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P. J. SCHOONENBERG
EXPANSIBLE PRINTING CYLINDER FOR
ROTARY MULTICOLOR PRINTING

2,583,889

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2 SHEETS—SHEET 1

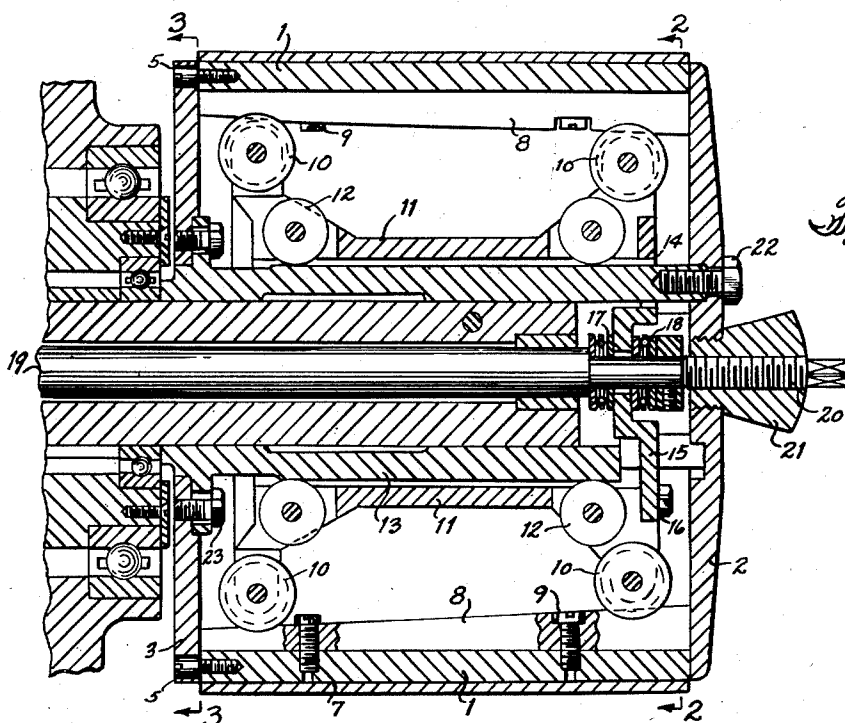


Fig. 1.

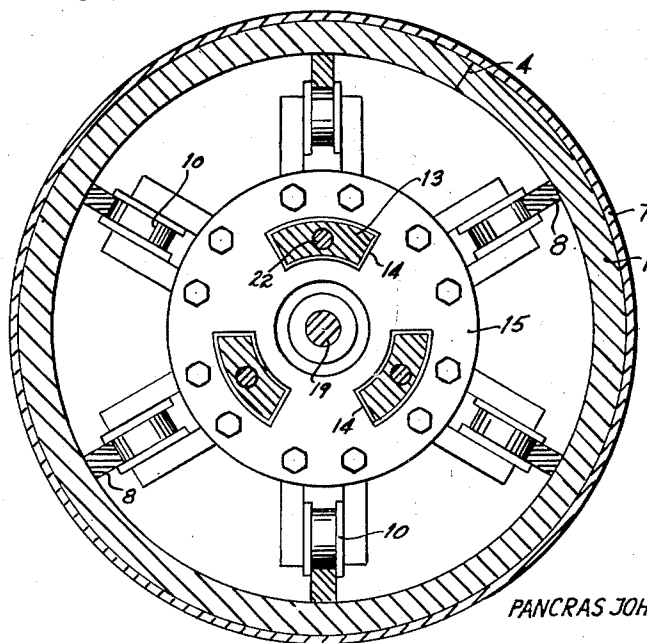


Fig. 2.

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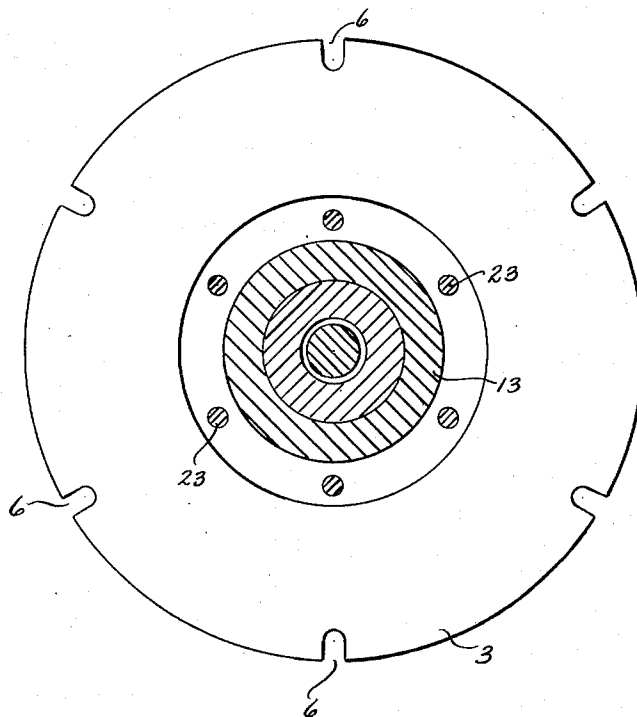
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Fig. 3.



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EXPANSIBLE PRINTING CYLINDER FOR
ROTARY MULTICOLOR PRINTINGPancras Johannes Schoonenberg,
Eindhoven, NetherlandsApplication April 29, 1950, Serial No. 158,955
In the Netherlands February 17, 1948

3 Claims. (Cl. 101—375)

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This invention relates to a printing cylinder for a printing press, more particularly for a multi-colour flat-bed printing press.

In this art an exact registry of the different colour prints is of great importance.

The main object of the invention is to provide means adapted to effect such exact registry by an adjustment of the printing cylinders during operation.

According to the invention the printing cylinder is provided with means for expanding the cylinder surface during operation in a continuous manner within very narrow limits.

The invention is concerned with extremely fine adjustments of the order of ten thousandths of millimetres.

Even extremely small variations in the periphery of the printing cylinder may be adjusted during operation by means of the apparatus according to the invention.

This invention is applicable to continuous printing processes, i. e. printing on a continuously running film or strip of material and to the possibility of continuous fine adjustment of the printing cylinder periphery.

In the drawing an example of a printing cylinder constructed according to the invention is shown.

Figure 1 represents a longitudinal section;

Figure 2 is a cross-section taken along the line II—II in Figure 1 and

Figure 3 is a view of the rear cross-plate of the cylinder taken along the line III—III in Figure 1.

The figures only show a single printing cylinder. Generally two printing cylinders cooperate in the multicolor printing process. Each of these cooperating cylinders may be constructed in the manner shown in the drawings.

Each cylinder has a surface 1, a front plate 2 and a rear plate 3. The surface is longitudinally split at 4 and its expansion is radially guided by means of studs 5 in slots 6 of the rear plate 3 (Figure 3).

The cylindrical surface is resilient and will return to or remain in the closed position unless the internal expansion forces, to be described hereinafter, are exerted thereon.

The printing plate 7 is secured to the cylinder surface e. g. by gluing.

Inclined surfaces 8 are mounted in the interior surface of the cylinder by means of screws 9.

Rollers 10 mounted on a slide member 11 are adapted to travel along surfaces 8. The slide member 11 is slidable along a central sleeve 13 by means of rollers 12. The sleeve engages longi-

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tudinal slots 14 in a disk 15, which has been connected with the slide member 11 at 16. The disk 15 is mounted between axial thrust bearings 17, 18 and thus connected to a central spindle 19. This spindle 19 is provided with screw thread 20. A threaded bush 21 cooperates with the screw threaded part 20 and is mounted in the front plate 2, which by means of bolts or screws 22 is connected to the sleeve 13 and presses the cylinder against the rear plate 3 without interfering with the radial expansion of the cylinder surface.

The rear plate 3 is connected to the sleeve 13 by means of bolts 23. The sleeve 13 is driven by conventional gearing means.

In operation by rotating the spindle 19 the slide member 11 will be axially displaced. During this movement the rollers 10 will exert an expanding action on the surfaces 8 and thus on the cylinder surface 1.

Figure 2 shows that the expanding forces act in all radial directions uniformly on the cylinder, the radial expansion thereof being guided by studs 5 in slots 6 (see Fig. 3).

The rotation of the spindle 19, consequently the adjustment of the periphery of the printing cylinder can be done during operation. If desired this action may take place electrically or mechanically in accordance with the sensing of the indication marks, which give an idea of the registry of the successive colour prints.

Having now described the nature of the invention and the object thereof, what I claim is:

1. A printing cylinder for a multi-color printing press comprising a resilient cylinder surface; support means for said cylinder surface including a central axial member and two end plates mounted thereon; a slidable member mounted on said central axial member; longitudinal inclined surfaces arranged symmetrically around the inner periphery of the cylinder surface; means mounted on said slidable member for engaging said inclined surface; a central spindle mounted threadedly in said cylinder and in operative connection with said slidable member; external means for rotating said spindle to displace the slidable member axially whereby said means for engaging the inclined surface is operated and the cylinder surface is radially expanded equally in all directions; and an expansible printing plate mounted on the cylinder surface.

2. A printing cylinder as defined in claim 1 wherein one of said end plates is provided with radial slots along its periphery and the cylinder

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surface is mounted in said slots by means of studs.

3. A printing cylinder for a multi-color printing press comprising a longitudinally split cylinder surface; longitudinal inclined surfaces mounted symmetrically around the inner periphery of the cylinder surface, a central support member for the cylinder; a slidable member mounted on said support member and adapted to be displaced axially thereon; means mounted on said axially slidable member for engaging said inclined surfaces; a central spindle mounted threadedly in said cylinder and extending through a central bore in said support member, said central spindle being coupled with said slidable member; external means for rotating said spindle during rotation of the cylinder to displace the slidable member axially and thereby

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to engage succeeding portions of the inclined surfaces and to expand the cylinder surface radially equally in all directions; and an expansible printing plate mounted in the cylinder surface.
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