

[72] Inventor **Louis G. Corse**
Paris, France
 [21] Appl. No. **797,881**
 [22] Filed **Feb. 10, 1969**
 [45] Patented **Nov. 17, 1970**
 [73] Assignee **Societe D'Etudes De Machines Speciales,**
Societe Anonyme
Paris, France
 [32] Priority **Feb. 14, 1968**
 [33] **France**
 [31] **139,824**

[56] **References Cited**
UNITED STATES PATENTS
 1,545,791 7/1925 Owen 101/415.1
 1,881,075 10/1932 Gutmann..... 101/415.1
 2,194,424 3/1940 Grupe 101/415.1

Primary Examiner—Robert E. Pulfrey
Assistant Examiner—J. Reed Fisher
Attorney—Irving M. Weiner

[54] **DEVICE FOR MOUNTING A NEGATIVE PLATE ON A PRINTING CYLINDER**
3 Claims, 5 Drawing Figs.

[52] U.S. Cl. 101/415.1
 [51] Int. Cl. B41f27/06,
 B41f27/12
 [50] Field of Search..... 101/415-1,
 378, 125, 126, 131, 131.5, 132, 132.5, 133;
 346/138; 51/364, 365, 367

ABSTRACT: A device for mounting a negative plate or sheet on a printing cylinder, of which the outer peripheral wall is discontinued in order to provide a longitudinal aperture extending throughout the length of the cylinder, comprising a cylindrical tensioning sector fitting in said aperture and forming with its peripheral surface the partial continuation of the cylinder peripheral surface, characterized in that it comprises in said longitudinal aperture of the cylinder at least one cylindrical bearing sector adjacent to said tensioning cylindrical sector, the outer surface of said cylindrical bearing sector completing the outer peripheral surface of said cylinder and tensioning sector, and being mounted on transverse adjustment on the pair of lateral flanges of said cylinder.

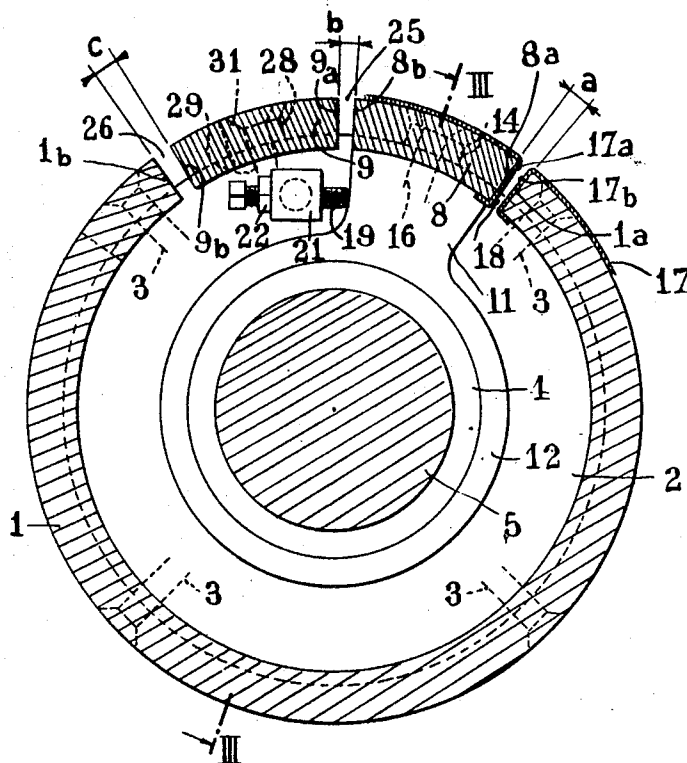


Fig.1.

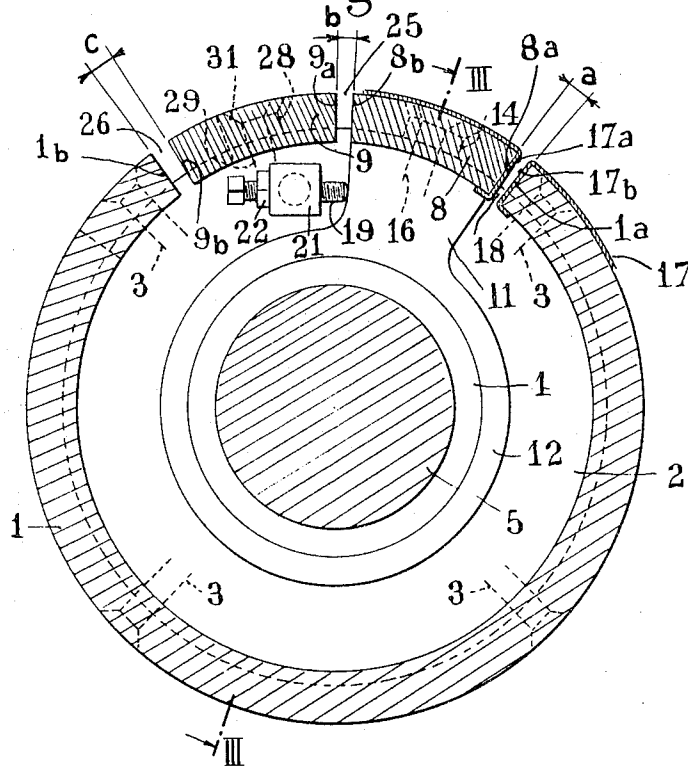
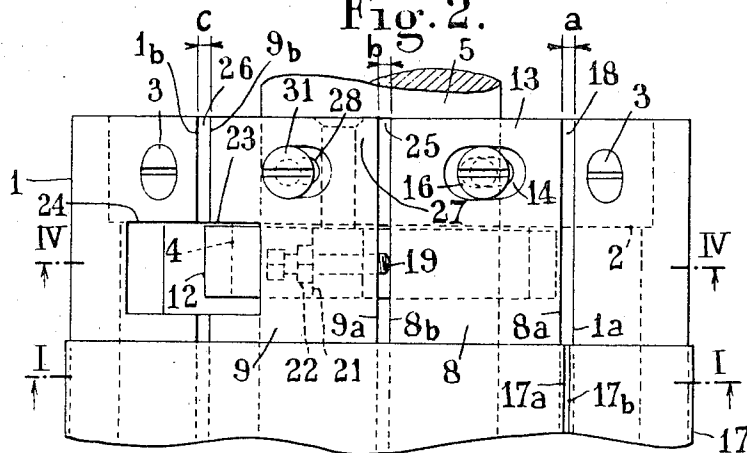
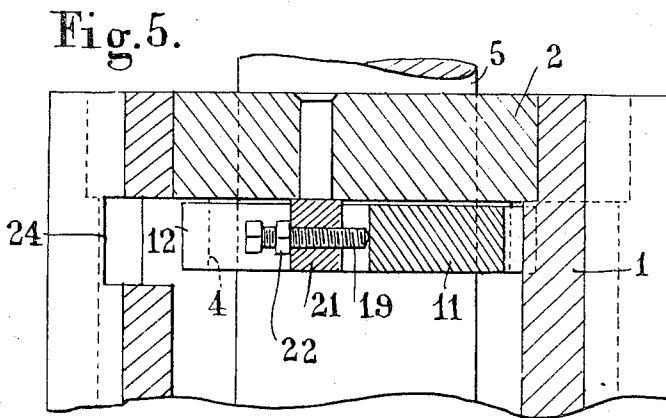
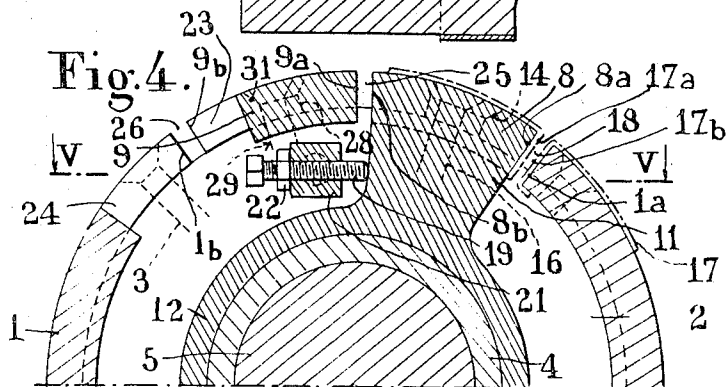
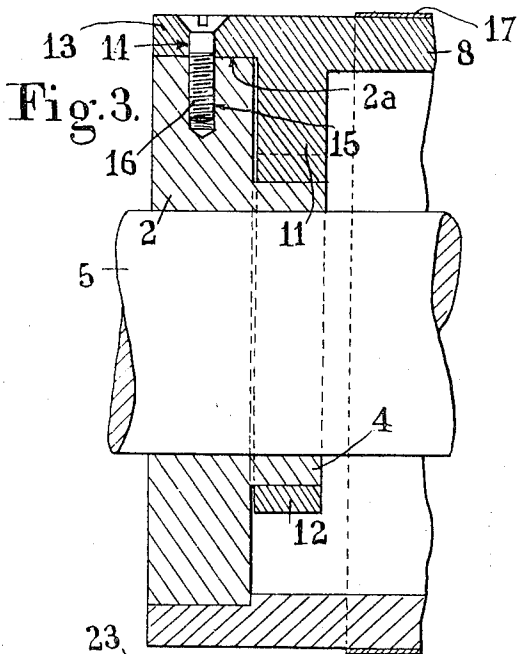


Fig. 2.





DEVICE FOR MOUNTING A NEGATIVE PLATE ON A PRINTING CYLINDER

BACKGROUND OF THE INVENTION

The present invention relates to devices for mounting a negative plate or sheet on a printing cylinder.

Various devices have already been proposed for tensioning and fastening a negative plate or sheet to a printing cylinder. A known device consists of a locking key or bar engageable in a longitudinal slot formed in the wall of the printing cylinder and retaining in this slot the bent or flanged marginal portions of the plate. Another tensioning and fastening device utilizes jaws to which the edges of the negative plate are secured, these jaws being subsequently moved towards each other for tensioning the negative plate.

However, all hitherto known devices are objectionable in that they give rise, on the surface of the printing cylinder, to empty gaps of relatively substantial width, constituting as many areas that cannot be utilized for printing purposes.

SUMMARY OF THE INVENTION

It is the essential object of this invention to obviate this inconvenience by providing a particularly simple device capable of minimizing the width of these useless gaps.

To this end, the device according to the present invention for mounting a negative plate or sheet on a printing cylinder, of which the outer peripheral wall is discontinued in order to provide a longitudinal aperture extending throughout the length of the cylinder, comprises a cylindrical tensioning sector fitting in said aperture and forming with its peripheral surface the partial continuation of the cylinder peripheral surface, the negative plate or sheet having one end bent and anchored to one edge of said sector and its opposite end also bent and anchored to the registering edge of the cylinder aperture, a support for said tensioning sector which is rotatably mounted about the cylinder axis, and means for adjusting the angular position of said support of said tensioning sector in relation to said cylinder for controlling the tension of said negative plate on the cylinder, and is characterized in that it comprises in said longitudinal aperture of the cylinder at least one cylindrical bearing sector adjacent to said tensioning cylindrical sector, the outer surface of said cylindrical bearing sector completing the outer peripheral surface of said cylinder and tensioning sector, and being mounted for transverse adjustment on the pair of lateral flanges of said cylinder.

The mounting device according to this invention is advantageous in that the width of the longitudinal gaps existing between the cylindrical bearing sector or sectors, the tensioning sector and the longitudinal edges of the continuous cylinder wall can be reduced to a very small value while permitting, due to the transverse shifting of the cylindrical bearing sector or sectors, of introducing the bent or folded edges of the negative plate into the gap left to this end between the cylindrical tensioning sector and the adjacent longitudinal edge of the cylinder wall.

In fact, the empty gap or interval necessarily provided for introducing the bent edges of the negative plate or sheet into the cylinder for tensioning this negative plate or sheet is divided into a plurality of elementary narrower gaps. Another advantageous feature characterizing this arrangement is obtained when the negative plate or sheet is intended for making several successive prints during each single revolution of the printing cylinder, for example for printing labels, illustrations, vignettes, etc., separated by nonprinted areas. In this case, the very reduced width of the empty or blank gaps left on the periphery of the printing cylinder may be inferior to the distance between two adjacent or successive prints, so that no circumferential space is lost during the printing process.

BRIEF DESCRIPTION OF THE DRAWING

A typical and exemplary form of embodiment of the device constituting the subject matter of this invention will now be described with reference to the attached drawings, in which:

FIG. 1 is a cross-sectional view showing a printing cylinder provided with a mounting and tensioning device for negative plate or sheet according to this invention, this section being taken along the line I-I of FIG. 2;

FIG. 2 is a fragmentary plan view from above of the printing cylinder of FIG. 1;

FIG. 3 is a fragmentary axial section taken along the line III-III of FIG. 1;

FIG. 4 is a cross section taken along the line IV-IV of FIG. 2;

FIG. 5 is a longitudinal section taken along the line V-V of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The printing cylinder illustrated in the drawings comprises a peripheral wall 1 secured at either end to transverse flanges 2 by means of screws 3. Each flange 2 has an inner extension in the form of a cylindrical hub 4 and is rotatably solid with a shaft 5.

The cross-sectional contour of the peripheral wall 1 of this printing cylinder is not completely circular and has an angular amplitude of about 290°. The longitudinal edges 1a and 1b of this peripheral wall 1 will thus define therebetween an aperture extending longitudinally throughout the cylinder length between said flanges 2, and the transverse are covered by this aperture constitutes a gap of about 70°. However, this numerical value should not be construed as limiting the invention, as will be seen presently.

A cylindrical tensioning sector 8 and a cylindrical bearing sector 9 are adapted to be mounted in the aperture defined by the longitudinal edges 1a and 1b. The cross-sectional amplitude of these cylindrical sectors 8 and 9 is about 32° for each sector, but again this value should not be regarded as limiting the scope of the invention.

The cylindrical tensioning sector 8 is rigid, at either end, with a radial arm 11 formed with an integral sleeve 12 rotatably mounted on the hub 4 of flange 2. Besides, the cylindrical tensioning sector 8 comprises at either end a radially thinner annular portion 13 of same angular amplitude which fits on the peripheral surface 2a of flange 2. This portion 13 comprises a slot 14 extending transversely to and registering with a tapped hole 15 formed in the peripheral outer surface 2a of flange 2. A set screw 16' extending through said slot 14 is screwed in said tapped hole 15 for locking the cylindrical tensioning sector 8 in the desired adjustment position on said flange 2.

The negative plate or sheet 17, illustrated in its operative and tensioned condition on the printing cylinder, has anchoring ends or edges 17a, 17b bent twice at right angles. As clearly shown in FIGS. 1 and 4, the edges 17a and 17b engage the longitudinal gap 18 (having a width a when the plate 17 is secured and tensioned) formed between the longitudinal edge 8a of the tensioning sector and the longitudinal edge 1a of the peripheral wall 1. The ends or edges 17a and 17b are bent twice at right angles in order to provide an inner lip adapted to anchor the negative plate 17 to the registering edges of sector 8 and wall 1.

The negative plate or sheet 17 disposed or wound on the printing cylinder is tensioned by means of a screw 19 provided at each cylinder end and engaged in a support 21 rigid with the adjacent flange 2, a locknut being associated with this screw for maintaining the plate 17 in the desired tensioned condition.

Notches 23 and 24 are formed in the bearing sector 9 and in the longitudinal edge 1b of the peripheral wall 1 of the printing cylinder, respectively, so as to register with the head of screw 19 and locknut 22 and permit the tightening or loosening of these members from outside the cylinder.

The cylindrical bearing sector 9 comprises two longitudinal edges 9a and 9b forming, in conjunction with the longitudinal edge 8b of tensioning sector 8 and the longitudinal edge 1b of wall 1, longitudinal gaps 25 and 26 having widths denoted b

and *c* respectively (assuming the negative plate 17 is secured and tensioned).

The cylindrical bearing sector 9 comprises at either end an extension 27 radially thinner than, but of same angular amplitude as, the remaining portion of the sector. This extension 27 has formed therethrough an elongated hole 28 having its major dimension disposed circumferentially and registering with a tapped hole 29 formed in the peripheral surface 2a of flange 2. This tapped hole 29 is engaged by a set screw for locking the cylindrical bearing sector 9 in relation to said flange 2.

Now, the manner in which the device according to the invention is utilized for tensioning and anchoring a negative plate 17 on the printing cylinder will be described. Firstly, the screws 16 and 31 are released for loosening these mutually shiftable tensioning and bearing sectors 8 and 9. Thus, these sectors 8 and 9 can now slide freely on the outer peripheral surface 2a of flanges 2 while being guided by the screws 16 and 31 engaging a sufficient number of threads of tapped holes 15 and 29, respectively. Then, the bearing sector 9 is shifted in the counterclockwise direction as shown in FIG. 1 so that its edge 9b will abut against the edge 1b of peripheral wall 1. The same operation is repeated with the other or tensioning sector 8, so that its edge 8b will abut against the edge 9a of sector 9. Under these conditions, the widths *b* and *c* of gaps 26 and 25 are reduced to zero while the gap 18 between the edge 8a of sector 8 and the edge 1a of wall 1 has its maximum width, i.e. the sum of the widths of the gaps obtaining when the negative plate 17 is tensioned, i.e. $a + b + c$ (corresponding to an arc of about 6° in the example described herein).

Then the two bent edges 17a and 17b of plate 17 can easily be inserted into the gap 18 so that they can anchor themselves to the sector and cylinder edges 1a and 8a.

When the edges of the negative plate 17 have thus been engaged the screw 19 is clamped so as to cause the arm 11 to pivot in the clockwise direction as shown in FIG. 1. As a result, the tensioning sector 8 is moved away from sector 9 and tends to move the plate edge 17a towards its opposite edge 17b, so as to slightly tension this plate 17.

Having thus obtained this plate prestress corresponding to an angular shift of about 2° of the tensioning sector, the bearing sector 9 is slightly shifted in turn in order to create a gap 26 having a width *c* (corresponding to an arc of about 2°).

After this operation the tensioning of the negative plate 17 is completed by further moving the tensioning sector 8 away from the bearing sector 9 (with an angular shift of about 2°) so as to create therebetween a gap 25 having a width *b* (corresponding to an arc of about 2°).

With the negative plate 17 thus definitely tensioned, the set-screw 19 is locked by means of its locknut nut 22. Thus, the gap 18 has a width *a* reduced to an arc of about 2°.

Finally, the bearing sector 9 is also locked on flange 2 by means of screws 31 and the printing cylinder is ready for use.

From the foregoing it will be seen that the widths of gaps 18, 25 and 26 (corresponding each to an arc of about 2°) are ex-

tremely small, of the order of 2 to 3 mm (.0'') in practice, in the case of a printing cylinder having an outer diameter of 180 mm (7''); under these conditions the tensioning sector 8 and bearing sector 9 can be utilized efficiently for printing labels, vignettes, illustrations, etc., separated by nonprinted areas or strips coincident with the above-defined gaps 25 and 26.

Although the above described form of embodiment comprises only one bearing sector 9 it is clear that if it is desired to further reduce the width of the residual gaps such as 25 and 26, the number of bearing sectors such as 9 may be increased so as to increase accordingly the number of gaps such as 25 and 26 and therefore reduce their width.

Of course, the form of embodiment of the invention described and illustrated herein should not be construed as limiting the present invention since many modifications and variations may be brought thereto without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A device for mounting a negative plate on the printing cylinder of a rotary printing machine which comprises a shaft, a pair of lateral flanges rigid with said shaft and an outer peripheral wall discontinued in order to provide a longitudinal aperture extending throughout the cylinder length, said device comprising a cylindrical plate-tensioning sector fitting in said cylinder aperture, and forming with its outer peripheral surface the partial continuation of the cylinder said tensioning sector having anchored to one of its longitudinal edges one bent longitudinal end of said negative plate of which the other bent end is anchored to the registering edge of the peripheral surface of said cylinder which bounds said cylinder aperture, a tensioning sector support rotatably mounted on said cylinder shaft, means for adjusting the angular position of said tensioning sector support in relation to said cylinder, to permit the control of the tension of said negative plate, and at least one cylindrical bearing sector adjacent to said tensioning sector, also fitting in said longitudinal cylinder aperture and forming with its outer periphery the continuation of the outer surface of said tensioning sector and of said cylinder, said cylindrical bearing sector being mounted for transverse adjustment on said pair of lateral flanges of said cylinder.

2. A device as set forth in claim 1, which comprises a pair of radial arms rotatably mounted about said cylinder shaft and rigid with said cylindrical tensioning sector at either end thereof, a support rigid with each lateral flange of said cylinder, and a screw engaging each one of said support rigid with each lateral flange and bearing against a registering radial arm.

3. A device as set forth in claim 1, wherein the tensioning and bearing sector comprises at each longitudinal end radially thinner portions adapted to slip on the peripheral surface of the lateral flanges of said cylinder, elongated holes formed in said thinner portions and set screws extending through said elongated holes and engaging registering tapped holes formed in the peripheral surface of said lateral flanges.

60

65

70

75