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MEANS FOR ATTACHING PRINTING PLATES ON DRUMS

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Fig. 1

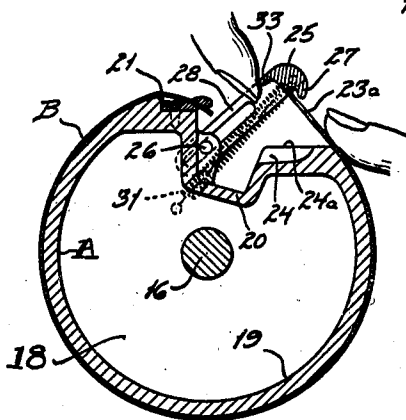
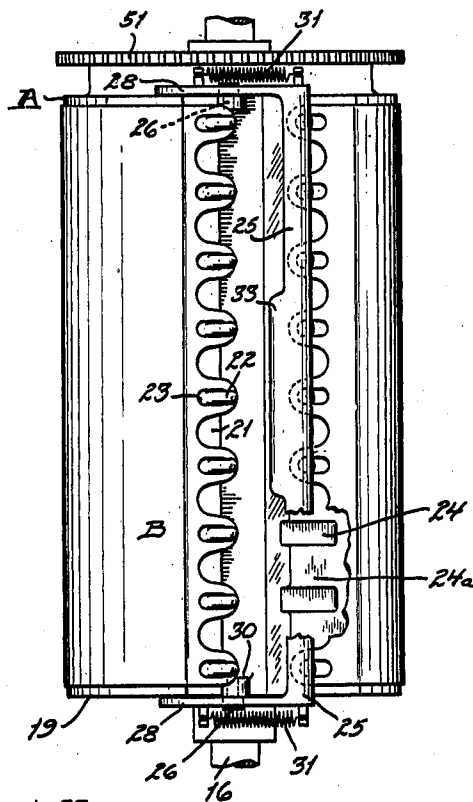


Fig. 3

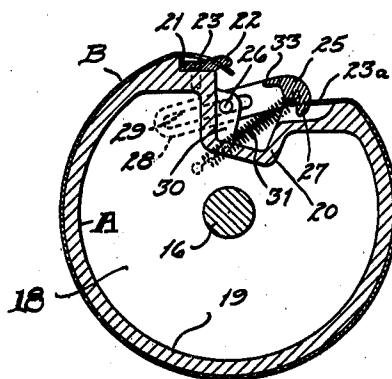


Fig. 2

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UNITED STATES PATENT OFFICE

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MEANS FOR ATTACHING PRINTING PLATES
ON DRUMS

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147,507. Divided and this application Novem-
ber 13, 1937, Serial No. 174,395

17 Claims. (Cl. 101-415.1)

This invention relates to improvements in printing machines and is especially concerned with means for attaching a printing plate to a rotary drum.

5 The general object of the invention is to provide an attaching device mounted on the drum which may be manually operated with great facility for attaching or releasing the printing plate.

10 My attaching device comprises a fixed member on the drum adapted to engage the plate near one end, and a movable member adapted to co-act with the other end to retain it under tension on the drum. The movable member comprises a bar having inwardly projecting teeth which enter a row of openings at the end of the plate, and spring means acting on the bar to maintain it in engagement with the plate while enabling it to be readily manually released therefrom.

15 One of the important characteristics of the invention is the provision of the inwardly projecting teeth on the movable attaching bar which is bodily movable but provided with a spring means tending to hold it in its innermost position, the result being that the projections may simultaneously engage the various openings in the plate, enabling the attaching device to be manipulated by one hand of the operator, while the other hand is free to hold the plate in position adjacent the edge being attached.

20 By pulling the attaching bar outwardly against the action of the spring, the plate may be released, while by simply allowing the bar to pass inwardly, due to the spring action and under the control of the operator's fingers, the teeth on the bar automatically pass through the openings in the positioned plate into recesses into the drum and thus effectively hold the plate under tension. This will be more fully explained in connection with the drawing, which illustrates a preferred embodiment of the invention.

25 In the drawing, Fig. 1 is a view of a suitable drum having a plate mounted thereon and held by my attaching device; Fig. 2 is a cross-section of the plate drum as indicated by line 2-2 of Fig. 1; Fig. 3 is a view similar to Fig. 2, but showing the position of the movable retaining member during the act of attaching the plate.

30 It will be understood that the drum may be mounted in any suitable machine and carry any suitable printing plate, for instance, a relief plate for direct printing or a planographic plate for offset printing, as shown in the drawing.

35 The drum A, as shown in the drawing, comprises a hollow member having a cylindrical wall 19, for the major portion of its periphery, and

end disc-like members 18, by which it is mounted on the shaft 16. A driving gear 51 is shown connected with one end of the drum.

40 The drum has its wall diverted inwardly, as indicated at 20 in Figs. 2 and 3, to provide a gap in which the plate retaining devices are mounted. One of these retaining devices comprises a bar 21, which is fixedly secured within the gap of the drum and is provided with a series of tongues or projections 22 adapted to enter elongated openings 23 formed in the end of a planographic or other similar flexible printing plate B.

45 At the other side of the gap in the drum is the movable plate-retaining member 25 in the form of a yoke, provided at each end with a bar-like formation 28, which lies along the ends of the drum. These bars are each provided with a slotted opening 29, through which pivot pins 26 pass. These pins are carried by suitable ears 30, formed on the drum. Springs 31 are interposed between the retaining member 25 and the drum, as indicated in Fig. 1, and are positioned to rock the retaining member inwardly toward the axis of the drum and to move it bodily toward the pivot pin 26. The inwardly diverted portion of the drum wall is provided with a series of pockets 24. The material 24a of the drum between these pockets forms a flat support for the inwardly bent end of the plate.

50 The plate B is positioned on the lugs 22 and then wrapped around the surface drum 19, whereupon the operator grasps the retaining member 25, rocking it about its pivot 26 and drawing it outwardly, and then allows the teeth 27 thereof to pass into openings 23a formed on the other end of the plate. Upon release of the retaining member, the springs 31 pull it in the direction toward the pins 26 and thereby tension the plate about the drum 19.

55 The bar 25, as shown in Figs. 1 and 2, is provided with an elongated handle-like formation 33, whereby it may be readily grasped by the operator to withdraw it against the action of the spring 31 to cause it to engage a plate or release a plate B from the drum.

60 The construction described enables a very ready attaching of the plate. After the plate has been hooked onto the fixed member 21 and wrapped around the drum, the operator need only press the free end of it with his thumb slightly into the drum recess, as indicated in Fig. 3, and then with his other hand grasp the yoke bar and draw it outwardly against its springs and allow it to swing inwardly, so that the teeth 27 pass through the openings, and then

the bar finds its own seat with these teeth occupying the recesses 24. By supporting the inwardly bent plate ears by the flat surfaces 24a of the drum itself, all difficulty of attaching the scalloped ears of the plate one at a time is avoided, and the attachment may be effected simultaneously for all of the ears and may be accomplished very quickly and easily.

The bar portion of the retaining device intermediate the teeth 27 by engaging the printing plate and forcing it into contact with the diverted drum surface, and there holding it, prevents distortion of the plate while it is being attached, as well as eliminating damaging strain in use.

15 The present invention is a division of my co-pending application, Serial No. 147,507, filed June 10, 1937, and assigned to the assignee of the present invention, Addressograph-Multigraph Corporation.

20 I claim:

1. The combination of a drum, an attaching device thereon comprising a bar with arms slidably and pivotally connected to the drum, the bar having projecting teeth adapted to engage openings in a plate wrapped around the drum, and spring means tending to move the detach-

25 ing device in a direction to tension the plate.
2. The combination of a drum, having means for attaching one end of a plate, and a bodily shiftable bar having inwardly projecting teeth adapted to engage openings in the other end of a plate wrapped about the drum, slotted arms at the ends of the bar, pins on the drum occupying the slots, and a tension spring pulling diagonally on the bar, and tending to move it approximately toward the axis of the drum and also approximately tangentially of the drum to hold the plate and tension it on the drum.

3. The combination of a plate cylinder having 40 a recess in which the ends of a plate wrapped around the cylinder may be anchored, the cylinder having in the recess a supporting surface interrupted by pockets, and one of the attaching means having inwardly projecting teeth adapted to extend through openings in the end portion of the plate into the pockets, while the plate rests against said supporting surface within the recess, arms on the bar pivotally and slidably connecting it with the cylinder, and 45 spring means tending to move the bar diagonally inwardly.

4. The combination of a plate cylinder having a recess and means in the recess for engaging the ends of the plate when it is wrapped around 50 the drum, one of said means comprising a yoke composed of a transverse bar and end arms, said transverse bar having teeth adapted to occupy openings in the adjacent end of the plate, said end arms extending inwardly of the drum and having slots embracing pins carried by the drum and a spring tending to move the yoke toward the interior of the drum and also longitudinally of the end arms.

5. The combination of a plate cylinder having 65 an outwardly facing recess, a means for anchoring one end of a printing plate, a yoke having a cross bar and end arms, said end arms having a slidable engagement with the drum and the cross bar having inwardly projecting teeth adapted to extend through openings in the plate after it has been wrapped around the drum, the drum having means to engage and support the inwardly bent portion of the free end of the plate clamped against it by said cross bar, said support 70 having recesses into which the teeth on the cross

bar may pass, and spring means acting on the yoke to cause the cross bar to retain the inturned end of the plate.

6. The combination of a drum having a cylindrical wall diverted inwardly to make an outwardly opening recess, and means in the recess for anchoring one end of the plate, movable means for attaching the other end when the plate is wrapped around the drum, the latter means comprising a yoke composed of a transverse bar and end arms, said transverse bar having fingers adapted to occupy openings in the adjacent end of the plate, said end arms extending inwardly of the drum and pivotally and slidably connected therewith, and a pair of tension springs respectively at opposite ends of the drum attached at their outer ends to the ends of the transverse bar and at their inner ends to the drum in the region between said pivotal connection and the axis of the drum.

7. The combination of a plate cylinder having its wall diverted inwardly to comprise an outwardly facing recess, a fixed bar located in the recess and having fingers to engage openings at one end of a printing plate, a yoke having a cross bar and end arms, said end arms having a pivotal and slidable engagement with the drum and the cross bar having inwardly projecting fingers adapted to extend through openings in the plate after it has been wrapped around the drum, the drum wall having means to engage and support the inwardly bent portion of the free end of the plate clamped against it by said cross bar, said support having recesses into which the fingers on the cross bar may pass, and spring means constraining the yoke in two directions, approximately toward the drum axis and approximately parallel with the inturned end of the plate.

8. The combination of a drum adapted to carry a printing plate and having a recess into which the end of the plate may pass, and a spring-constrained attaching device on the drum normally within the recess but adapted to be drawn against the spring action to a position beyond the periphery of the drum and a row of inwardly projecting teeth on said attaching device adapted to occupy openings in the plate while the attaching device between the teeth engages the exterior of the plate and assists in bending the end portion thereof into the recess.

9. The combination of a drum, adapted to carry a printing plate and having a recess into which the end of the plate may pass, said drum having a stationary ledge within the recess comprising alternately arranged supporting surfaces and pockets, and a spring constrained bar normally in the recess but adapted to be drawn against the spring action to a position beyond the periphery of the drum, said bar having inwardly projecting teeth adapted to occupy openings in the plate and pass beyond them into the pockets while the portion of the bar between the teeth engages the exterior of the plate.

10. The combination of a drum, adapted to carry a printing plate and having a recess into which the end of the plate may pass, said drum having a stationary ledge within the recess comprising alternately arranged supporting surfaces and pockets, a bar normally in the recess but adapted to be drawn outwardly to a position beyond the periphery of the drum, said bar having inwardly projecting teeth adapted to occupy openings in the plate and pass beyond them into the pockets while the portion of the bar between the teeth engages the exterior of the plate, said 75

bar being both pivotally and slidably attached to the drum, and spring means tending both the slide the bar inwardly on its sliding attachment and to swing it inwardly on its pivotal attachment.

11. The combination of a drum, adapted to carry a printing plate and having a recess into which the end of the plate may pass, said drum having a stationary ledge within the recess comprising alternately arranged supporting surfaces and pockets, a bar normally within the recess but adapted to be drawn outwardly, said bar having inwardly projecting teeth adapted to occupy openings in the plate and pass beyond them into the pockets while the portion of the bar between the teeth engages the exterior of the plate, and spring means acting on the bar and tending to move it inwardly both in the plane of the supporting surface of the plate and transversely thereof whereby the bar when in engagement tensions the plate and holds it against the supporting surface.

12. The combination of a drum, an attaching device thereon adapted to overhang the outer face of a plate wrapped around the drum, said attaching device having inwardly projecting teeth adapted to pass through openings in such plate, and spring means acting on the device tending to move it in a direction to tension the plate.

13. The combination of a drum having means for attaching one end of a plate, a bodily shiftable bar carried by the drum in such manner that it may stand outside the outer face of a plate wrapped around the drum at the other end of such plate, said bar having inwardly projecting teeth adapted to occupy openings in such other end of the plate, and spring means acting on the bar and tending to move it inwardly of the drum and also away from the edge of the plate to tension the plate and hold it firmly on the drum.

14. The combination of a plate cylinder having a recess, means in said recess for engaging the ends of a plate when it is wrapped around the cylinder, one of said means comprising a bar so mounted on

the drum that it may bear against the outer face of such plate, said bar having a row of inwardly projecting teeth adapted to pass through and occupy openings in the adjacent end of the plate, and spring means for moving the bar in a direction to maintain it in engagement with the plate.

15. The combination of a plate cylinder having a recess in which the ends of a plate wrapped around the cylinder may be anchored, the cylinder having in the recess a supporting surface interrupted longitudinally by pockets, one of the attaching means being adapted to overhang and act inwardly against the exterior of the plate and having inwardly projecting teeth adapted to extend through openings in the plate into said pockets while the plate rests against said supporting surface within the recess, and spring means acting on said attaching means to tension the plate.

16. The combination of a drum adapted to carry a printing plate and having alternately arranged stationary supporting surfaces and pockets, and an attaching device on the drum movable independently of the supporting surfaces and having projecting teeth adapted to pass inwardly through openings in the plate and pass into the pockets while portions of the plate rest on the supporting surfaces.

17. The combination of a plate cylinder having a recess, means in said recess for engaging the ends of a plate wrapped around the cylinder, one of said means comprising a bodily shiftable bar so mounted on the cylinder that it may be moved in a direction toward the outside of the recess and may overhang the exterior face of the plate wrapped around the cylinder, said bar being equipped with inwardly projecting teeth adapted to occupy openings in the intumed free end of the plate, spring means for moving the bar inwardly transversely of such intumed end and also approximately parallel therewith, and a manually engageable ledge on the bar enabling the operator's fingers to move it outwardly in opposition to the spring.

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