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MASTER PAPER HOLDER FOR ROTARY DUPLICATOR

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Fig. 2

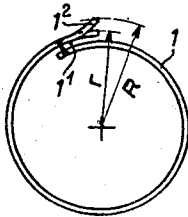


Fig. 1

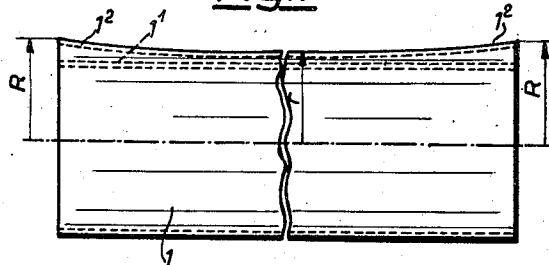


Fig. 3

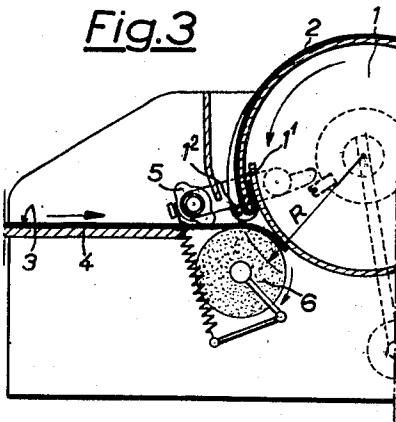


Fig. 4

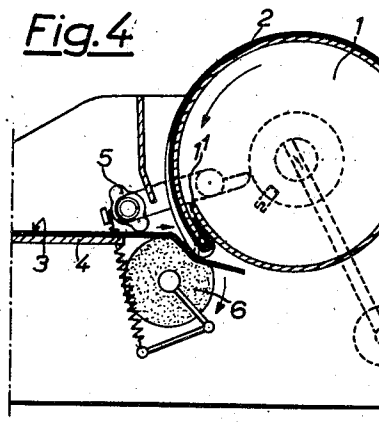


Fig. 5

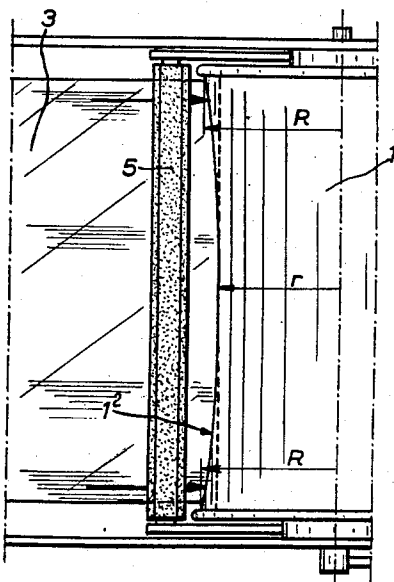
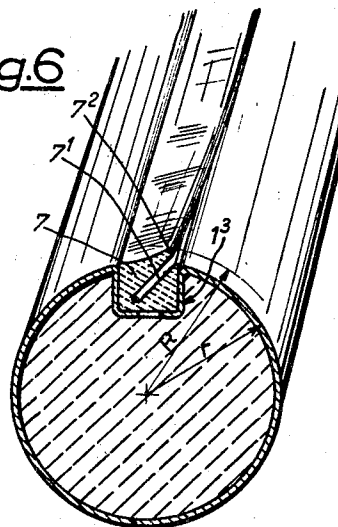


Fig. 6



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MASTER PAPER HOLDER FOR ROTARY DUPLICATOR

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4 Claims. (Cl. 101—132.5)

In duplicators, the sheets to be printed are moistened before their printing and when they pass between the rolls, each sheet may expand in an irregular manner and deform as a consequence of its wetting while it is driven uniformly throughout its breadth along an unvarying path as provided by the parallelism of the generating lines of said rolls. During the printing, this drive of the deformed sheets leads often to a creasing so that the sheets may become thus unfit for use.

The improvements to the duplicating machine forming the object of the present invention remove this drawback, in particular as a consequence of the arrangements which subject the sheets to a driving stress which is more considerable about their lateral edges than in their middle so that consequently said sheets are tensioned and can no longer be creased during the printing procedure.

I have illustrated by way of example in the accompanying drawing a preferred embodiment of my invention given obviously by way of a mere exemplification. In said drawing:

Fig. 1 is on a small scale an outer elevational view of a printing roller drum according to my invention.

Fig. 2 is an outer end view corresponding to Fig. 1.

Fig. 3 is a partial diagrammatic cross-sectional view of a duplicator equipped with a printing drum executed in accordance with my invention, the apparatus being illustrated before the printing of a sheet and during the introduction of said sheet between the rolls or drums.

Fig. 4 is a diagrammatic view similar to Fig. 3, illustrating the passage of the sheet over the edge of the master-paper or block on the printing drum.

Fig. 5 is a diagrammatic plan view corresponding to Fig. 3.

Fig. 6 is a partly sectional perspective view of a printing drum executed according to a modification.

In the embodiment illustrated in Figs. 3, 4 and 5, the duplicator includes chiefly the conventional printing drum 1 made of rigid material and provided in its outer surface with a longitudinal slot 1¹ which allows engaging and clamping the end of the master-paper 2 onto the drum.

The sheet to be printed 3 which rests on the feeding plate 4 is first moistened by the felt-carrying member 5 and is then urged over the printing drum 1 through the agency of an elastic roll 6 exerting a tangential pressure on said drum.

According to my invention, the printing drum 1 is provided, as usual, with a longitudinal slot 1¹ for the engagement of the master-paper, but the shape of the outer lip 1² formed by the edge of said slot is modified throughout its length so as to appear longitudinally, i.e. in the direction of the generating line of the cylinder as a gradually incurved outline which is symmetrical with reference to the cross-section of the drum through the middle of its length.

Said outline provides locally at each end of the drum a deformed projecting part having a radius R which is larger than the radius r of the medial section of the drum.

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During operation of the duplicator, the sheet to be printed 3 is first clamped between the roll 6 and the drum 1, as illustrated in Fig. 3. In this position, the outer incurved lip 1² of the slot in the drum is located at a distance from the sheet which is substantially equal to the depth of the slot 1¹ inside which the master-paper is engaged.

The sheet 3 clamped between the two rolls is carried along by the printing drum 1 until it engages the incurved lip 1² (Fig. 4). Said lip which engages also the elastic roll 6 through the sheet exerts on the latter a tractional stress which is irregular by reason of the shape of its outline. As a matter of fact, the arcuate outline of said lip 1² allows:

Driving normally the central section of the sheet since the radius r of its curvature is equal to the radius of the drum 1;

Exerting a gradually increasing tensional stress on the extreme sections of the sheet to be printed as a consequence of the increase of its radius from r to R.

This arrangement constrains the sheet to follow a path which is longer at its outer edges than in its central section as a consequence of the difference between the corresponding developed lengths of the drum. The sheet is thus stretched and cannot be creased.

By way of example of an embodiment which should not be construed in a limiting sense, the printing drum described may be executed as illustrated in Figs. 1 and 2 by means of a rolled metal sheet with a deformation of the upper edge of the metal sheet beyond the line of weld along which the master-paper is secured to the drum.

In the modification illustrated in Fig. 6, the drum is solid and is provided with a longitudinal groove 1³ which allows the engagement and the securing therein of a small piece 7 in the form of an elongated bar or rod or tongue fitting in and filling said groove. For instance, as shown in Figure 6, said piece 7 may be substantially parallelopipedic and shaped so as to provide a longitudinal slot 7¹ for the introduction of the master-paper while its outer outline 7² is modified in the manner described hereinabove with reference to the lip 1² in Figs. 1 to 6.

Important advantages are obtained through the novel arrangement disclosed as will readily appear from the above.

Obviously, and as already apparent from the preceding disclosure, my invention is by no means limited to the applications and embodiments of its various parts which have been more specially referred to hereinabove and it covers all the modifications thereof falling within the scope of the accompanying claims.

What I claim is:

1. In a duplicator, a rotary printing drum having in its outer surface a longitudinal slot formed with an inner lip and an outer lip, said outer lip overlapping said inner lip, said slot being adapted to receive and hold the end of a master-paper between said lips; means for feeding a moist sheet of paper to be printed over said outer surface of said printing drum, said means comprising a resilient pressure roller exerting a tangential pressure on said outer surface, said sheet of paper being urged onto said printing drum and said master-paper by said pressure roller; the longitudinal edge of said outer lip being gradually curved symmetrically with reference to the cross-section of the drum at the middle of its length, and outwardly relative to the axis of the drum, whereby said sheet is stretched to a greater extent along its outer edges than in its middle portion and its creasing is prevented.

2. A duplicator according to claim 1, in which the distance between said longitudinal edge and the axis of said drum is greater at both terminal cross-sectional planes

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of said drum than at the middle cross-section of said drum.

3. A duplicator according to claim 1, in which said printing drum is constituted by a rolled rigid sheet.

4. In a duplicator, a rotary printing drum constituted by a solid cylinder provided with a longitudinal groove; an elongated solid piece fitted in and filling said groove and provided with a longitudinal slot opening at the periphery of said drum and adapted to receive the end of a master-paper; said slot having an outer edge and an inner edge; means for feeding a moist sheet of paper to be printed over said piece onto said drum and master-paper, said means comprising a resilient pressure roller urging said sheet of paper onto said drum and said master-

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paper; said outer edge of said slot being gradually curved symmetrically with reference to the median cross-section of said drum and outwardly relative to the axis of said drum, the distance between said outer edge and the axis of the drum being greater at both end cross-sectional planes of said drum than at said median cross-section; whereby said sheet is stretched to a greater extent along its outer edges than in its middle portion and its creasing is prevented as it is fed onto said drum.

References Cited in the file of this patent

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