Nov. 28, 1933. H. A. W. WOOD 1,937,455

PLATE POSITIONING DEVICE

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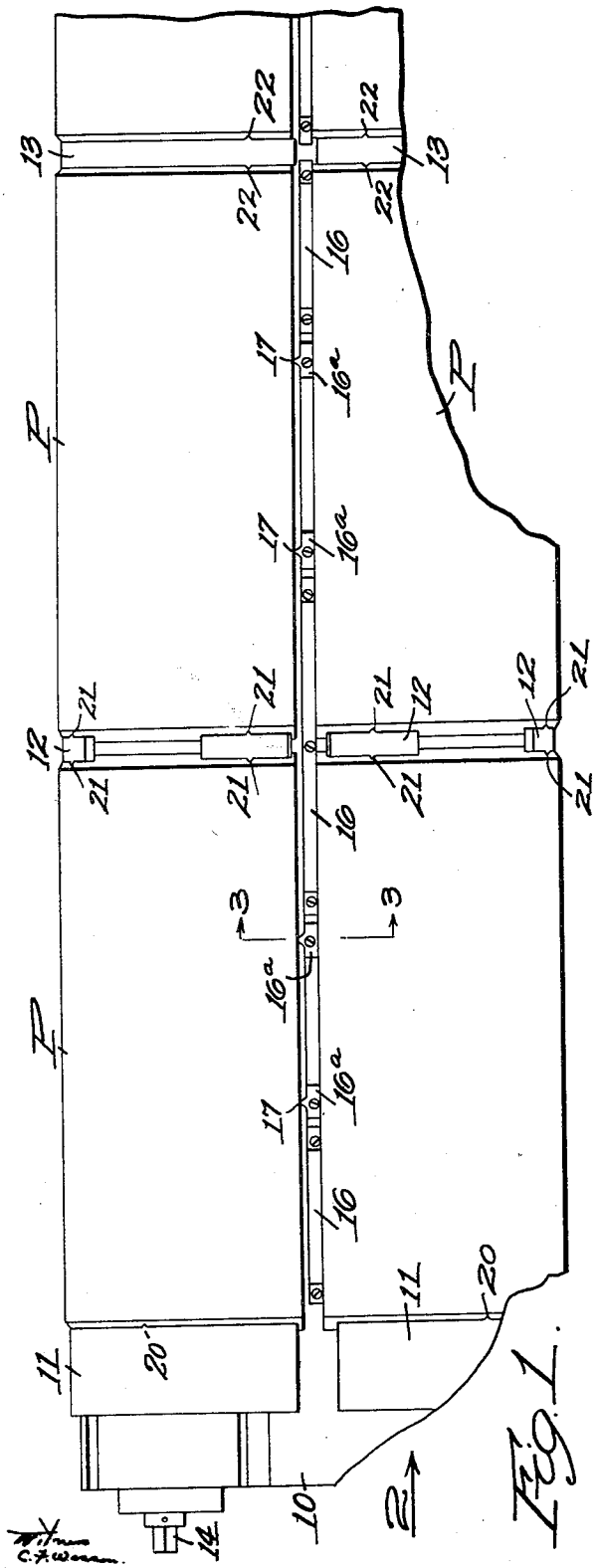


Fig. 1.

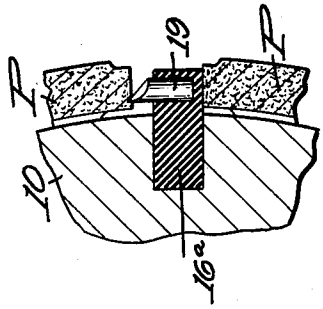


Fig. 6.

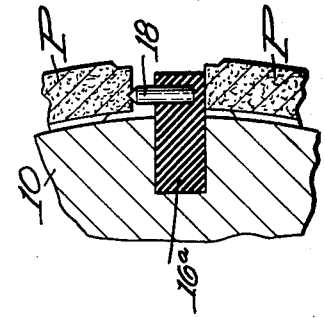


Fig. 5.

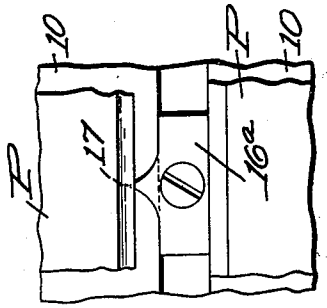


Fig. 4.

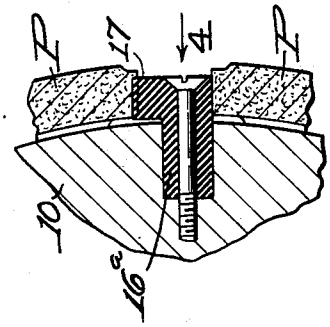


Fig. 3.

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PLATE POSITIONING DEVICE

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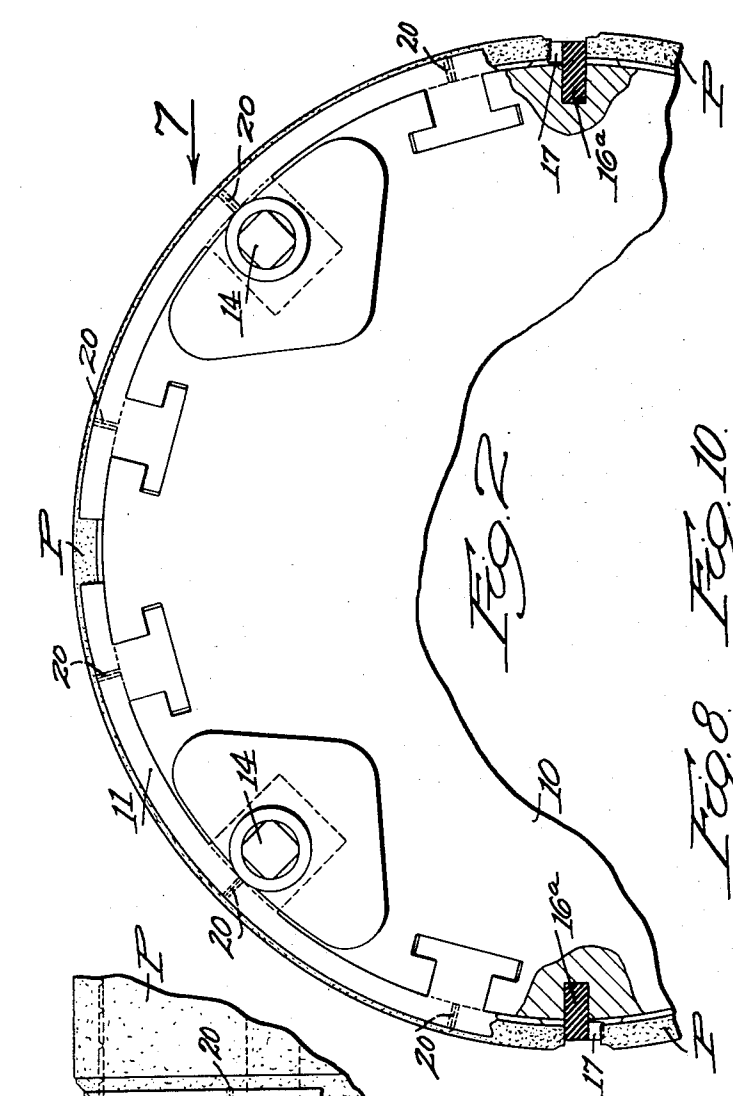


Fig. 2

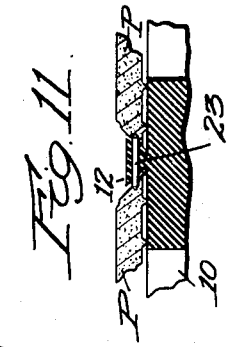


Fig. 11

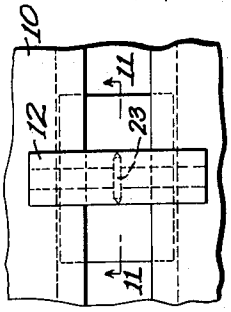


Fig. 10

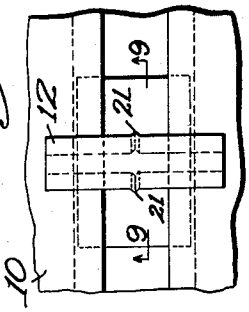


Fig. 8

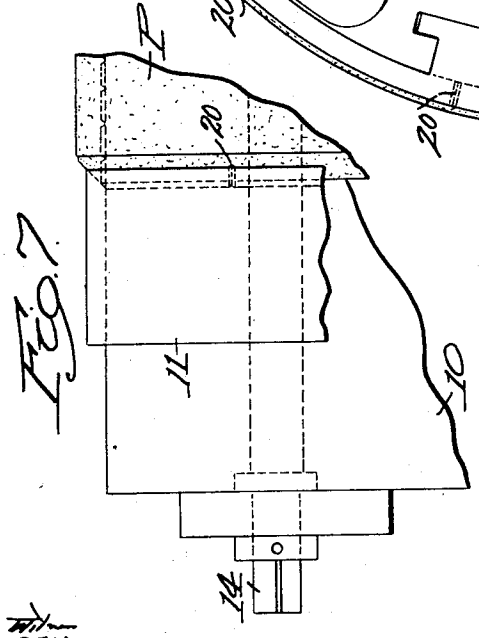


Fig. 7

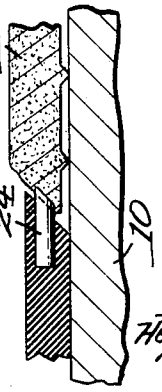


Fig. 12

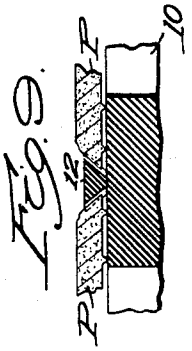


Fig. 9

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UNITED STATES PATENT OFFICE

1,937,455

PLATE POSITIONING DEVICE

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Application January 22, 1931. Serial No. 510,504

7 Claims. (Cl. 101—378)

This invention relates to the proper positioning of printing plates on the cylinders of a printing press, particularly a newspaper printing press.

The principal objects of the invention are to provide means whereby if the plate tends to lengthen circumferentially or laterally the means by which its edges are held will not prevent the lengthening or widening of the plate but will prevent its buckling and will keep the plate flat on the cylinder in spite of any such growth.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a plan of a printing plate cylinder provided with preferred embodiments of this invention in several places;

Fig. 2 is an end view as indicated by the arrow 2 in Fig. 1, partly in section, and on enlarged scale;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a side view looking in the direction of the arrow 4 in Fig. 3;

Figs. 5 and 6 are views similar to Fig. 3 showing modifications;

Fig. 7 is a side view of a portion of the cylinder showing the application of this invention to the end clamp, as indicated by the arrow 7 in Fig. 2;

Fig. 8 is a side view of a portion of the cylinder showing the application of the invention to a center clip;

Fig. 9 is a sectional view on the line 9—9 of Fig. 8;

Fig. 10 is a view like Fig. 8 showing another modification;

Fig. 11 is a sectional view on the line 11—11 of Fig. 10, and

Fig. 12 is a sectional view showing a sharp edged pin which may be inserted into any of the clips now in use.

A curved stereotype printing plate cannot very well be totally restricted on all four sides when clamped to a cylinder because the action of printing causes an increase in the length and breadth of the plate after repeated impressions. This invention is designed largely for allowing this growth of the plate to take place in such a way that the clamps still hold it but compensate for its increase so that the plate will be firmly held and yet not be buckled out of shape. This is done by the use of sharp projections on or near the plate holding members which, on account of the small areas of contact with the plate will simply dig further into the soft metal of the plate as the plate grows toward them.

Referring to Figs. 1 and 2 it will be seen that a printing cylinder 10 is shown on which are mounted end clamps 11, center clips 12 and a center ring 13 as usual. A clamping screw 14 is employed to move the end clamps to and fro as has been customary. The plates P are held at their beveled edges which cooperate with complementary bevels on the several holding means, namely the end clamps, center clips and center ring. In the form illustrated in these figures the plate is positioned at its straight edges by the usual solid margin bar 16. This margin bar is flat and radial on its leading edge where it engages the rear edge of the plate and constitutes positive means for causing the plate to move around with the cylinder. On its following or rear edge it does not touch the following plate usually.

Holding members 16ª are fixed to the cylinder preferably near the ends of the margin bar. These blocks are provided with edges 17 that stick into the front edges of the following plate on its radial end surface. The plate is placed in the proper place to begin with and held by the several holding members named. As it increases in length it does not buckle as if it were held by flat surfaces, but the edges 17 become further embedded in the relatively soft metal of the plate. Thus the plate is firmly held at all times and its growth in length is compensated for by the fact that these sharp edges or points sink further into the metal. This sharp edge 17 as indicated in Fig. 3 is a long radial edge which, of course, cuts into the plate.

In Fig. 5 a conical point 18 is employed for the same purpose while in Fig. 6 this pin is replaced by one 19 having a sharp point and also a beveled edge. These last two forms cut into the plate as the plate lengthens with less resistance than in the case shown in Fig. 3 and yet they hold the plate in position, particularly in the form shown in Fig. 6 in which there is a tangential side to the pin 19 adjacent to the cylinder and, no matter how much it cuts in, this straight cylindrical surface holds the plate in place firmly against the cylinder. This pin is so constructed that a point bears against the plate and thus provides a positioning means with a minimum of resistance to the lengthening of the plate and with a beveled edge which will cut itself into the plate, without damage if the pressman puts the plate on improperly so that it covers the plate support readily. A double slant

with a wedge shaped edge can be used in this way.

Other means for positioning the plate properly to prevent any damage from creepage consists of sharp projections 20, 21 or 22 in the end clamp, center clips and center ring or other holding members. These embed themselves in the plate when it is locked up and thus prevent any angular movement of the plate. Each pin is equipped with a sharp projecting edge or point adapted to embed itself in the beveled edge of the soft plate. These latter ones particularly prevent creepage of the plate.

In the form shown in Fig. 10 a pin 23 extends all the way through one of the clips 12 now in use and has a point on each end for engaging the bevels of the plates on the opposite sides.

Also in the form shown in Fig. 12 a sharp edged pin 24 is inserted into any one of the clips now in use and holds the plate in a way similar to that of Fig. 6, of course on the side instead of on the end. With projections in the beveled edges of the clips the plates may be placed in any desired position and they will retain that position whether a margin bar is in contact with the plate or not.

In practice it is found that most plates lengthen or creep against the trailing margin bar, but on cylinders which make several stops they are sometimes thrown against the leading margin bar and thus get out of register.

It will be seen that by the use of this invention the points or edges, distributed as shown in Fig. 1, keep the plates in their proper position regardless of the condition of the press operation. This is accomplished without subjecting the plates to unnatural strains which are apt to result in bad printing. The soft metal permits these points and edges to sink into the plates and, after each disturbance which may have caused the plate to creep or lengthen, the plate is held still more firmly without buckling.

Although I have illustrated and described several embodiments of the invention and shown it as applied to the several edges of the plate, I am aware of the fact that further modifications can be made and that the invention is not limited to the holding of the plate by said means on all edges. Therefore, I do not wish to be limited in these respects, but what I do claim is:—

1. As an article of manufacture, a member for holding the edge of a printing plate on a printing cylinder, said member having an elongated sharp surface arranged radially for engaging the edge of the plate and capable of penetrating further in if the edge of the plate moves toward it.

2. As an article of manufacture, a holding member for a printing plate adapted to be mounted on a printing cylinder, said member having a sharp projection for engaging the edge of the plate throughout the width of said edge, for the purpose described.

3. The combination with a margin bar for a printing plate cylinder, of holding members adjacent thereto, sharp projections thereon for the purpose of engaging the forward edge of a printing plate and holding the plate in position and also allowing for the lengthening of the plate circumferentially on the cylinder.

4. The combination with a margin bar for a printing plate cylinder, of a plurality of projections provided with sharp edges arranged radially with respect to the cylinder, for the purpose described.

5. The combination with a margin bar for a printing plate cylinder, of a plurality of sharp pointed projections extending rearwardly for the purpose of penetrating the forward edge of a printing plate and holding the plate in position and also allowing for the lengthening of the plate circumferentially on the cylinder.

6. As an article of manufacture, a center ring for a printing plate cylinder having on its opposite edges projections having projections provided with sharp transverse edges for engaging in the slanting surfaces of the edges of two plates on opposite sides of the center ring.

7. The combination with a printing plate cylinder of a member for holding the front straight longitudinal edge of a printing plate thereon, said member having a projection provided with a reduced sharp area for engaging the edge of the printing plate, whereby, if the plate is out of position or lengthens during a series of impressions, this sharp area will work into the soft metal of the plate and still hold it without preventing the motion of the edge of the plate, said member having a surface on the opposite side for engaging the rear straight longitudinal edge of the next plate on the cylinder.

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