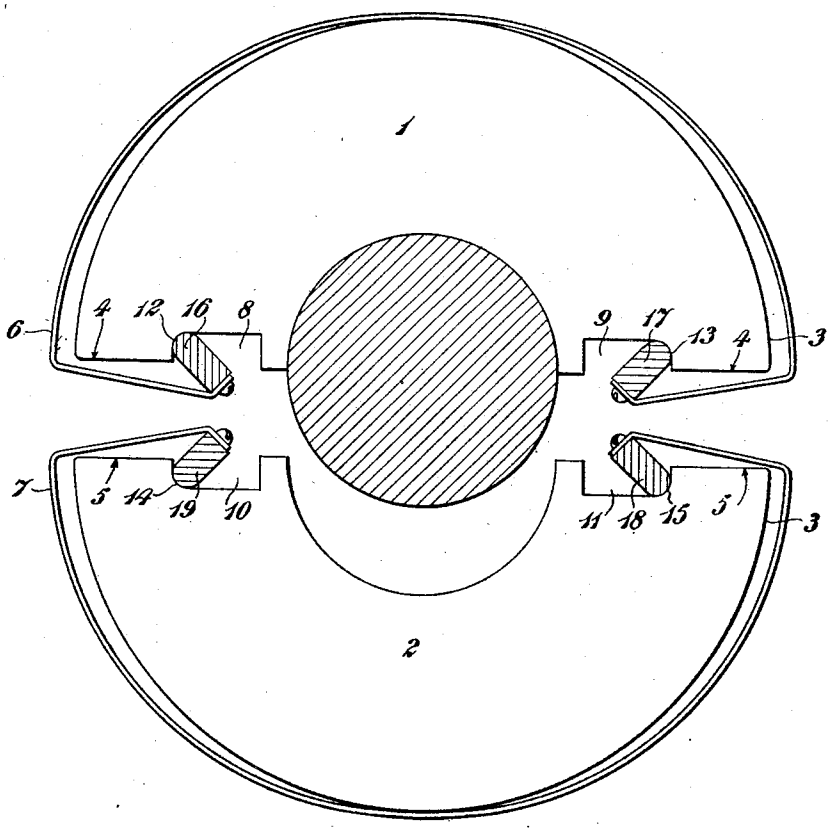
March 10, 1931. A. J. BARTON 1,795,702

PRINTING CYLINDER FOR ROTARY PRINTING MACHINES

Filed July 20, 1928 2 Sheets-Sheet 1

Fig. 1.



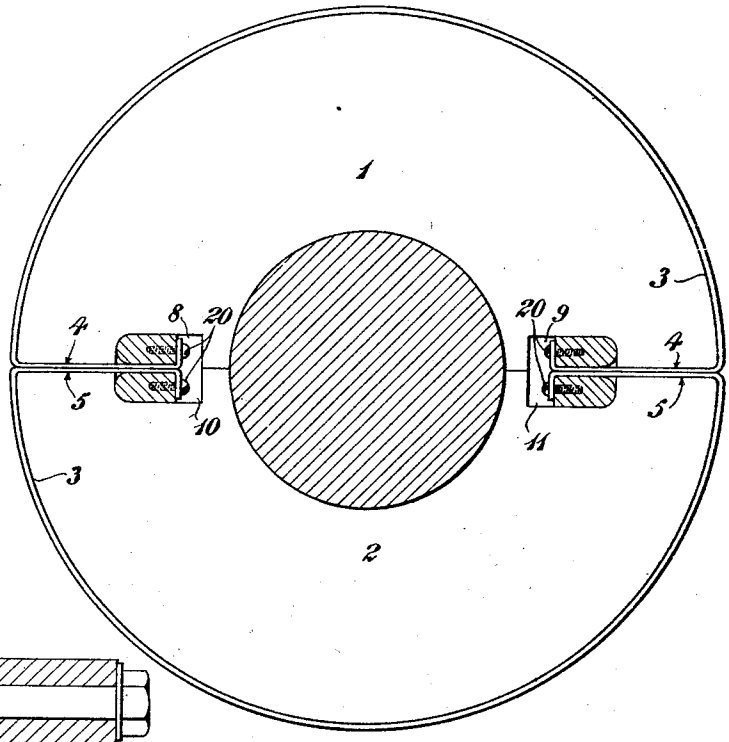
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Fig. 2.



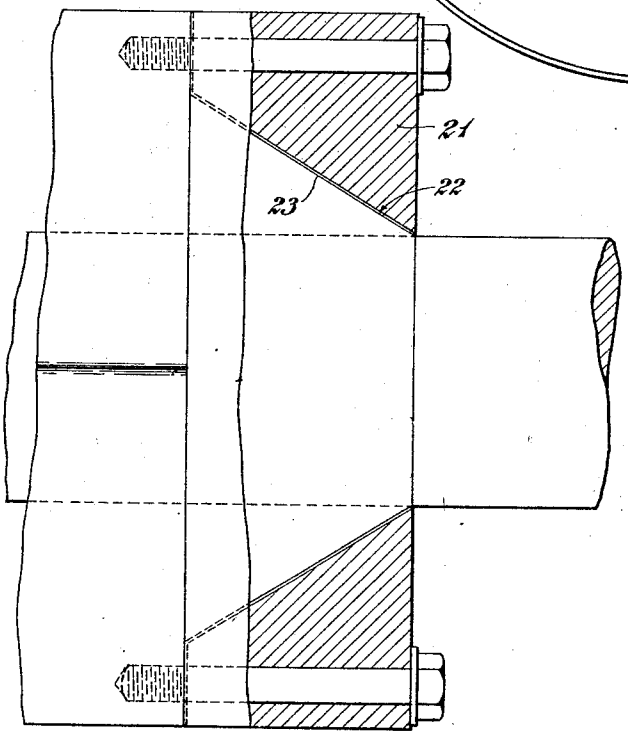


Fig. 3.

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UNITED STATES PATENT OFFICE

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PRINTING CYLINDER FOR ROTARY PRINTING MACHINES

Application filed July 20, 1928, Serial No. 294,293, and in Great Britain July 29, 1927.

This invention relates to printing machines and more particularly to printing cylinders for use in flat bed and/or rotary printing machines and has for its object to provide an improved construction of printing cylinder which allows of an increased output from the machine without detracting from the quality of the work produced by the machine.

Heretofore the printing cylinder has been adapted to carry an impression or design plate the opposite ends of the impression or design plate when in printing position being disposed in a gap in the printing cylinder and secured in the said gap in such manner that the impression or design plate is placed under tension.

According to the present invention a printing cylinder for printing machines is formed in two or more than two parts. More particularly the printing cylinder may carry two plates either or both of which may be utilized for printing purposes. If however only one plate be used the said plate must be an impression or design plate in which case the surface of the other part of the cylinder would be flush with the arcuate surface of the impression or design plate. It is preferred however to utilize two impression or design plates and that both plates be utilized for printing purposes and in such an arrangement both plates come into operation preferably in succession in one revolution of the printing cylinder or in any desired part thereof, either to print the same matter or if desired different matter. The printing cylinder which is to carry the impression or design plate or plates where two such plates are used is formed preferably in at least two parts each part having an approximately semi-circular outer surface and a jointing face which is adapted to carry or support means whereby to place the impression or design plate or plates under tension. For this purpose each part of the cylinder is provided in its jointing face with recesses one of which is disposed adjacent to each outer edge of each jointing face of each cylinder part. The outer faces of the said recesses are preferably of arcuate or suitably curved form and each recess is adapted to carry a bar having an outer arcuate or curved edge so that in co-operation with the arcuate or curved edge of the said recess the bar is capable of rocking movement.

In order that the invention may be clearly understood and readily carried into effect, reference is made to the accompanying drawing which shows diagrammatically and by way of example a constructional form of a printing cylinder in accordance with the present invention.

Figure 1 shows an end elevation of a printing cylinder in two parts with two plates, the shaft and anchor bars being shown in section.

Figure 2 is a similar view showing the cylinder and plates when assembled.

Figure 3 is a side elevation of part of the cylinder showing a retaining collar in section at one end of the cylinder.

In the construction shown in Figures 1 and 2, the cylinder is shown as being formed in two parts 1 and 2, but the cylinder may be formed in more than two parts with a corresponding number of plates if so desired. In the two part form shown each part is provided with a semi-circular or arcuate outer surface 3 the part 1 having a jointing face 4 and the part 2 having a jointing face 5 adapted to carry and support means whereby to place an impression or design plate 6 and another similar plate 7 (if used) which may if so desired also be an impression or design plate in tension. Where one of the plates is omitted the surface of the other part of the cylinder would form a flush surface in continuance of the plate surface. For the purpose of tensioning the plate or plates the part 1 of the cylinder is provided in its jointing face with recesses 8, 9, the part 2 of the cylinder having similar recesses 10, 11 in its jointing face 5. The recesses 8 and 9 are disposed adjacent to the outer edges of the face 4 of the cylinder 3 and the recesses 10 and 11 are disposed adjacent to the outer edges of the jointing face 5 of the cylinder 2. The outer faces 12, 13, 14, 15 of the recesses 8, 9, and 10, 11 are preferably curved to any suitable curvature and each recess is

adapted to carry a bar such as 16, 17, 18 and 19. If one plate only be used then that part of the cylinder which is unprovided with a plate would preferably have a plane diametrical jointing face. The bars 16 and 19 and the bars 17 and 18 form pairs which mutually co-operate in tensioning the plates on the cylinder when assembling the two or more parts of the cylinder to form a unitary whole. It will thus be seen that each of the bars 16, 17, 18 and 19 is capable of rocking movement in its respective recess. Opposite ends of the impression or design plate and the other plate may be secured to the respective bar by screws such as 20 or in any other suitable manner. At each end of the cylinder is disposed a collar 21 having a tapered bore 22 of outwardly converging conicality and adapted to co-act with a correspondingly formed portion on the cylinder each collar being secured to the cylinder end by set screws or equivalent. Obviously, on tightening the set screws, the collars 21, acting through the tapered bore 22 in cooperation with the tapered terminals of the cylinder parts, will force said parts together for the desired tensioning function of the plates.

A printing cylinder so constructed has an approximately peripheral flush surface except for the two very small gaps formed by the junctions of the two plates. In assembling the plates and the two parts of the cylinder, each plate is engaged by two of the aforesaid rockable bars and the two plates are simultaneously tensioned or placed under tension by the forcing together of the two parts of the cylinder. This latter movement causes rocking of the bars while being moved towards each other thereby tensioning the plates.

The cylinder may be formed in two, three or more parts each part being provided with recesses and rockable bars such as hereinbefore described so that at least one impression or design plate with one or more than one plate which may also be an impression plate or plates may be secured in position on one and the same cylinder and simultaneously placed under tension by the assembly of the parts of the cylinder to form a composite or unitary whole.

Although the cylinder is preferred and shown in the drawing in two parts it is obvious that two plates need not be used as one of the parts of the cylinder may carry an impression or design plate and the other part of the cylinder may be turned down to such a diameter as to form a flush surface with the one impression or design plate on the other part of the cylinder. It is thus possible to use a cylinder formed in two or more parts with one impression or design plate or one impression or design plate and a plain plate or one impression or design plate and two plain plates either of which or both of which may be a design or impression plate.

What I claim is:—

1. A printing cylinder formed in two parts, the meeting faces of said parts being recessed, an anchor bar arranged in each recess, printing plates secured to such anchor bars and overlying the periphery of the cylinder parts, and means for forcing the cylinder parts together to thereby exert pressure on the anchor bars to move the same into the recesses to tension the connected plate.

2. A printing cylinder for printing plates and divided longitudinally, the meeting faces of such parts being formed with recesses, anchor bars loosely seated in such recesses and connected to the edges of such plates, the normal position of the bars being in part projected beyond the meeting faces of the cylinders, and means for forcing the cylinder parts together to thereby move the anchor bars to tension the plates.

3. A printing cylinder divided axially into two parts, the meeting faces of the parts being formed with recesses opening through said meeting faces, anchor bars loosely seated in said recesses and fulcrumed for movement at the radially outer ends of the recesses, printing plates having their edges secured to the respective anchor bars of each part of the cylinder, said plates normally holding the bars with their ends projecting beyond the meeting faces of the cylinder parts, and means for forcing the respective parts of the cylinder together to thereby compel the projecting ends of the anchor bars to move into the recesses about the fulcrum ends of the bars, whereby to tension the plates on the periphery of the cylinder parts.

4. In a longitudinally split printing cylinder, a design plate overlying the periphery of the cylinder segments and having its ends extending inwardly and between the said segments, means engaging the inwardly extending plate ends and adapted by co-operative butting contact during assembly of the cylinder segments to tension the said design plate, and means to retain the cylinder segments in assembled position.

5. In a longitudinally split printing cylinder, means disposed between the cylinder segments and adapted to co-operate by butting contact during assembly of the said cylinder segments to tension a design plate superimposed on the periphery of the cylinder segments and engaging the said means, and means to retain the cylinder segments in assembled position.

6. In a longitudinally split printing cylinder, means disposed in recesses in the meeting faces of the cylinder segments and adapted to be rocked therein by and during assembly of the said cylinder segments so as to tension a design plate superimposed on the periphery of the cylinder segments and engag-

ing the said rockable means, and means to retain the cylinder segments in assembled position.

7. In a longitudinally split printing cylinder, rockable bars disposed in recesses in the separating faces of the cylinder segments, a design plate overlying the periphery of the cylinder segments, bars disposed between the cylinder segments, means to engage the ends of the design plate with the said bars so that during assembly of the cylinder segments rocking motion is imparted to the bars so as to apply tension to the design plate, and means to retain the cylinder segments in assembled position.

8. In a longitudinally split printing cylinder, means disposed in recesses in the separating faces of the cylinder segments and adapted to be rocked therein by butting contact during assembly of the said cylinder segments so as to tension design plates superimposed on the periphery of the cylinder segments and engaging the said rockable means, and means to retain the cylinder segments in assembled position.

9. In a longitudinally split printing cylinder, rockable bars disposed in recesses in the separating faces of the cylinder segments, the said recesses having arcuate outer ends, design plates secured to the said rockable bars and overlying the periphery of the cylinder segments and adapted to be tensioned by rocking motion imparted to the bars by their butting contact during assembly of the cylinder segments, and means to retain the cylinder segments in assembled position.

10. In a longitudinally split printing cylinder, rockable bars loosely disposed in recesses having arcuate outer ends and located in the separating faces of the cylinder segments, means to connect opposite ends of a design plate to the said rockable bars, the said bars before assembly of the cylinder segments projecting beyond the separating faces of the cylinders so that during assembly of the cylinder segments the rockable bars butt against one another and are forced toward one another so as to apply tension to the design plate superimposed on and overlying the periphery of the cylinder segments, and means to retain the latter in assembled position.

11. In a longitudinally split printing cylinder, rockable bars arranged in pairs and loosely disposed in recesses in the separating faces of the cylinder segments, rounded outer edges on the said rockable bars adapted to co-operate with rounded outer ends of the respective recesses to act as fulcrums for the said bars, a design plate overlying the peripheral surface of the two segments and having its ends secured to two opposed rockable bars, means to assemble the cylinder segments so as to impart rocking movement to the said bars during assembly of the cylinder segments and thereby apply tension to the plate, and means to retain the cylinder segments in assembled position.

12. In a longitudinally split printing cylinder, a design plate overlying the peripheral surface of each segment and having its ends extending inwardly of and between the said segments, bars disposed in pairs between the segments and arranged for butting contact, means securing the ends of each plate to two laterally aligned bars so as to tension the plate during assembly of the cylinder segments by imparting rocking movement to the said bars, and means to retain the cylinder segments in assembled position.

13. In a longitudinally split printing cylinder, rockable bars loosely disposed in recesses in the separating faces of the cylinder segments, rounded outer faces on the said rockable bars adapted to co-operate with rounded outer ends of the respective recesses to act as fulcrums for the said bars and to permit of rocking movements thereof, and means to secure the ends of design plates to the said bars interposed between the cylinder segments so that during assembly of the said segments tension is applied to the design plates by rocking movement imparted to the said bars.

14. A printing or other cylinder wherein the printing cylinder is split longitudinally or lengthwise to form at least two segments, the adjacent faces of the two cylinder segments being provided with recesses having outer curved surfaces, rockable bars in the said recesses, a metallic design or impression plate having its ends secured to the rockable bars arranged to cooperate with any one segment.

In testimony whereof I have hereunto signed my name.

ALBERT JAMES BARTON.