positions in their cycles relative to their working spaces, at any given time. Hence two operators can perform the same operations upon the plate and blanket cylinders of the two units simultaneously, which is highly advantageous.

In the form of the invention illustrated in Fig. 2, the disposition of plate and blanket cylinders 10', 11' and 13', 14', of the two units, as well as the inkers and dampeners 30', 31' and 34', 35' may be identical with the corresponding parts of the Fig. 1 construction, although the spacing of the two pairs of plate and blanket cylinders may be somewhat different. In this form however there are no separate transfer cylinders between the two units. The units have impression cylinders 36 and 37 respectively of double size compared with the plate and blanket cylinders. Each of these cylinders has two sheet supporting surfaces and two sets of grippers, the grippers of cylinder 36 being numbered 38 and 39 and those of cylinder 37 being numbered 40 and 41. The two impression cylinders are arranged in juxtaposition with each other as well as with the blanket cylinders of their respective units. Hence a sheet taken by the grippers 39 of cylinder 36 may be transferred directly to the grippers 41 of cylinder 37, and a sheet taken by the grippers 38 may be correspondingly transferred directly to the grippers 40. Therefore the impression cylinders, in addition to performing their usual functions, in this case function also as transfer cylinders. As compared with the first form of the invention therefore, two cylinders with their bearings and driving connections are eliminated and the machine is simplified to that extent.

In this case the axes of the three cylinders of each unit cut the points of a triangle, but the triangle in this case is not an isosceles triangle. However, as in the case of Fig. 1, the longest legs of the two triangles face toward each other.

Feed cylinders 21' and 22' similar to the cylinders 21 and 22 of Fig. 1 may be employed for transferring sheets from a feed board 18' to the impression cylinder 36. The sheets after being imprinted on both sides by the two units of the machine are taken by grippers on a transfer cylinder 25' and transferred to grippers 26' on gripper bars forming parts of a chain delivery 27', all of these parts being similar to the parts 25, 26 and 27 of Fig. 1.

The mode of operation and the advantages of this second form of the invention are substantially the same as in the case of the first described form.

Having thus described my invention, I claim:

1. In a sheet fed perfecting offset press, two printing units each comprising plate and blanket cylinders of the same size in vertical alignment and an impression cylinder of double size, the impression cylinder of each unit being disposed below the axis of the blanket cylinder on the side thereof toward the other unit, the impression cylinders of both units having two sets of sheet grippers, the impression cylinders and their grippers being so disposed that the grippers of the first unit impression cylinder transfer sheets directly to the grippers of the second unit impression cylinder.

2. In a sheet fed perfecting offset press, first and second printing units each comprising plate, blanket and impression cylinders, each unit being arranged with the plate cylinder above the blanket cylinder and the impression cylinder on the side of the blanket cylinder toward the other unit, a sheet feed table arranged on the side of the first unit remote from the second printing unit, gripper means for conveying sheets received from the table under the first unit blanket cylinder to the first unit impression cylinder, partly around each impression cylinder, upwardly between the plate cylinders and toward a delivery point, said gripper means placing the sheets upon the first impression cylinder at a point below its axis and removing the sheets from the second impression cylinder at a point above the axis of the latter cylinder.

3. Mechanism as claimed in claim 2 wherein said sheet gripper means includes a rotary gripper-equipped sheet handling cylinder between the feed table and the first impression cylinder for placing the sheets upon the latter.

4. Mechanism as claimed in claim 2 wherein said sheet gripper means includes two sets of moving sheet grippers between the feed table and the first impression cylinder, one of which is adapted to place the sheets upon the first impression cylinder.

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