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H. GRIEBLING
DEVICE FOR MOUNTING SUBSTANDARD-SIZED PRINTING
PLATES ON AN IMPRESSION CYLINDER OF
A ROTARY PRINTING PRESS

3,230,881

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2 Sheets-Sheet 1

Fig. 2

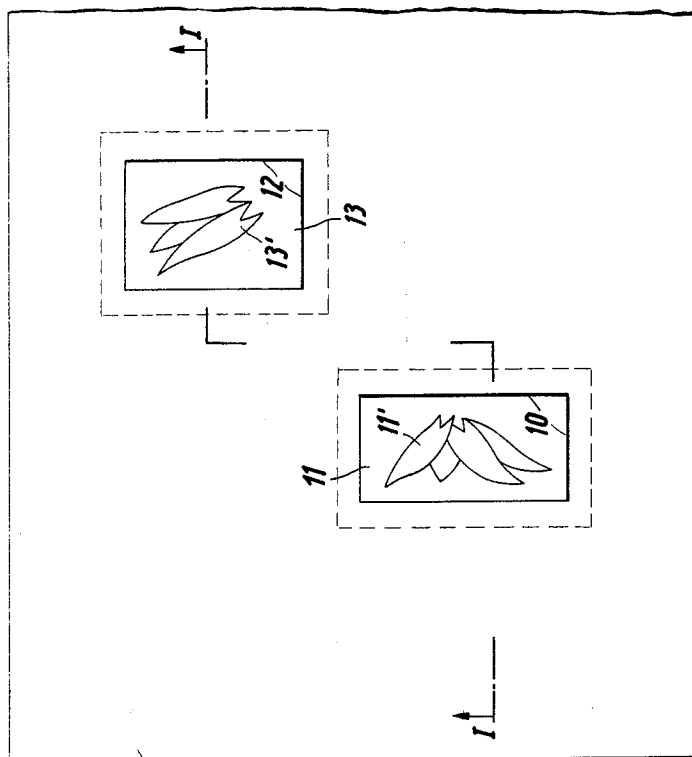
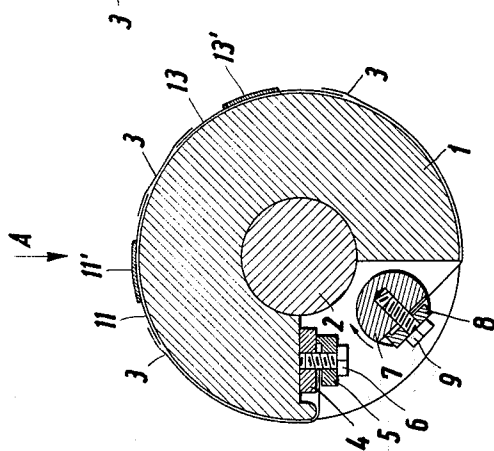


Fig. 1



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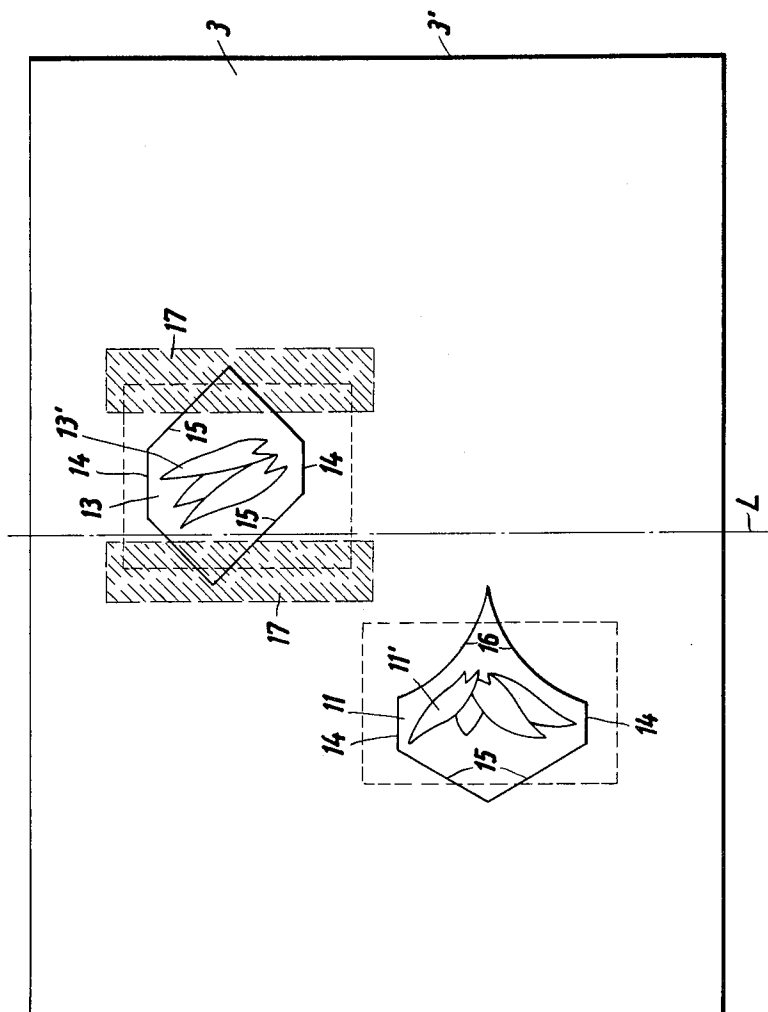
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Fig. 3



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DEVICE FOR MOUNTING SUBSTANDARD-SIZED PRINTING PLATES ON AN IMPRESSION CYLINDER OF A ROTARY PRINTING PRESS

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5 Claims. (Cl. 101—415.1)

The invention relates to printing from engraved-type printing plates made of a plastic such as Dycril, or also from zinc or magnesium etched printing plates.

It is customary to clamp such plates, which generally have a gauge of about 0.8 to 2 mm., on the printing or impression cylinder of a rotary printing press. The plates are secured, suitably curved, to the cylinder of the press along their edges parallel to the longitudinal axis of the cylinder by means of clamping cleats and are then tensioned about the cylinder. The correct orientation of such plates does not present any difficulties, and the aforesaid method is simple and economical.

The use of curved or arcuate printing plates becomes uneconomical when the areas on the plates which are actually to be printed are comparatively small, since a plate of full size must be used to permit mounting and tensioning of the plate on the cylinder. It is impractical to adhere printing plates of reduced size directly to the cylinder, since a printing plate adhered directly to the cylinder cannot be oriented by appropriately displacing the plate on the cylinder. An accurate orientation of the printing plate is generally necessary, especially for multi-color printing. Furthermore, in practice it is generally impossible to remove adhered printing plates from the cylinder without damaging the plates.

Bonding of a small or substandard-sized printing plate on a backing of kraft paper or foil would facilitate the orientation of the plate, but curved printing plates have a tendency to retain their initial shape and position, whereby the plates frequently do not rest flush on the cylinder. If several substandard-sized printing plates are adhered to a backing, orientation of the printing plates in reference to each other is impossible.

It is an object of the invention to provide a novel and improved device of the general kind above referred to which permits printing of material which occupies only part of the area of a standard-sized printing plate in an economical and convenient fashion.

It is also an object of the invention to provide a novel and improved device for mounting a substandard-sized printing plate upon the impression cylinder of a rotary printing press, with which device such printing plate can be conveniently mounted on a cylinder having conventional clamping and tensioning means of standard size and can also be accurately oriented on the cylinder without difficulty.

Another object of the invention is to provide a novel and improved device of the general kind above referred to with which several substandard-sized printing plates can be simultaneously mounted on the impression cylinder and adjusted independently of each other. As is evident, simultaneous printing of several small areas reduces the total costs of the printing operation.

Still another object of the invention is to provide a novel and improved device of the general kind above referred to by means of which substandard-sized plates are first loosely retained on the impression cylinder for adjustment and are then pulled taut for securing the plates in the adjusted positions.

A further object of the invention is to provide a novel

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and improved device of the general kind above referred to which has few and inexpensive components, the total cost of which is far less than the cost of a standard-sized printing plate only a fraction of which is utilized for printing.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and set forth in the appended claims constituting part of the application.

In the accompanying drawings, several preferred embodiments of the invention are shown by way of illustration, and not by way of limitation.

In the drawings:

FIG. 1 is a sectional view of the impression or printing cylinder of a rotary printing press, the section being taken on line I of FIG. 2;

FIG. 2 is a development of FIG. 1 on an enlarged scale, two printing plates of substandard size adhered to a backing being shown in the direction indicated by arrow A in FIG. 1; and

FIG. 3 is a development similar to FIG. 2, showing substandard-sized printing plates adhered to a backing in a configuration and orientation different from those of FIG. 2.

Referring first to FIGS. 1 and 2 in detail, FIG. 1 shows an impression or printing cylinder 1 mounted on a shaft 2. Sheet material or foil is used as backing 3. One end of the backing is secured in a conventional manner by clamping the end between a strip 4 suitably secured to the cylinder within a cut-out thereof and a cleat 5. The strip 4 and the cleat 5 are secured to each other by suitable fastening means, such as a headed screw 6. The other end of the backing is held between a roller 7 rotatably mounted within the cylinder parallel to the longitudinal axis thereof and a cleat 8. The cleat is pressed against a flattened surface of roller 7 by suitable fastening means, such as a headed screw 9. As is evident, rotation of roller 7 by suitable actuating means (not shown) will pull backing 3 taut on the peripheral surface of cylinder 1.

Backing 3 has a cut-out 10 for a substandard-sized printing plate 11 and a similar cut-out 12 for a second substandard-sized printing plate 13. As is evident, the printing plates 11 and 13 occupy only a fraction of the total surface of backing 3, which should be visualized as having the size of a standard printing plate. The backing 3 may be made of paper, such as kraft paper, metal foil or plastic, and in any event of an inexpensive material.

As is clearly shown in FIG. 2, the outlines of cutouts 10 and 12, while generally similar to the outlines of printing plates 11 and 13 are considerably smaller than the outlines defined by the printing plates, so that the margins of the plates underlie the backing at the cut-outs. In practice, it has been found that the backing material should overlap the printing plates by about 10 mm. The raised or relief portions 11' and 13', respectively—that is, the portions of the printing plates from which the printing is actually effected—protrude beyond the surface of the backing material retaining the printing plates on the cylinder 1. The relief portions of the printing plates should be at least 0.3 mm. higher than the flat portions thereof, as is indicated in FIG. 1 in an exaggerated fashion.

In the hereinbefore-described first stage of the operation the backing is held comparatively loosely or slack on the cylinder, so that the printing plates can be conveniently oriented in reference to the cylinder and also in reference to each other. Upon completion of the orientation of the plates, the backing 3 is tightened by simply turning tension roller 7 in the direction indicated by the arrow in FIG. 1. The tightened backing will hold the printing plates safely in position.

Similarly, the printing plates can be removed after completion of the printing operation, or also reoriented, if

necessary, after loosening of backing 3 by turning tensioning roller in the opposite direction.

It is sometimes found that after prolonged use of a backing, the edges of its cut-outs which are parallel or substantially parallel to the lengthwise axis of the cylinder 1 tend to form gaps between the backing and the underlying marginal portions of the printing plates. Such tendency to form gaps is particularly marked when the printing plates, while not of standard size, are comparatively large, and also when the length of the printing plates in the direction of the axis of the printing cylinder is substantial.

The tendency to form gaps can be effectively avoided by eliminating as much as possible edges at the cut-outs which are parallel or not substantially vertical to this axis, and by providing instead edges which extend at a slant in reference to the cylinder axis or are arcuate.

FIG. 3 shows an arrangement of this kind. The axis of the cylinder is indicated by the dash-dotted lines L. Two printing plates 11 and 13 of substandard size are again shown as being retained by a backing 3, the edge 3' of which is parallel to the cylinder axis L. The full lines of the cut-outs show a configuration which avoids lines extending parallel to the cylinder axis L. The configuration of the cut-outs as used in the embodiment of FIG. 2 is shown in dotted lines for comparison. As may be observed in FIG. 3, edges 14 of the cut-outs are transverse of the cylinder axis, and edges 15 are at a slant in relation thereto. In other words, the cut-outs do not have edges which are parallel to the cylinder axis.

In the left-hand cut-out, the straight slanted edges 15 are replaced by curved edges 16.

As previously explained, the use of cut-out configurations as shown in FIG. 3 effectively counteracts any tendency of the backing to form gaps along its edges.

To secure the printing plates further in the oriented positions, after tensioning of the backing as afore described, adhesive strips 17 of suitable material may be applied, so that the strips overlie the backing material and also the marginal portions of the underlying printing plates; that is, the portions of the plates not participating in the actual printing operation. The strips 17 may be covered with suitable pressure-adhesive material, such as is used, for instance, for Scotch tape and also for a material known as "Tesafilm."

While the invention has been described in detail with respect to certain now preferred examples and embodiments to the invention, it will be understood by those skilled in the art, after understanding the invention, that

various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended, therefore, to cover all such changes and modifications in the appended claims.

What is claimed is:

1. A device for mounting a substandard-sized printing plate upon an impression cylinder of a rotary printing press, said device comprising a mounting sheet made of pliable sheet material and including a cut-out, an impression cylinder having clamping means operable for retaining the mounting sheet loosely on said cylinder, said mounting sheet having a standard size substantially equal to the peripheral wall area of said cylinder, a substandard-sized printing plate having a peripheral outline in excess of the peripheral outline of said cut-out in the mounting sheet, and tensioning means operable for stretching the mounting sheet taut about the cylinder, the printing plate, when placed between the cylinder and the mounting sheet in the loosely retained position thereof, being adjustable in reference to the cut-out and being stationarily held in a selected adjusted position by the pressure of the mounting sheet when the same is stretched by operation of the tensioning means.

2. A device according to claim 1, wherein said mounting sheet includes several cut-outs, and wherein several of said substandard-sized printing plates are provided, each of said cut-outs locating and exposing one of the printing plates placed between the cylinder and the mounting sheet in registry with one of the cut-outs thereof.

3. A device according to claim 1 and comprising mounting strips adhered to sheet material portions of the mounting sheet and adjacent printing plate portions exposed in said cut-out to secure the printing plate in the adjusted position in reference to the cut-out.

4. A device according to claim 1, wherein said cut-out has a peripheral outline such that substantially all the edges thereof are oriented at a slant in reference to the longitudinal axis of the impression cylinder.

5. A device according to claim 4, wherein at least some of said edges of the cut-out are arcuate.

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