

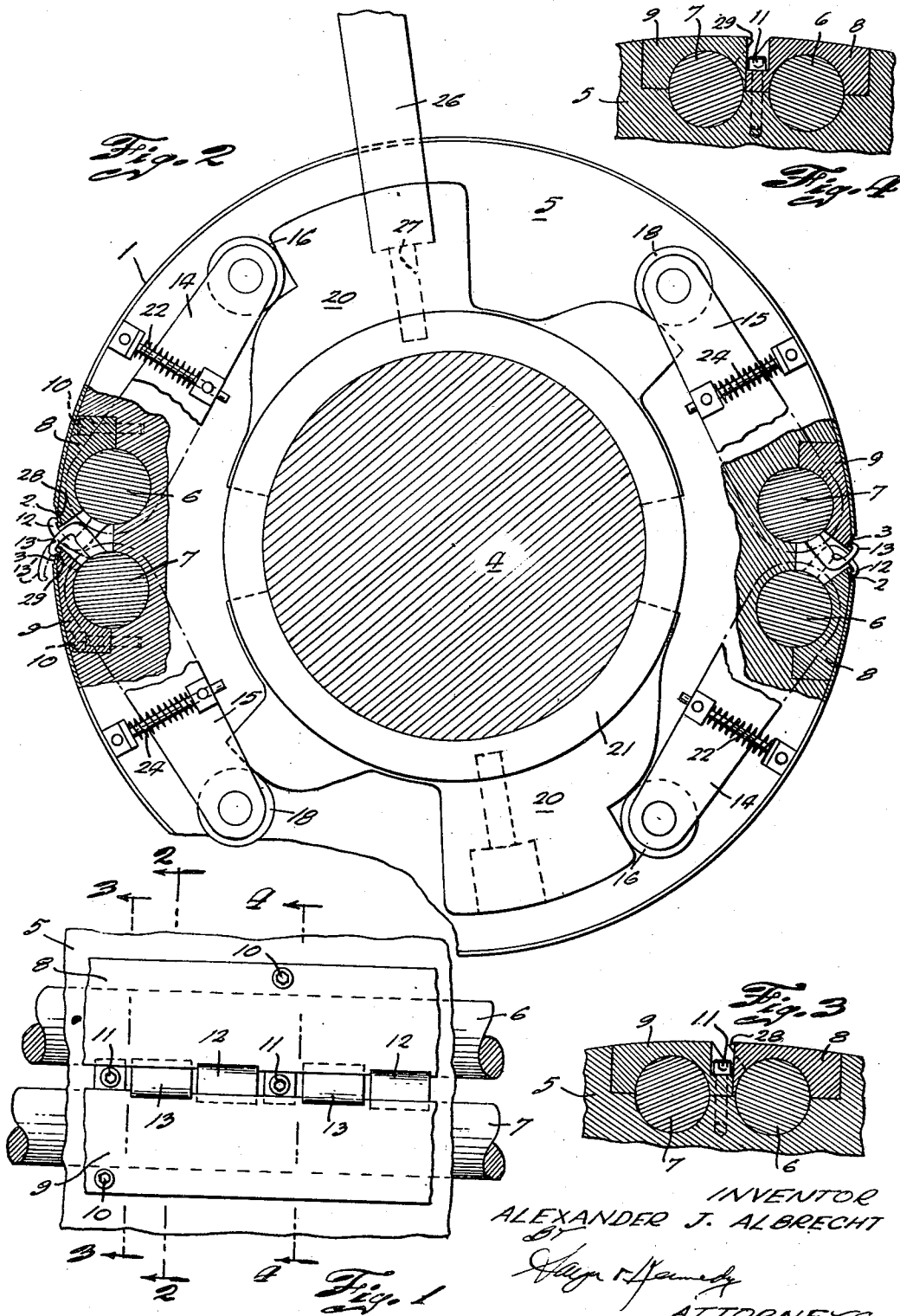
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PRINTING PLATES AND PLATE CLAMPING MECHANISM THEREFOR

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PRINTING PLATES AND PLATE CLAMPING MECHANISM THEREFOR

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2 Claims. (Cl. 101—415.1)

This invention relates to improvements in printing plates and plate clamping mechanism therefor.

The general object of the invention is to provide an improved printing plate and plate clamping mechanism, and particularly for use in newspaper or other relief printing. In such printing, it has been customary to use stereotype printing plates which are cast of type metal or the like and which may be a half inch or thereabouts in thickness. Such plates possess a number of disadvantages, among which may be mentioned difficulty in obtaining a clear and durable printing surface, difficulty in holding a plate on the cylinder against the action of centrifugal force and difficulty resulting from the deformation of the plate under printing pressure and impact.

It is an object of the invention to provide a light, thin printing plate, minimizing the effect of centrifugal force and the printing pressure in loosening and deforming the plate.

A further object of the invention is to provide a printing plate capable of greater sharpness and clarity in printing and having a more durable surface than plates now in use.

Still another object of the invention is to provide a printing plate and clamping mechanism therefor of a simple character and which is rapid and reliable in operation.

With these and other objects which will appear in the following full description in mind, the invention consists in the improved printing plate and clamping mechanism which will now first be fully described in connection with the accompanying drawing and will then be more particularly pointed out in the appended claims.

In the drawing:

Figure 1 is an elevation view of a portion of a printing cylinder surface showing clamping mechanism according to the invention;

Figure 2 is a view partly in end elevation and partly in section on the line 2—2 of Figure 1; and

Figures 3 and 4 are sections on the lines 3—3 and 4—4 respectively of Figure 1.

A printing plate embodying the invention may be a casting of magnesium or an alloy having similar characteristics, of generally semi-cylindrical form and of any convenient dimensions. It is, in general, about one-sixteenth inch thick and is grooved as indicated at 2 and 3 along its leading and trailing straight edges. The groove may extend about half way through the plate or for about one-thirty-second of an inch.

The printing cylinder 5 has a shaft 4 and includes a clamping mechanism comprising for each plate, bars or shafts 6 and 7 rotatably journaled in the cylinder body and held therein by members 8 and 9 which are bolted to the cylinder as at 10 and 11. Each of the shafts 6 and 7 is provided with plate grasping hooks 12 and 13, which enter into the grooves 2 and 3 of the plates for grasping and stretching the plate around the cylinder. The two sets of hooks face oppositely around the cylinder circumference and are alternated and interfitted axially

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of the cylinder, as shown in Figures 1 and 2. Shafts 6 and 7 are rotated for grasping and holding, or for releasing the plates by means of cam follower arms 14 and 15 carrying rollers 16 and 18 which engage cams 20 and are forced against the same by springs 22 and 24. The cams 20 are rotatably supported on the cylinder shaft 4 and are held in position by a collar 21 suitably secured to the shaft. A wrench 26 having a projection inserted into a socket 27 in the cam provides means for moving the cams to operate the hooks 12 and 13.

The surfaces of the members 8 and 9 underlying the hooks 12 and 13 are rounded as at 28 and 29. These surfaces are eccentric to the shafts 6 and 7, and in consequence, as the shafts are rotated to release the plate, the hooks will move outwardly and away from the cylinder surface, as indicated at 13' in Figure 2, thus releasing the plate. As the shafts are rotated back to grasping position, the hooks approach the surface of the cylinder and will grasp the plate firmly thereagainst.

In removing plates from the cylinder, the upper cam 20 is operated so as to release the uppermost plate and the cylinder is rotated half way around and the other cam is then operated to release the other plate. In placing plates upon the cylinder, the operation is the same except that the movement of the cams is in the reverse direction.

By reason of the thinness of the plate by comparison with conventional stereotype plates, its bulk is reduced to a small fraction and by reason of the lightness of the magnesium alloy its weight is still further reduced. Since both the thickness of the plate and the specific gravity may be reduced to about 10% by comparison with the thickness and specific gravity of conventional plates, the centrifugal force upon the plate may be reduced to a small fraction or the order of 1% of the centrifugal force encountered with plates as now made. By reason of the superior mechanical properties of the plate, and the improved clamping mechanism of the invention, however, the security with which the plate is held may be comparable or even superior to the security of holding obtained with conventional plate clamping mechanisms. It will also be noted that the plate of the invention actually possesses superior strength under pressure, furnishing a better support for the printing image and its outer surface and also having less tendency to grow, these consequences following from the thinness of the plate and also from the material of which it is made.

Since the plate may be held satisfactorily by merely forming the grooves 2 and 3 therein and since these are elements which may readily be cast, or cut into the plate by simple plate trimming mechanism, the plate is simple to manufacture and requires no special attention in placing it on the cylinder in order to insure accuracy in positioning it.

What is claimed is:

1. In a printing cylinder, an axially aligned plurality of plate clamping hooks, means supporting the hooks for clamping movement about a pivotal axis within the cylinder, the cylinder having a generally cylindrical plate supporting surface and a convex surface curving inwardly from the cylindrical plate supporting surface, underlying the hooks and eccentric to the pivotal axis about which they move, whereby the hooks in moving to clamp a plate approach the eccentric surface to clamp the plate against it.

2. A printing cylinder according to claim 1, in which the clamping mechanism is duplicated for clamping the leading edge of one plate and trailing edge of another, the two sets of clamping hooks facing oppositely around the cylinder and being alternated and interfitted axially of the cylinder.

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