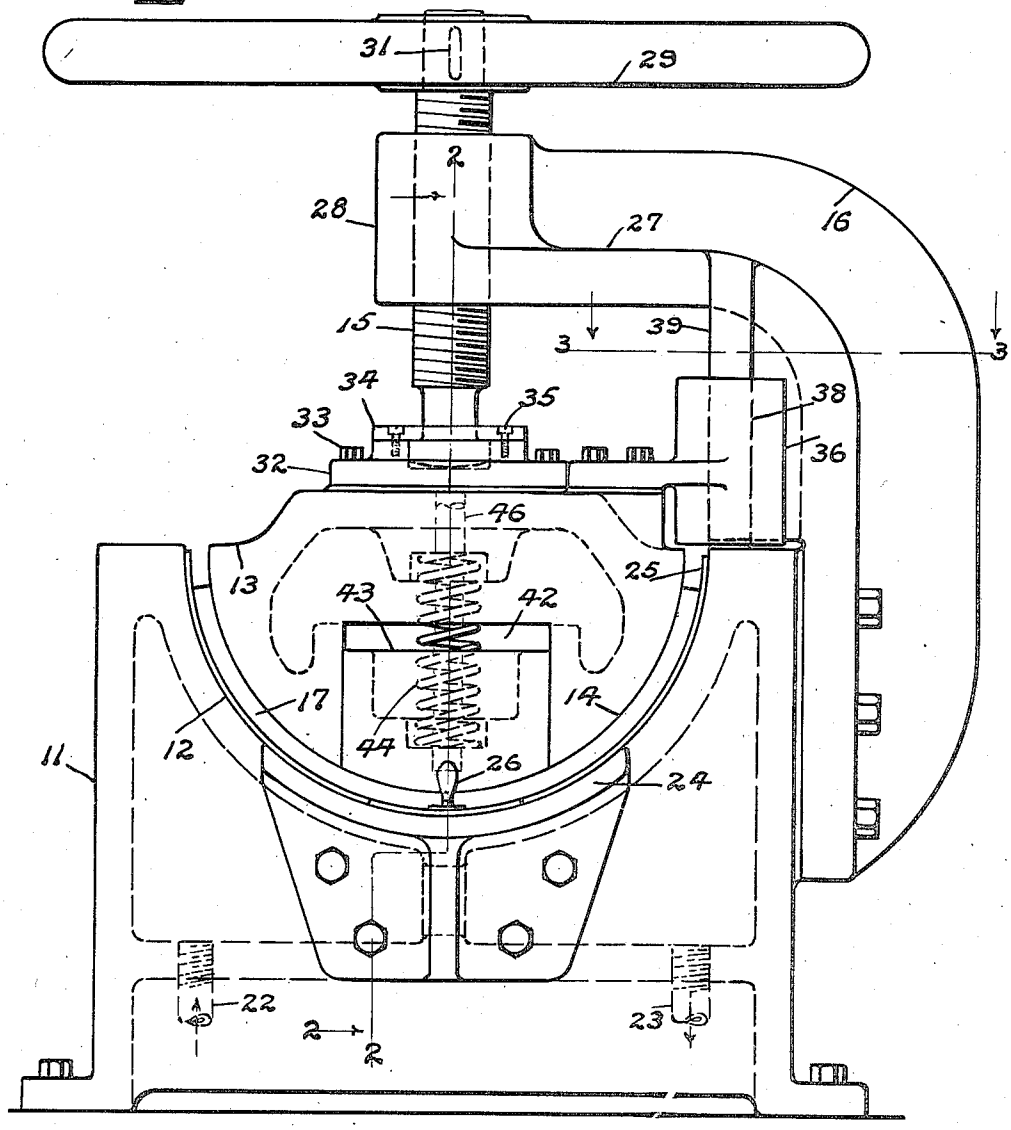
June 28, 1938. W. F. HUCK 2,122,142

METHOD OF AND MEANS FOR FORMING PRINTING PLATES

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Fig. 1.



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Fig. 2.

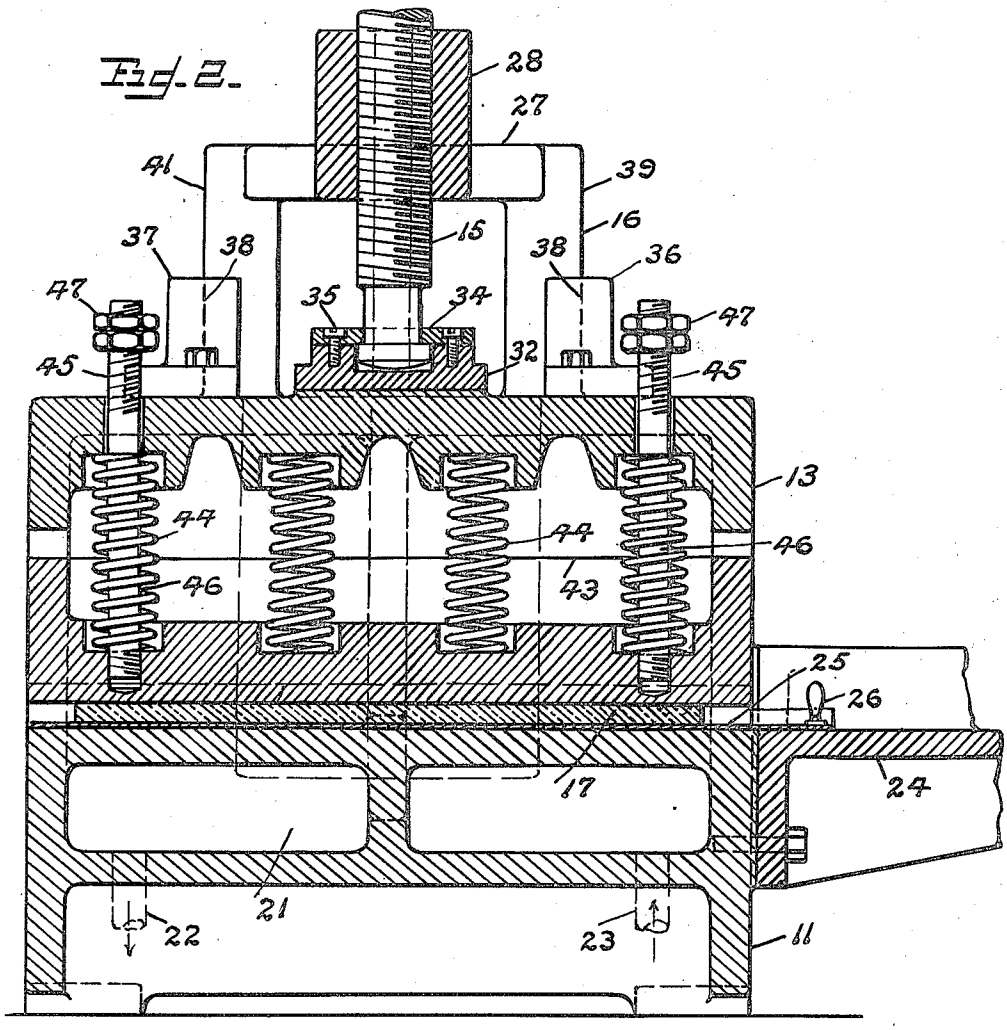
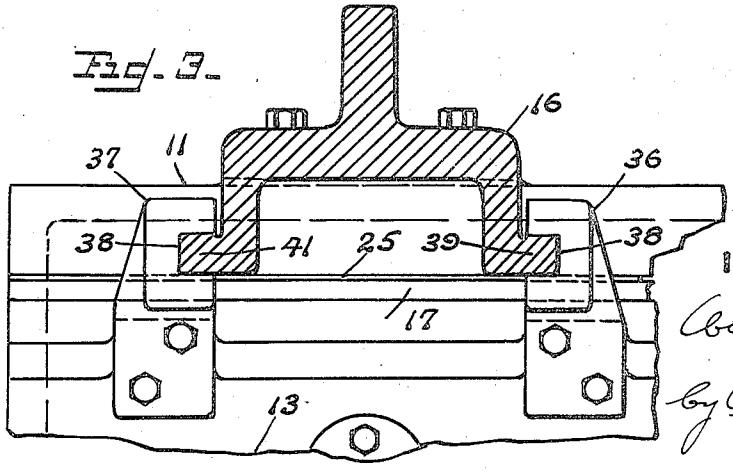


Fig. 3.



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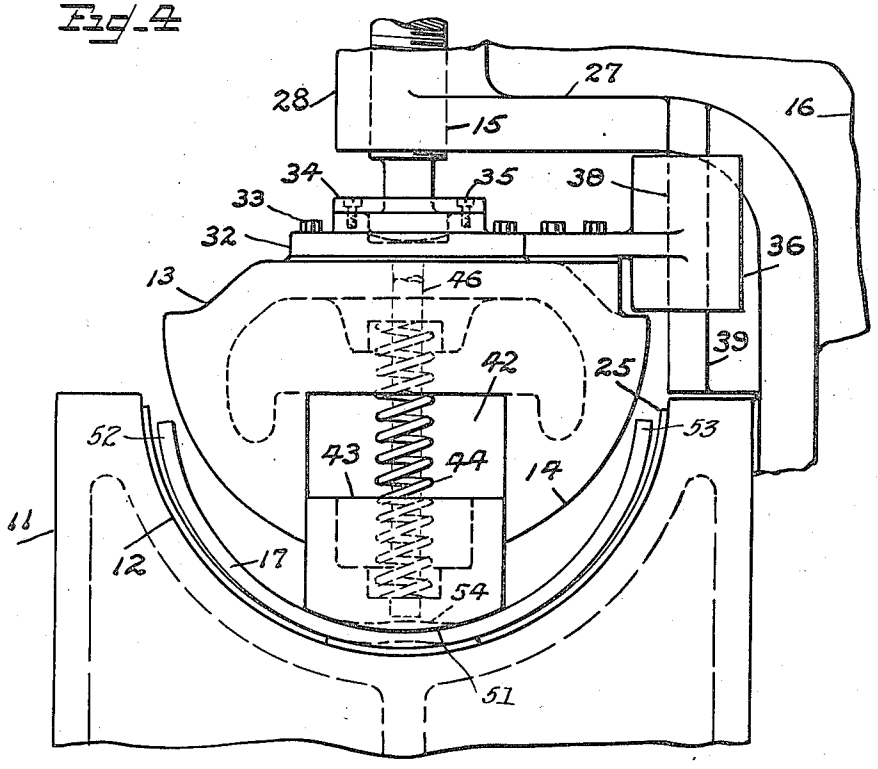
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Fig. 4



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UNITED STATES PATENT OFFICE

2,122,142

METHOD OF AND MEANS FOR FORMING PRINTING PLATES

William F. Huck, Richmond Hill, N. Y., assignor, by mesne assignments, to R. Hoe & Co., Inc., New York, N. Y., a corporation of New York

Application June 19, 1935, Serial No. 27,329

10 Claims. (Cl. 153—48)

This invention relates to printing plate presses and more particularly to improvements in curved stereotype plate forming presses for use in qualifying the curve of such plates to insure substantially perfect fit thereof to the curvature of the cylinders upon which they are mounted.

Such presses are used in instances where a flat plate is curved by rolling the same between rollers to set the curve so formed and qualify it to fit the curvature on the cylinder upon which it is to be mounted. Presses have been provided for this operation comprising a clamp block and base block formed to receive and clamp a plate therebetween. In most instances the plate is rolled with a curve of somewhat smaller radius than that required and this curve is changed and qualified by the press to the proper curve. The pressing operation, in many instances, causes the plates to buckle slightly along their center portion due to the movement of one press part toward the other and, at the completion of such a movement, this buckled portion is pressed upon, causing considerable distortion and unevenness to appear on the plate.

One of the objects of this invention is to provide an improved plate press wherein such buckling and subsequent distortion of the plate is substantially eliminated.

Another object is to provide in plate presses, mechanism whereby the portion of the plate most likely to be buckled or otherwise distorted will be maintained against such distortion and properly formed, while the plate as a whole is being acted upon by the press.

Another object of this invention is to provide a method of forming pre-curved printing plates into conformation with the printing cylinder upon which they are to be used.

It is also an object of the invention to provide a plate press of generally improved construction, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is an end elevational view of a plate press embodying the features of this invention;

Figure 2 is a vertical sectional view of the same on line 2—2 of Figure 1, looking in the direction indicated by the arrows;

Figure 3 is a section of a part of the press taken on line 3—3 of Figure 1, and looking in the direction indicated by the arrows; and

Figure 4 is a partial end elevational view of the plate press shown in Figure 1, showing certain parts thereof disposed in another position.

The plate press selected to illustrate the novel features of the improved press of this invention generally comprises a base block 11 having a concavely curved groove 12 extending across the same, a clamp block 13 having a convexly curved surface 14, a clamp screw 15 and a clamp screw supporting bracket 16. A plate 17 is shown disposed between clamp block 13 and base block 11, in Figures 1 and 2, after being pressed by said blocks by rotation of clamp screw 15 to form it and qualify the curvature thereof to fit a cylinder of a printing press.

The base block 11 may be cored out to provide compartments 21, for the reception of water or other cooling fluid which may flow through an inlet 22 and an outlet 23. A tablelike extension 24 is provided, upon which to draw the formed plate 17, after its release from the press. A thin metallic sheet 25 having a handle 26, may be provided to assist in withdrawing the plate and as a liner for the curved seat 12, provided in base block 11.

The bracket 16 is bolted to the base block 11, and is provided with an arm 27, formed to overhang the clamp block 13, and has at its end an enlarged portion 28, which is threaded to receive the clamp screw. The portion 28 is disposed substantially over the center of clamp block 13.

The clamp screw 15, at its upper end, is provided with a hand wheel 29, secured thereto by a key 31. At its lower end, the clamp screw 15 is formed to rotatively engage a thrust plate 32, secured to clamp block 13 by screws 33 and is retained thereto by cover plates 34, removably secured to plate 32 by screws 35.

Guide brackets 36 and 37 are secured to clamp block 13, one adjacent either end thereof, and are each provided with guideways 38, adapted to receive guide members 39 and 41, formed one on each side of the screw supporting bracket 16. Cooperation of the parts of the guiding members insures against tilting and other dislocation of

the clamp block 13 with respect to base block 11, as well as preventing rotation of block 13 with screw 15.

A recess 42 is provided in clamp block 13 interrupting the curved surface 14 thereof and extending lengthwise of the block along substantially its medial portion. A plate engaging and retaining member 43 is disposed in recess 42 and is permitted free vertical sliding movement between the sides thereof. The lower and outer surface of member 43 is formed with the same curvature as that of surface 14 of block 13 whereby it coincides therewith and presents an unbroken curved surface to the plate 17, when in operative clamping position.

The member 43 is under constant urge downwardly, or outwardly from recess 42, with respect to the block 13 by coiled pressure springs 44 and is limited in its outward movement from recess 42, by members 45, having lock nuts 47 (Figure 2). The body portions 46 of members 45 act as retaining means for the springs 44. Adjustment of nuts 47 operate to vary the outward movement of member 43 from recess 42. Normally, member 43 protrudes from block 13, as shown in Figure 4, the amount being variable by adjustment of nuts 47.

The above described mechanism operates upon a plate 17 to substantially eliminate buckling or other distortion thereof and insures accurate qualifying of the curvature of the same whereby it will closely and perfectly fit the curve of the cylinder of the printing press. Referring to Figure 4, the plate 17 is shown disposed between block 11 and block 13, before pressure is applied by screw 15. In this position, the member 43 is in spring pressed engagement with the medial portion 51 of the plate 17, and is holding it firmly against block 11. Downward movement of block 13, by operation of screw 15, will spread side edges 52 and 53 of plate 17 and tend to force the side portions thereof downwardly and thereby buckle or otherwise disturb the plate 17 at its medial portion, such as is indicated in dotted lines at 54, were it not for the member 43, which constantly and with ever-increasing pressure, caused by compression of springs 44, during the downward movement of block 13, maintains the medial portion 51 of plate 17 securely in place in block 11, insuring its perfect form by preventing any distortion thereof. When released from pressure, the plate 17 is immediately stripped from block 13 by member 43, should it tend to adhere thereto and may readily be removed from the press with sheet 25 without requiring the use of other releasing and removing means.

The provision and arrangement of parts as above described forms an improved plate forming and curve qualifying press whereby more accurately curved plates may be formed and which is comparatively simple in structure, inexpensive to make and particularly efficient in use.

Obviously a separate clamping device or any other suitable mechanism may be employed, whereby the plate engaging and retaining member may be pressed against the plate to lock it in position before it is engaged by the clamp block.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the claims rather than to the foregoing description to indicate the scope of the invention.

What I claim is:

1. In a stereotype plate forming press, a base member having a concavely curved seat to receive a pre-curved plate, a member having convexly curved surface, the radius of which is greater than the radius of the inner surface of the pre-curved plate, and being movable toward and away from said base member, means to move said movable member toward said base member to engage and spread apart the side edges of the plate and to clamp it therebetween, and means having a convexly curved surface portion movable with said movable member and having its curved surface portion normally in advance of the curved surface of said member to engage a determined portion of the plate to maintain the same in the curved seat of said base member before the movable member is advanced into plate side edge engaging position.

2. In a forming press for a pre-curved printing plate having two straight edges and two curved edges, a concaved press member, the radius of the curvature of which is greater than the radius of the plate, adapted to receive the plate, means to clamp the plate against the concaved member along a line substantially midway between the straight edges of the plate, and a convexed press member, the radius of the curvature of which is greater than the radius of the plate, adapted to then engage and spread the side edges of the plate apart and then force the plate into conformity with the concaved member.

3. In a press for forming printing plates, a first member having a concavely curved seat to receive a pre-curved printing plate, a second member having a convexly curved surface and being movable to cooperate with said first member and clamp the pre-curved printing plate therebetween, the radius of the curvature of said curved seat and said curved surface being greater than the radius of the respective curves of the outer and inner surfaces of the pre-curved plate whereby the side edges of the pre-curved plate will be contacted by the convexly curved surface of said second member and spread apart, and means to clamp the plate portion intermediate its side edges against the curved seat of said first member before said second member engages the side edges of the pre-curved plate.

4. In a press for forming curved printing plates adapted for use on a printing cylinder, in combination, a first member having a concavely curved seat formed therein to receive a pre-curved printing plate, the curvature of said seat being of larger radius than the radius of the curvature of the other surface of the pre-curved plate, a removable curved lining member for said first member and upon which the plate rests, a second member having a convexly curved surface and being movable to cooperate with said first member to clamp the pre-curved plate therebetween, the curvature of said convexly curved surface being the same as the curvature of the printing cylinder upon which the plate is to be mounted and being of a larger radius than the radius of the inner curved surface of the pre-curved plate, whereby said second member will first engage the plate at its side edges and spread them apart before completely clamping the plate against said seat, and a slidable

member adapted to engage the plate portion intermediate its side edges and clamp it against said seat in advance of the engagement of said second member with the side edges, to prevent buckling of the plate at this portion thereof.

5. In a press for qualifying the internal curvature of a pre-curved printing plate to increase its radius to conform it with the curvature of a printing cylinder upon which it is to be mounted, a press member having a convexly curved surface, the curvature of which conforms to the curvature of the printing cylinder, a concavely curved press member to support the plate, a convexly curved member slidably mounted in said first mentioned convexly curved member, and means to cause said second mentioned convexly curved member to engage the plate and clamp it to said concavely curved member and then cause said first mentioned convexly curved member to engage and increase the radius of the curvature of the plate while clamping it against said concavely curved member.

6. In a press for qualifying the internal curvature of a pre-curved printing cylinder upon which it is to be mounted, a first press member having a concavely formed seat formed therein to receive a pre-curved printing plate with its printing surface adjacent thereto, a second press member having a convexly formed surface formed thereon, the radius of the curvature of which is greater than the radius of the curvature of the surface of the plate opposite its printing surface, a third press member having a convexly curved surface slidably mounted in said second press member with its curved surface normally in advance of the curved surface of said second press member, whereby when said second and third press members are moved toward said first member to clamp a plate therebetween, said third member will first engage and clamp the plate to said first member and then said second member will engage and spread apart the side edges of the plate, and means to move said second and third members into plate clamping cooperation with said plate.

7. The method of increasing the radius of curvature of a pre-curved printing plate into conformation with the curvature of the printing cylinder upon which it is to be mounted, which comprises disposing the pre-curved plate upon the concave surface of a press member the curvature of which is larger than the convex curvature of the pre-curved plate, then advancing a convex press member toward said concave press member to cause a part carried thereby to engage and clamp the portion of the plate intermediate its side edges to the concave member and then to further advance said convex member to transversely spread the side edges of the plate and to press the plate in its entirety to said concave member.

8. The method of increasing the radius of curvature of a pre-curved printing plate into conformation with the curvature of the printing cylinder upon which it is to be mounted, which comprises disposing the pre-curved plate upon the concave surface of a press member the curvature of which is larger than the convex curvature of the pre-curved plate, then advancing a convex press member having a curvature larger than the curvature of the concave surface of the plate and the same as that of the printing cylinder and having a part resiliently extended therefrom, toward said concave press member to first cause said part to engage and clamp the plate to the concave member, and then to further advance said convex member to transversely spread the side edges of the plate and to press the plate in its entirety to said concave member.

9. The method of increasing the radius of curvature of a pre-curved printing plate into conformation with the curvature of the printing cylinder upon which it is to be mounted, which comprises disposing the pre-curved plate upon the concave surface of a press member the curvature of which is larger than the convex curvature of the pre-curved plate, then advancing a convex press member having a curvature larger than the curvature of the concave surface of the plate and the same as that of the printing cylinder and having a part resiliently extended therefrom, toward said concave press member to first cause said part to engage and clamp the plate to the concave member, and then to further advance said convex member to transversely spread the side edges of the plate and to press the plate in its entirety to said concave member, and then to withdraw said convex member away from said concave member to permit said resiliently extended member to free the plate from the convex member.

10. In a forming press for a pre-curved printing plate, a concave press member having a curvature of greater radius than the convex surface of the plate, a convex press member having a curvature of greater radius than the concave surface of the plate, and a resiliently pressed member mounted in said convex member to clamp the plate in advance of the engagement of said convex member with the plate to spread the side edges thereof and press it against the concave member to conform its curvature thereto.

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