Sept. 5, 1939. G. OAKES 2,172,144

PRINTING PLATE FOR ROTARY RIB EQUIPPED PRINTING CYLINDERS

Filed Aug. 31, 1938

Fig. 1

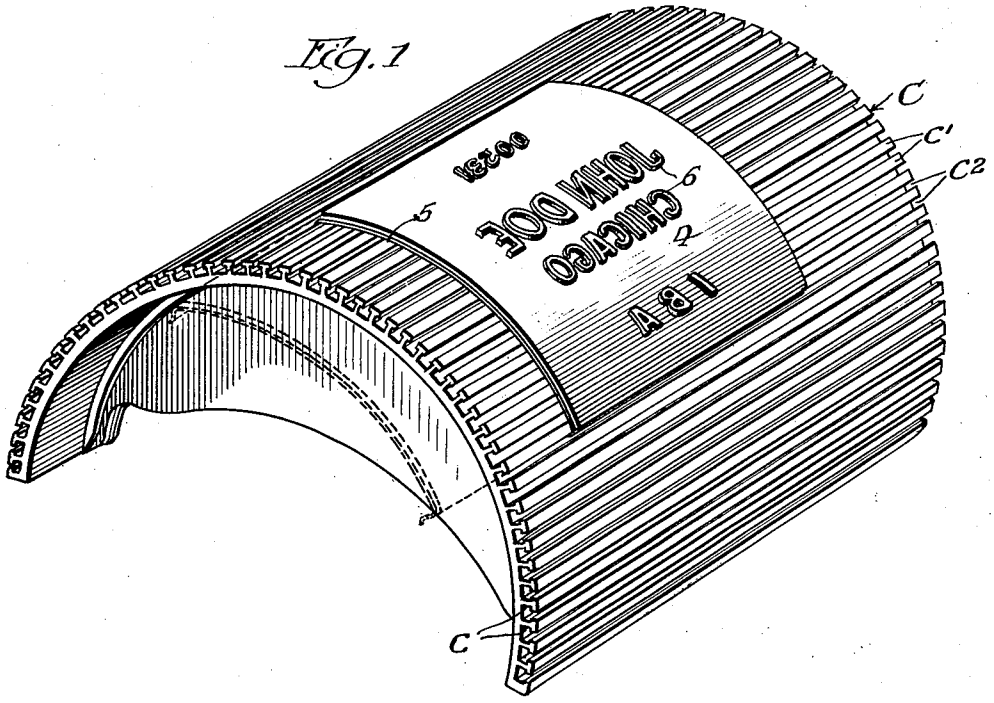


Fig. 2

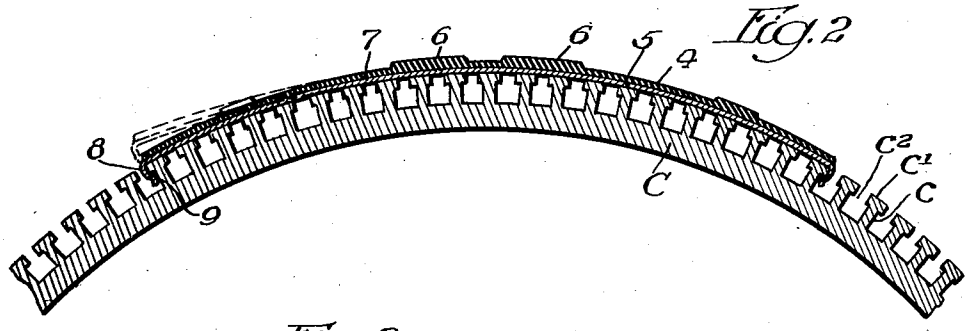
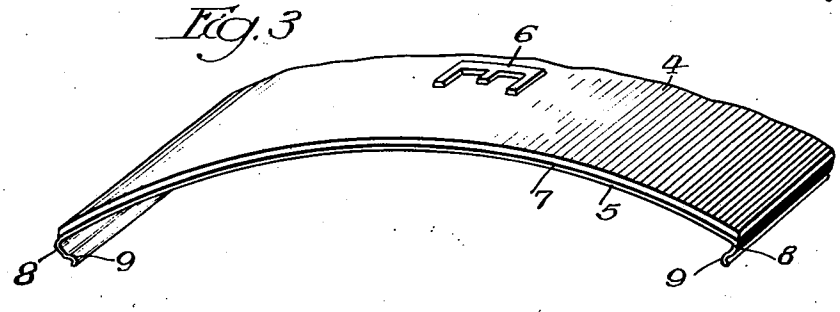


Fig. 3



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UNITED STATES PATENT OFFICE

2,172,144

PRINTING PLATE FOR ROTARY RIB EQUIPPED PRINTING CYLINDERS

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3 Claims. (Cl. 101—375)

The present invention relates generally to printing plates for use in connection with "Multigraphs" and like printing apparatus. More particularly the invention relates to that type of printing plate which comprises a type sheet of molded rubber and a thin metallic substantially conterminous backing sheet together with a layer of cement or adhesive material between the two sheets for securing them together, and is adapted to be applied to a rotary "Multigraph" cylinder having on the outer periphery thereof a series of laterally spaced longitudinally extending plate supporting and anchoring ribs with integral enlarged heads which project in opposite directions in the direction of the circumference of the cylinder and define undercut grooves between the ribs.

One object of the invention is to provide a printing plate of this type which is extremely simple in design and embodies novel and improved means whereby it may be applied and anchored to the "Multigraph" cylinder more quickly and readily than previously designed plates of the same general character.

Another object of the invention is to provide a printing plate of the type and character under consideration in which the anchoring means therefor is in the form of side flanges which are formed integrally with, and extend inwardly from, the side margins of the thin metal backing sheet and embody along the outer margins thereof inwardly extending bead formations for hooking or interlocking engagement with the heads of the ribs which are adjacent to the side margins of the plate when the latter is applied to the cylinder.

A further object of the invention is to provide a printing plate of the last mentioned character in which the bead formations are continuous and extend throughout the entire length of the anchoring flanges and in addition are substantially semicircular in cross-section so that the outer portions thereof extend outwardly at approximately a 45° angle with respect to the anchoring flanges and serve as the result of their angularity and when pressure is applied to the side margins of the plate in connection with application of the plate to the cylinder to spring the anchoring flanges outwardly and thus bring the bead formations into interlocked relation with the heads of the adjacent ribs.

A still further object of the invention is to provide a "Multigraph" type printing plate which is generally an improvement in the art and may be produced at a low and reasonable cost.

Other objects of the invention and the various advantages and characteristics of the present printing plate will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is perspective view of an externally ribbed rotary "Multigraph" cylinder having applied thereto a printing plate embodying the invention;

Figure 2 is an enlarged transverse section taken on the line 2—2 of Figure 1 and illustrating in detail the manner in which the anchoring flanges with their inwardly extending bead formations serve to hold the plate in hooked relation with the heads of the ribs that are adjacent to the side margins of the plate; and

Figure 3 is a fragmentary perspective view of the plate illustrating in detail the construction, design and character of the anchoring flanges at the side margins thereof.

The printing plate which is shown in the drawing constitutes the preferred embodiment of the invention. It comprises a type sheet 4 and a backing sheet 5, and is adapted to be applied to, and for use in connection with, a rotary "Multigraph" type cylinder C having on the outer periphery thereof a series of laterally spaced, longitudinally extending plate supporting and anchoring ribs *c*. The latter, as shown in Figures 1 and 2 extend from one end edge of the cylinder to the other and embody integral enlarged flat sided heads c^1 which project in opposite directions in the direction of the circumference of the cylinder and define undercut grooves c^2 between the ribs. As well understood in the art, the cylinder C is adapted to be rotated so as to bring the printing plate into successive engagement with sheets of paper or the like for printing purposes.

The type sheet 4 is formed of molded rubber and embodies on the outer face thereof integral raised impression or print forming characters 6. The latter are adapted to be inked during rotation of the cylinder C and make the desired impressions when brought into contact with the work. Preferably the type sheet is rectangular.

The backing sheet 5 is formed of thin metal and underlies the type sheet 4. It is substantial-

ly conterminous with the latter and embodies on the outer face thereof a layer 7 of cement or adhesive material whereby the type sheet is secured thereto. In mounting the printing plate on the cylinder C, the backing sheet 5 together with the type sheet is adapted to be bent into arcuate form.

In order releasably to secure the plate in place two anchor flanges 8 are provided. These flanges are formed integrally with and extend inwardly at substantially right angles from the side margins of the metallic backing sheet 5. They are adapted to fit within the undercut grooves c^2 between the ribs c of the cylinder C as shown in Figure 2, and embody along the outer parts thereof inwardly extending bead formations 9. These formations are continuous and extend from one end of the anchoring flanges 8 to the other. They are adapted when the plate is applied to the cylinder to underlie and maintain hooked relation with the heads of the adjacent ribs of the cylinder and serve to hold the plate in abutting relation with the underlying face portions of the subjacent rib heads c^1. The flanges because they are formed integrally with the side margins of the backing plate 5 are capable of being sprung outwardly to a limited extent. The bead formations 9 are semicircular in cross-section with the result that the outer portions thereof extend outwardly at approximately a 45° angle with respect to the inner parts of the flanges 8 and hence when they are placed against the top faces of the heads and pressure is applied to the side margins of the plate, they urge or direct the anchoring flanges outwardly and cause them to enter the adjoining undercut grooves c^2 in such manner that the bead formations snap into gripping or hooked relation with the heads of the adjacent ribs c. The inner parts of the flanges are substantially flat and are adapted to fit flatly against the adjoining flat sides of the heads of the adjacent ribs when the plate is in connected relation with the cylinder (see Figure 2). As a result of the fact that the inner parts of the flanges abut flatly against said adjoining side faces of the rib heads when the plate is in place the plate is effectively held or locked against movement circumferentially of the cylinder. When the plate is in place the inner portions of the bead formations 9 underlie the heads of the adjacent ribs c and the outer portions of said formations project outwardly, that is, in spaced relation with respect to the ribs and are in such position that they may be readily engaged by a pry or other tool in connection with the removal of the plate from the cylinder.

The plate because of the anchoring flanges with the bead formations therein is adapted to be applied to the cylinder in two different ways. In the first place it may be applied to the cylinder by first bending or warping it into arcuate form and then placing it in alignment with one edge of the cylinder. After so placing or positioning the plate the ends of the anchoring flanges that are adjacent to the adjoining end edge of the cylinder are inserted into the contiguous ends of the adjoining undercut grooves c^2 and the plate is slid axially with respect to the cylinder until it is properly positioned with respect to the cylinder end edges. The other mode or way of applying the plate to the cylinder comprehends first inserting one of the anchoring flanges into one of the undercut grooves c^2 and then shifting the plate in the direction of the other anchoring flange in order to bring the bead formation of the one flange into hooked relation with the head of the adjacent rib. Thereafter, the plate is pressed downwardly in the direction of the cylinder in order to bring the metallic backing sheet 5 into engagement with the heads of the subjacent ribs and cause the plate to assume an arcuate form. After pressing the plate in this manner inward and downward pressure is applied to the other anchoring flange 8. As soon as such pressure is applied the outer portion of the bead formation of said other flange slides outwardly on the head of the subjacent rib and forces said other flange outwardly in the direction of the entrance of the adjoining undercut groove. In response to further pressure on the plate said other flange is caused to enter the aforesaid groove and the bead formation 9 thereof snaps into hooked relation with the head of the adjacent rib. The plate may be removed either by sliding it axially or lengthwise with respect to the cylinder in order to disengage the anchoring flanges 8 from the adjacent ribs on the outer periphery of the cylinder or by placing a pry under the outer portion of the bead formation of one of the flanges and then springing outwards the one flange until it clears the head of the adjacent rib of the cylinder.

The herein described printing plate may be manufactured at a low and reasonable cost because of the simple design of the anchoring flanges 8. Because of the bead formations on the anchoring flanges the plate may be applied to the "Multigraph" cylinder C in an expeditious manner and with facility and may also be readily removed by way of a pry or any other suitable tool.

Whereas the bead formations 9 have been described as extending from one end of the anchoring flanges to the other, it is to be understood that they may be of interrupted or series design. It is also to be understood that the invention is not to be restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a printing plate adapted for use with a rotary printing cylinder having on the outer periphery thereof a plurality of laterally spaced longitudinally extending plate supporting ribs with enlarged heads extending in opposite directions circumferentially of the cylinder and defining undercut grooves between the ribs, and comprising a type sheet of flexible and elastic material, a thin backing sheet of flexible resilient metal having the type sheet secured to its outer face and adapted together with said type sheet to be bent into arcuate form and pressed into abutment with the heads of the ribs, and means for releasably securing the two sheets in place consisting of flanges formed integrally with and projecting inwardly from the side margins of the backing sheet and having the inner parts thereof substantially flat and extending at substantially right angles to the side margins of said backing sheet and having their outer parts shaped to form bead formations, the inner portions of which extend inwardly and the outer portions of which extend outwardly at substantially 45 degree angles with respect to said inner parts of the flanges so that they are adapted in response to initial inward pressure on the side margins of the two sheets to slide outwards on the adjacent rib heads and cause the flanges

to flex outwardly beyond said adjacent rib heads, said flanges being adapted after outward flexure thereof and in response to further inward pressure on the side margins of the two sheets to enter the adjacent grooves and then snap inwards towards one another into a position wherein the inner portions of the bead formations underlie and are in hooked relation with the heads of the adjacent ribs and the outer portions of said formations project outwards away from said adjacent ribs.

2. As a new article of manufacture, a printing plate adapted for use with a rotary printing cylinder having on the outer periphery thereof a plurality of laterally spaced longitudinally extending plate supporting ribs with enlarged flat sided heads extending in opposite directions circumferentially of the cylinder and defining undercut grooves between the ribs, and comprising a type sheet of molded rubber, a thin backing sheet of readily flexible resilient metal having the type sheet cemented to the outer face thereof and adapted together with said type sheet to be bent into arcuate form and pressed into abutment with the heads of the ribs, and means for releasably securing the two sheets in place consisting of flanges formed integrally with and projecting inwardly from the side margins of the backing sheet and having the inner parts thereof of substantially flat and extending at substantially right angles to the side margins of said backing sheet and having their outer parts struck inwards to form continuous full length bead formations of substantially semicircular cross section, the outer portions of said formations extending at substantially 45 degree angles with respect to the inner parts of the flanges and being adapted in response to initial inward pressure on the side margins of the two sheets to slide outwards on the adjacent rib heads and cause the flanges to flex outwardly beyond said adjacent rib heads, the flanges being adapted after outward flexure thereof and in response to further inward pressure on the side margins of the two sheets to enter the adjacent grooves and then snap inwards towards one another into a position wherein the inner parts thereof fit flatly against the contiguous side faces of said adjacent rib heads, the inner portions of the bead formations underlie and are in hooked relation with said heads and the outer portions of said formations project outwards away from the adjacent ribs.

3. As a new article of manufacture, a printing plate adapted for use with a rotary printing cylinder having on the outer periphery thereof a plurality of laterally spaced longitudinally extending plate supporting ribs with enlarged heads extending in opposite directions circumferentially of the cylinder and defining undercut grooves between the ribs, and comprising a type sheet of flexible and elastic material, a thin backing sheet of readily flexible metal having the type sheet secured to its outer face and adapted together with said type sheet to be bent into arcuate form for placement against the heads of the ribs, and means for releasably securing the two sheets in place consisting of flanges connected to and projecting inwardly from the side margins of the backing sheet and having the inner parts thereof substantially flat and extending at substantially right angles to the side margins of said backing sheet and having their outer parts shaped to form inwardly extending portions and outwardly extending portions, said flanges being adapted when the two sheets are placed against the ribs and the side margins of the sheets are pressed inwardly, to enter the adjacent grooves and then snap inwards into a position wherein the inwardly extending portions of the outer parts thereof underlie and are in hooked relation with the heads of the adjacent ribs and the outwardly extending portions of said outer parts extend outwardly with respect to said adjacent ribs.

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