

Jan. 6, 1925.

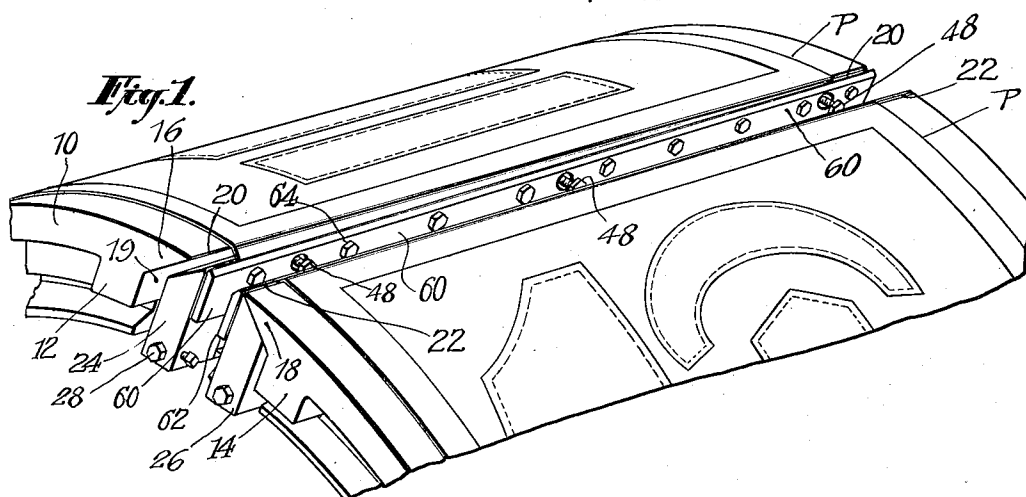
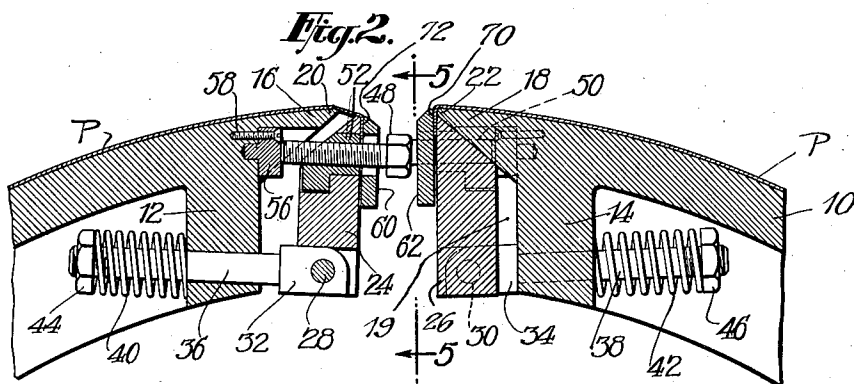
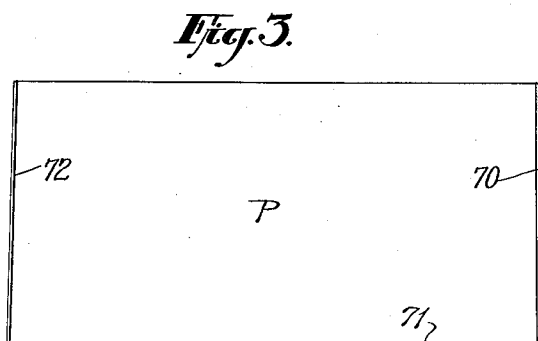
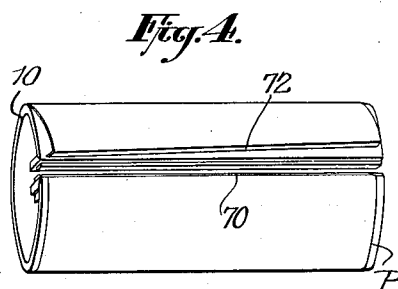
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C. ZARKIN

PLATE CLAMPING DEVICE

Filed June 28, 1924

2 Sheets-Sheet 1



Inventor
Charles Zarkin.

By His Attorney

D. Anthony Reina

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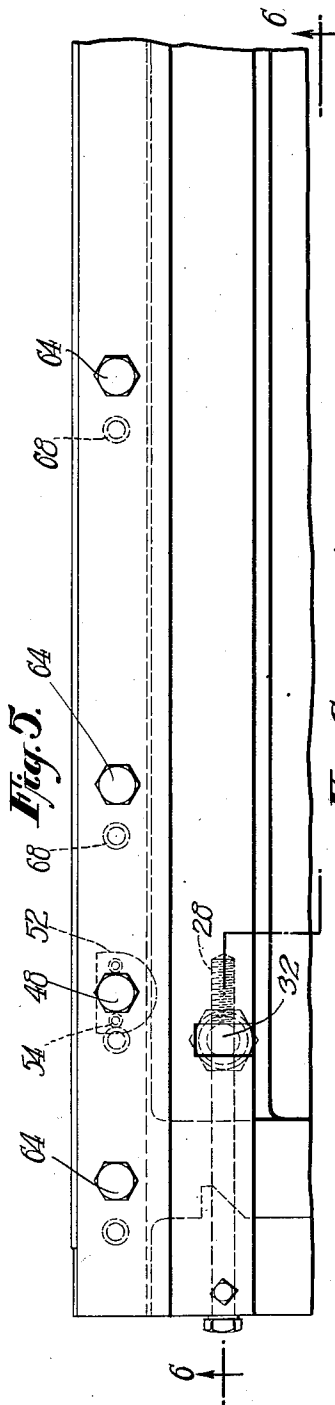
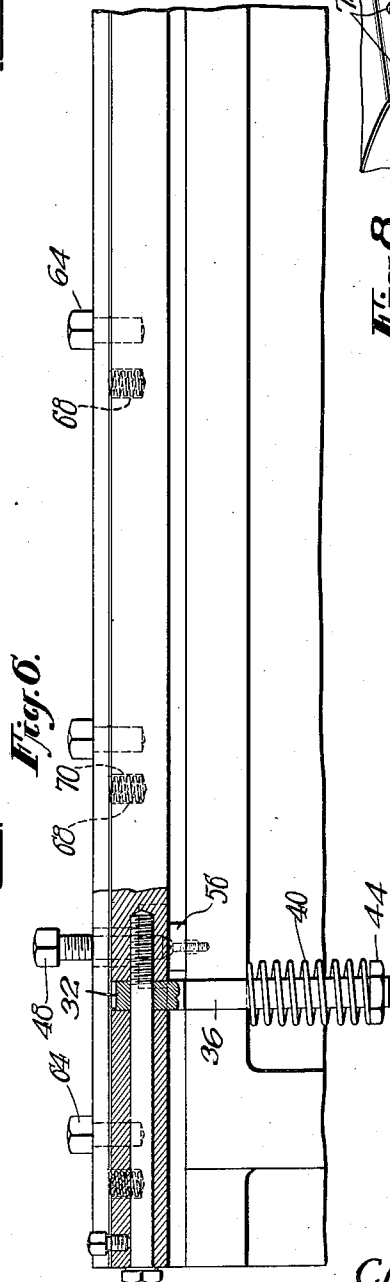
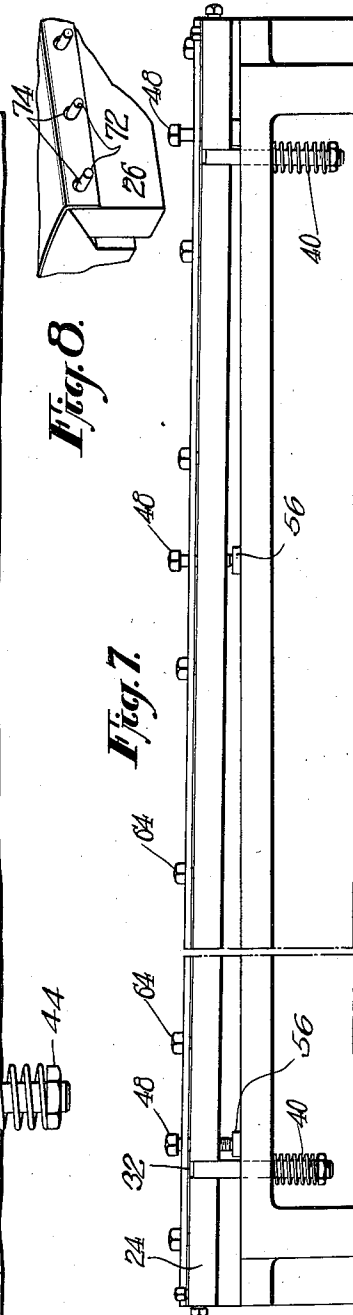
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

CHARLES ZARKIN, OF NEW YORK, N. Y., ASSIGNOR TO THE McCALL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PLATE-CLAMPING DEVICE.

Application filed June 28, 1924. Serial No. 722,976.

To all whom it may concern:

Be it known that I, CHARLES ZARKIN, a citizen of the United States, residing in the city, county, and State of New York, have
5 invented certain new and useful Improvements in Plate-Clamping Devices, of which the following is a specification.

This invention relates to means for securing flexible sheets or plates in firm contact
10 with a supporting member. While not limited thereto the invention is particularly adapted for securing plates to the cylinders of printing presses.

In the type of press known in the art as
15 the offset press, suitably etched zinc plates are frequently employed, these being mounted on suitable printing rollers or the like. In the offset press an impression or a series of impressions are made from suitable ink-
20 ing rollers on such zinc plates which in turn print or transfer the impression or series of impressions onto a rubber blanket which in turn transfers said impressions to the paper or article to be printed. The off-set press
25 is well adapted for printing on tissue paper such as used in the manufacture of paper garment patterns and the printing cylinder illustrated herein is shown equipped with plates adapted to print outlines and descriptive
30 matter such as used on such paper patterns although, of course, the particular impressions carried by the flexible plates is of little consequence as far as the present invention is concerned.

The zinc plates used in the presses are
35 extremely thin and before they are applied to the rollers thereof are usually hung or laid out flatwise. They are usually of about twenty gauge metal which is approximately
40 one thirty-second of an inch in thickness. The plates are wrapped around the printing cylinder and in order to form a good printing surface they must be held firmly in contact with the cylindrical surface of the
45 cylinder throughout their entire area. In order to secure the plates, various clamping devices have heretofore been used, but many of them have proven unsatisfactory in service because of the length of time re-
50 quired to "make ready".

The flexible plates are usually of rectangular shape bent over at their ends to form angular flanges. In order to secure the plate to a cylinder without having warped

or buckled portions extending beyond the
55 true cylindrical surface, it is essential that the plates be of absolute true rectangular form and that the flanges bent over at the ends of the plates have parallel edges, in order that they be secured properly with
60 clamps heretofore used. In practice it frequently happens, however, that the plates are not cut to true rectangular shape and the flanges are not always formed so that they have parallel edges. This makes it extreme-
65 ly difficult with the ordinary clamping devices to secure the plate properly to the cylinder.

My improved clamping device is so arranged that irregularities in the formation
70 of the attaching flange or in the cutting of the rectangular plate are compensated for. The plates can be attached to the printing cylinder and put under tension so as to secure them in contact with the cylinder
75 throughout their entire area in a very short time.

An embodiment of the invention is illustrated in the accompanying drawings in which—

Fig. 1 is a perspective view of a portion of a printing cylinder showing flexible plates secured thereto by my improved clamping device;

Fig. 2 is a transverse sectional view of
85 a portion of the printing cylinder equipped with two adjacent clamps, one of which has been adjusted so as to put the plate under tension;

Fig. 3 is a perspective view of a flat plate
90 showing a flange on one end properly bent but with the flange on the other end bent obliquely such as frequently happens in preparing these plates for use;

Fig. 4 diagrammatically represents the
95 same plate wrapped around the printing cylinder prior to being tensioned or stretched thereon;

Fig. 5 is a sectional view on line 5—5 of
100 Fig. 2;

Fig. 6 is a sectional view on line 6—6 of
Fig. 5;

Fig. 7 is a view similar to Fig. 6 but on a smaller scale illustrating the manner in which the device compensates for malformed
105 plates;

Fig. 8 is a detail illustrating a modification.

Referring in detail to the drawings, the printing cylinder 10 is formed with longitudinally extending flanges 12 and 14 and beveled overhanging walls 16 and 18 which form a longitudinally extending pocket 19 within which my improved device is wholly located. By beveling the portions which form the walls 16 and 18 as shown, I provide a structure which requires the loss of very little printing space on the cylinder. The edges 20 and 22 of the cylinder extend longitudinally across the same in true parallel relationship. In securing the flexible plate P to the cylinder, the ends thereof pass over the edges 20 and 22. It follows, therefore, that if the plate is not of true rectangular formation or if the flanges are bent obliquely or on the skew as indicated at the left in Fig. 3, it will be difficult to secure the plate in smooth contact with the surface of the cylinder. My improved device overcomes this difficulty as will be apparent from the further description.

Located within the pocket 20 are longitudinally extending bars 24 and 26 supported at their respective ends by pivot pins 28 and 30 which pass through eyes formed in heads 32 and 34 formed on the ends of transversely extending shanks 36 and 38 which pass through suitable bores formed in the flanges 12 and 14 respectively of the cylinder. The shanks 36 and 38 are surrounded by springs 40 and 42 the tension of which may be adjusted by means of nuts 44 and 46 carried by said shanks. Each bar 24 and 26 is supported near each end by pins 28 and 30 carried by the yieldingly supported shanks 36 and 38. The springs 40 and 42 tend normally to hold the bars 24 and 26 respectively parallel to the upper edges 20 and 22 of the cylinder, but because of the yielding support of the bar they can be skewed or moved obliquely with respect to the edges 20 and 22.

The upper portions of the bars 24 and 26 are beveled off at an angle to fit the bevel of the walls 16 and 18 respectively so that said bars can be nested in the comparatively narrow pocket formed in the cylinder.

For adjusting the position of the bars 24 and 26 relatively to the edges 20 and 22 of the cylinder I provide a series of adjusting screws 48 and 50 respectively. These screws are threaded through bushing portions such as illustrated at 52 in Figs. 2 and 5, said portions being secured in place by suitable screws 54. The cylinder is suitably counter-bored at points opposite the several adjusting screws 48 and 50 and hardened steel wear plates or discs 56 are secured in said counter-bores against which the said adjusting screws are adapted to impinge. These wear pieces are held by screws 58 as shown in Fig. 2. The bores through which the shanks 36 and 38 extend are on an angle

inclined to the horizontal shown in Fig 2. As thus arranged when the adjusting screws 48 and 50 are manipulated, the bars 24 and 26 will be drawn slightly inward toward the center of the cylinder. In other words, the mounting of the bars 24 and 26 is such that when they are adjusted, their movement will cause them to move inward away from the cylindrical surface.

The bars 24 and 26 carry clamp members 60 and 62 and clamp screws 64 which are provided for forcing said clamp bars toward the bars 24 and 26 against the action of light springs 68 carried in drilled sockets 70 formed in the respective bars 24 and 26.

In operation to clamp a plate which has been malformed or improperly flanged as illustrated in Fig. 3 assuming the face 70 of the flange to be perpendicular to the edge 71 of the plate, as illustrated this can be inserted between the clamp 62 and the bar 26 and the plate then wrapped around the cylinder. The inaccurately formed flange 72 whose face is oblique or out of perpendicular with the edge 71 can then be engaged between the bar 24 and clamp bar 60 and the clamp screws 64 tightened. With the plate improperly flanged as illustrated in Fig. 3 or in the case of a plate of a shape not truly rectangular there will be a bulge in the plate after the same is wrapped around the true cylindrical surface of the printing drum. To take up this bulge with my improved device, adjusting screws 48 in the case illustrated can be turned up so as to pull one end of the bar 24, for example at the left end illustrated in Figs. 1 and 7, a greater distance away from the edge 20 of the cylinder than the other end. In other words, the bar 24 will be skewed to compensate for the mal-formation of the plate. Further tightening of the adjusting screw will put the plate under tension and cause it to firmly contact with the true cylindrical surface of the printing drum throughout its entire area. It will be appreciated that the stretching or tensioning of the plate is effected by turning up the adjusting screws 48 which form sort of pivotal support for the bar about which the springs 40 tend to rock the same so as to pull the plate over the edge 20. Because of the angular disposition of the shanks 36 and of general arrangement of the parts, the circumferential end of the plate will be drawn inward from the cylindrical surface hence adjusting the plates will not cause the objectionable projection of any parts out beyond the circle which defines the outer or printing surface of the plate.

In the foregoing I have described means for clamping the flanges of the plate to the bars 24 and 26. As an alternative means for securing the plate to the adjusting bars I may provide pins 72 carried by the bars

24 and 26 which are adapted to pass through suitable anchoring holes 74 formed in the plate as illustrated in Fig. 8.

In the foregoing description I have described a cylinder as having a single plate secured thereto which practically encircles its entire circumference. The overhanging bevel walls are so arranged that a very short sector of the periphery is required to accommodate the clamping devices. This arrangement effects a considerable saving of paper or other material which is printed on as the amount of paper represented by the space between the devices is usually a waste. This is especially true when the printing is done upon paper fed from a continuous roll.

While as above stated the plate usually is a single one for each cylinder it is of course to be understood that in some cases the cylinder may be provided with two separate plates each of which embraces approximately 180° of the same. In such cases where a plurality of plates are used on a single cylinder at least one end of the plate will be tensioned by my improved clamping device such as herein before described.

While I have described with great particularity the details of the embodiment of the invention illustrated, it is not to be construed that I am limited thereto as various modifications and substitution of equivalents may be made without departing from the invention as defined in the appended claims.

What I claim is:—

1. A device for securing a flexible plate to a cylinder comprising an adjustable member, spring pressed bearings for supporting the latter, means for securing one end of the plate to said adjustable member, and means for adjusting the said member relatively to the cylinder so as to put the plate under tension and hold it firmly in contact with the cylinder.

2. A device for securing a flexible plate to a cylinder of a printing press comprising a clamp for gripping the plate, a member to which the plate is held by said clamp spring pressed bearings forming yielding pivots for said member and means whereby one end of said member can be moved relatively to its other end so that plates whose transversely extending edges are skewed out parallel can be properly tensioned and held snugly in contact with the surface of said cylinder.

3. A device for securing a flexible plate

to a cylinder of a printing press comprising a member extending lengthwise of said cylinder, yielding pivot bearings for said member secured to said cylinder, and means whereby the position of said member can be skewed with respect to a line extending longitudinally across the face of said cylinder.

4. A device for securing a flexible plate to a cylinder of a printing press comprising a bar carried thereby, means for fastening one end of said plate to said bar and spring pressed pivots for said bar adapted to yield when adjusting the position of the bar relatively to a line extending longitudinally across the face of said cylinder whereby plates can be properly tensioned regardless of whether or not their securing edges are parallel or oblique to said line.

5. In combination with the cylinder of a printing press, means for securing a flexible plate thereto comprising a bar extending longitudinally across the cylinder within a pocket formed in the latter, adjusting screws adjacent the ends of said bar, and spring pressed members secured to said cylinder forming yielding pivotal bearings for said bar.

6. In combination a printing press cylinder having a longitudinally extending pocket having an overhanging beveled upper wall, a bar similarly beveled, plate securing means carried by said bar and resilient supports for said bar and means for securing the bar in either oblique or parallel spaced relationship with respect to the line defined by the intersection of the cylindrical surface and the beveled upper wall of said pocket.

7. In combination a printing press cylinder having a longitudinally extending pocket having an overhanging beveled upper wall, a bar similarly beveled, plate securing means carried by said bar and resilient supports for said bar, a pivotal connection between each of said supports and the bar, and set screws for adjusting the bar relatively to the edge of said cylinder formed by the intersection of said beveled upper wall and the outer surface of said cylinder, the parts being so arranged that manipulation of the set screws to tighten the plate will cause the bar to move inward away from the circular surface of said cylinder.

In witness whereof, I have hereunto signed my name.

CHARLES ZARKIN.