Jan. 3, 1956 L. M. STEMPEL 2,729,164

TRANSFER PRINTING MECHANISM

Filed June 17, 1948 2 Sheets-Sheet 1

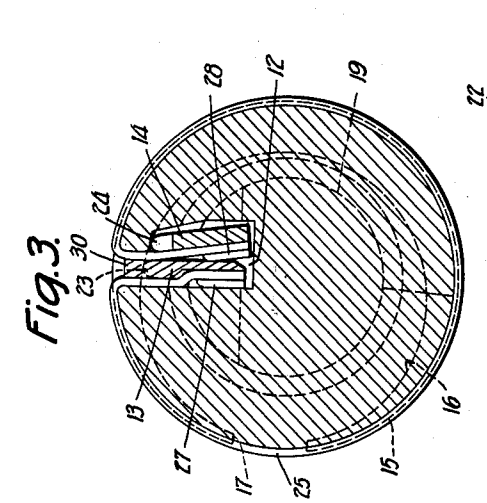


Fig. 3.

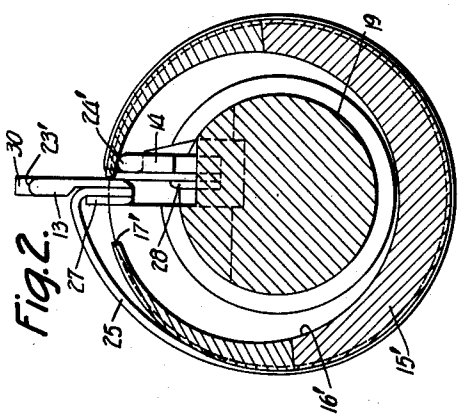


Fig. 2.

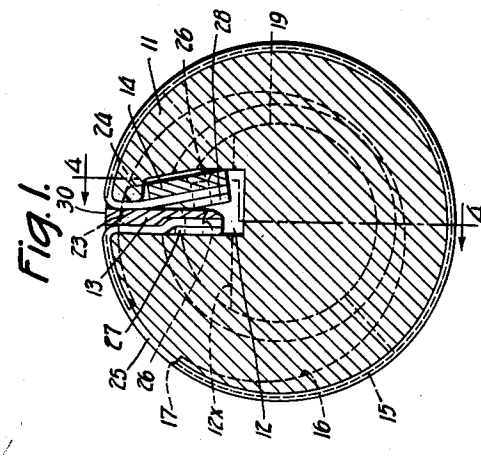


Fig. 1.

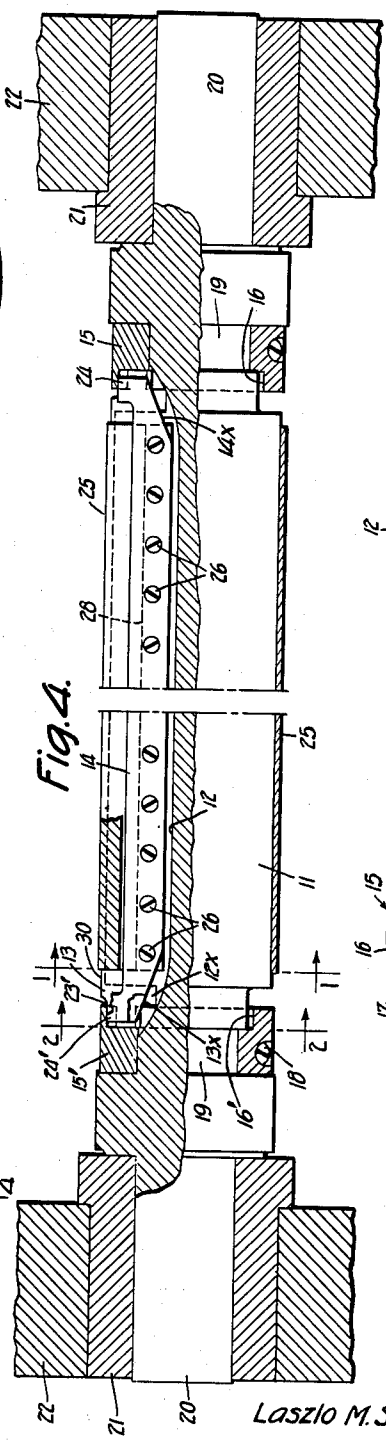


Fig. 4.

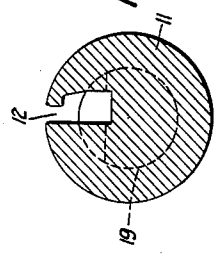


Fig. 6.

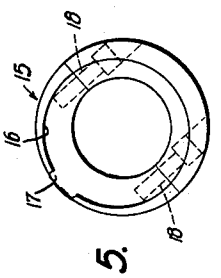


Fig. 5.

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TRANSFER PRINTING MECHANISM

Filed June 17, 1948

2 Sheets-Sheet 2

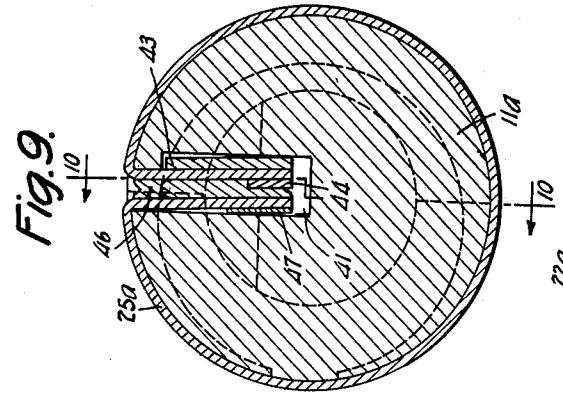


Fig. 9.

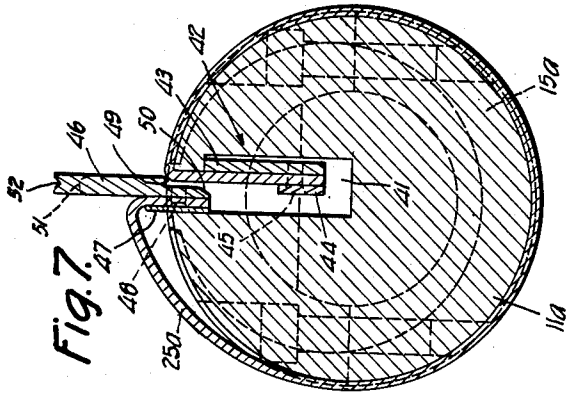


Fig. 7.

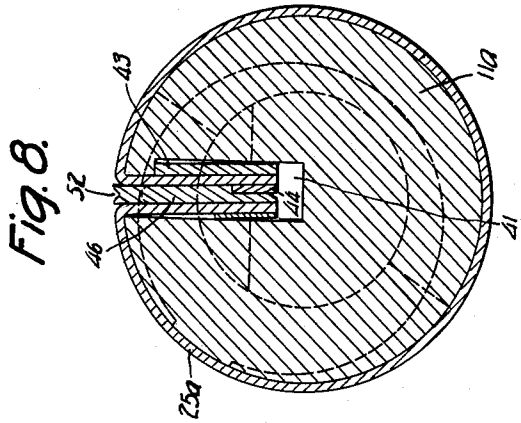


Fig. 8.

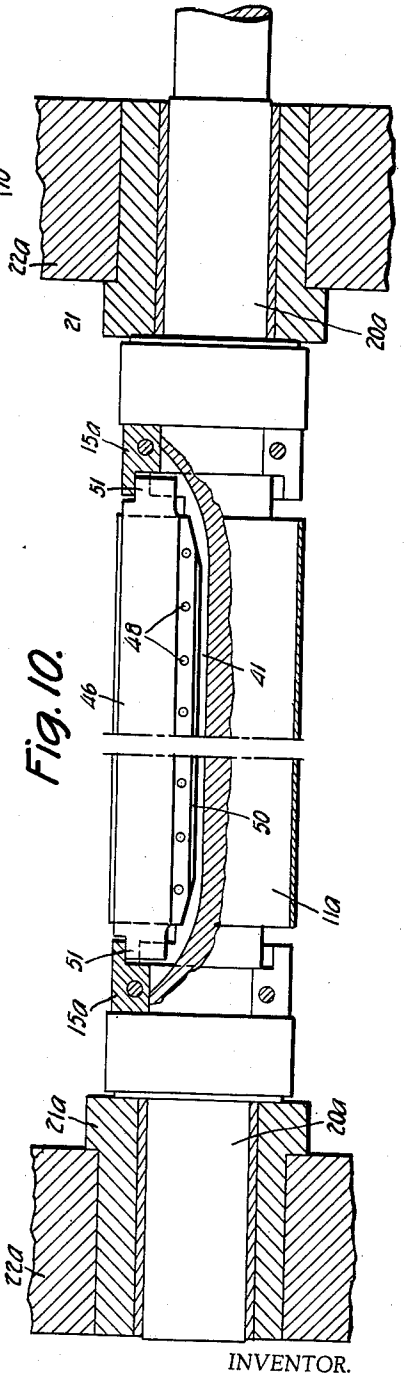


Fig. 10.

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2,729,164

TRANSFER PRINTING MECHANISM

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Application June 17, 1948, Serial No. 33,636

1 Claim. (Cl. 101—415.1)

The present invention relates to transfer cylinders for applying a printed or lithographed impression to a web of paper or other material.

More particularly, the invention relates to means for securing and tensioning a flexible transfer blanket which is wrapped around the periphery of the cylinder.

Arrangements for the tensioning of flexible transfer blankets are known in the art, and these generally teach the fastening of one end of the blanket within a slot in the cylinder. The free end is then drawn into the cylinder slot adjacent to the end which is already secured therein. Such tensioning arrangements have the effect of tightening the transfer blanket about the circumference of the cylinder by means of tension applied to only one end of the blanket. Because of frictional forces between the inner surface of the blanket and the periphery of the transfer cylinder, there is a tendency toward eccentricity resulting from non-uniformity of the circumferential tension forces in the flexible transfer blanket.

Accordingly, it is an object of the invention to provide a transfer blanket fastening arrangement in which the tension is applied substantially equally to both ends of the transfer blanket.

A further object of the invention is to provide a recess in the transfer cylinder adapted to receive the tensioning devices for both ends of the transfer blanket and which will render a minimum portion of the cylinder circumference unusable for printing purposes.

Still another object of the invention is to provide fastening and tensioning members adapted to fit within a recess in the cylinder and which will effectively close the recess when the blanket is tensioned about the circumference of the cylinder.

Other and further objects will become apparent upon reading the following specification together with the accompanying drawing forming a part hereof.

Referring to the drawing, Fig. 1 represents an enlarged sectional view of a cylinder embodying the invention taken along the line 1—1 of Fig. 4, looking in the direction of the arrows;

Fig. 2 is a similar view taken along the line 2—2 of Fig. 4 some of the parts being shown in a different position;

Fig. 3 is a view similar to Fig. 1;

Fig. 4 shows a view in sectional elevation, partly broken away, of a transfer cylinder embodying the invention, the section shown at the left hand portion of Fig. 4 being taken along the line 4—4 of Fig. 1;

Fig. 5 shows a view in elevation of an eccentric collar member used in practicing the invention;

Fig. 6 is a sectional view taken along the line 1—1 of Fig. 4 with the transfer blanket and tensioning members omitted;

Fig. 7 is a transverse sectional view showing a modified form of transfer cylinder and blanket with the blanket partially applied;

Fig. 8 is a view similar to Fig. 7 but showing both

blanket clamps lodged in the cylinder recess and the collars turned to a retaining position;

Fig. 9 is a view similar to Fig. 8 but showing the collars turned still further to retain the blanket clamps in positions such that the blanket will be held taut; and

Fig. 10 is a sectional view similar to Fig. 4, the view being taken up the line 10—10 of Fig. 9 looking in the direction of the arrows.

Referring to Fig. 1, a transfer cylinder 11 is provided with a longitudinal slot 12 adapted to receive a pair of bar members 13 and 14. Slot 12 is so shaped that bar member 14 may first be inserted within the slot and pushed to one side as shown in Fig. 2, and the bar member 13 may then be inserted. Collars 15 and 15' are provided with eccentric recesses 16 and 16' and with apertures 17 and 17'. The protruding ends of bar members 13 and 14 are inserted into the recesses 16 and 16' through the apertures 17 and 17'. Each of the collars 15 and 15' is shown made in two sections secured together by bolts 18 which serve to assemble each collar with capacity for free rotation upon a neck portion 19 of cylinder 11.

The cylinder 11 is shown with extending shaft portions 20 journalled in suitable bearings 21, the bearings being supported by side walls 22 of the printing press or other machine. Suitable provision is made for driving the transfer cylinder and for bringing it into engagement with the printing plate and with the web of material to be printed. These facilities are well known in the art and may take any desired form.

Each bar member is provided with extending end portions adapted for engagement with the walls of the respective eccentric recesses 16 and 16' of collar members 15 and 15'. On bar member 13, these projections are designated 23 and 23', and on bar member 14 they are designated 24 and 24'. A transfer blanket 25 is provided at each end with a plurality of holes, spaced to conform to the spacing of screws 26 which clamp each of the two ends of the blanket between one of the bar members and one of the auxiliary clamping bars 27 and 28 associated with bar members 13 and 14 respectively.

In operation, the two ends of transfer blanket 25 are secured to the bar members 13 and 14 by means of auxiliary clamping members 27 and 28 and bar member 14 is first inserted within slot 12. Thereafter, the bar member 13 is inserted within slot 12 after first laterally displacing the bar member 14 so that it is retained within the internal recess formed by the over-hanging shoulder of slot 12. This can best be seen in Fig. 2.

Bar member 13 is then pressed downwardly into the remaining space in slot 12, the upwardly extending portion 30 thereof filling the remaining opening of the slot. At the time that the bars are inserted within slot 12, the openings 17 and 17' in eccentric collars 15 and 15' are positioned to permit passage of the protruding ends of the bar members. After these end portions have been passed through openings 17 and 17' and thus been brought within the eccentric recesses 16 and 16' the essentric collars 15 and 15' are then rotated substantially equally to draw both bar members radially inwardly within the slot 12 toward the center of cylinder 11, thereby drawing the transfer blanket 25 snugly around the periphery of cylinder 11 with a tension which is substantially evenly applied at both ends of the blanket. Unevenness in tension along the bar members 13 and 14 may be equalized by separate rotation of one of the eccentric collars 15 or 15'.

In Fig. 1 the eccentric collars 15 and 15' have been rotated to draw the blanket 25 around cylinder 11 and lock bars 13 and 14 within slot 12.

In Fig. 3 the eccentric collars 15 and 15' have been turned further to apply a tension to the blanket 25,

In this position, the frictional forces between the projecting ends 23, 23′ and 24, 24′ and the internal surfaces of recesses 16 and 16′ are sufficient to retain the collars 15 and 15′ in the position indicated in Fig. 3 in which tension is maintained on the blanket 25.

When it is desired to withdraw the bars from the recess 12 of the cylinder 11, the bar 13, if jammed, can be loosened or dislodged by the use of a heavy screw driver or any other tool suitable for use as a pry or lever. The inner edges 13x of the bar 13 and 14x of the bar 14 are inclined away from the cylinder axis at the ends as seen in Fig. 4. Notches 12x are provided at the ends of the cylinder 11 to enable a lever to be inserted beneath the edges 13x of the bar 13 and 14x of the bar 14.

In Figs. 7 to 10, inclusive, disclosure is made of a further embodiment of the invention. As before, a transfer cylinder 11a is surrounded by a flexible transfer blanket 25a. The cylinder is mounted through bearing portions 20a in bearings 21a, the latter being supported in side frame members 22a.

The cylinder 11a is formed with a longitudinally extending recess 41. The recess 41 includes a relatively narrow entrance portion through the periphery of the cylinder, a portion which can be entered directly through the entrance portion, and an offset, undercut portion, the two latter portions being merged and havnig substantially radial, parallel walls.

The ends of the blanket 25a are secured by clamps as before, but the clamps are somewhat modified in form, as compared with the structures illustrated in Figs. 1 to 4. The first clamp 42 comprises a main bar 43 which is lodged in the undercut portion of the recess 41 and an auxiliary bar 44 which engages the opposite face of the blanket 25a. Headed screws 45 have their bodies passed through the auxiliary bar 44 and threaded into the main bar 43. The main and auxiliary bars are both plain rectangular bars, and the ends of the bar 43 do not extend beyond the ends of the cylinder 11a.

The second clamp comprises a main bar 46 and an auxiliary bar 47. Headed screws 48 have their bodies passed through the auxiliary bar 47 and threaded into the bar 46. The bar 46 is formed with a shouldered rabbet 49 which is adapted to be driven down into position to receive and engage the auxiliary bar 44 of the first clamp.

Initially the bar 43 may not lie squarely in the undercut portion of the recess as shown in Fig. 7, but may extend obliquely across the recess. As the second clamp is driven down into the recess, a cam surface 50 at the lower, inner corner of the clamp plate 46 engages the auxiliary clamp plate 44, and cams it aside so as to cause the plate 44 to become located in the rabbet. The combined thickness of the clamps is substantially equal to the width of the recess 41, there being just enough clearance to permit the clamps to slide snugly relatively to the cylinder and to one another.

The plate 46 is formed with protruding ends 51 which cooperate with cam sleeves 15a in the manner already described with reference to Figs. 1 to 5. The construction of the cam sleeves is precisely the same as illustrated in Fig. 5.

The clamp plate 46 has a notch or groove 52 formed in its outer face. With this construction a suitable tool such as a cold chisel may be used for driving the plate 46 down into the recess 41, the edge of the chisel being lodged in the groove. When the plate 46 has been driven in far enough to cause the shoulder of the rabbet 49 to engage the plate 44, the two clamps are thereafter driven inward in unison so that the blanket is tensioned equally at its opposite ends. The cam collars 15a are turned to over-lie the protruding ends 51 of the plate 46 to hold the plate against retraction. This causes both clamps to be held in blanket tensioning positions.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desire to cover by Letters Patent is set forth in the appended claim.

I claim:

In a transfer press, in combination, a transfer cylinder having a longitudinal recess formed therein, the recess including a relatively narrow entrance portion through the pheriphery of the cylinder, a portion which can be entered directly through the entrance portion, and an offset undercut portion, the two latter portions being merged and having substantially radial, parallel walls, a flexible blanket wrapped around the periphery of the cylinder, blanket clamps secured to the opposite ends of the blanket and each including a main bar and an auxiliary bar, the main bar of the first clamp being lodged in the undercut portion of the recess, and the main bar of the second clamp being formed with a shouldered rabbet in which the auxiliary bar of the first clamp is received, the clamps being of a combined thickness substantially to fill the width of the recess, the second clamp as it is forced inward into the recess serving to force the first clamp inward also, the main bar of the second clamp being formed with protruding ends, and retaining members cooperative with said ends to cause both clamps to be held in blanket tensioning positions.

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