March 10, 1936. G. W. POPPE 2,033,205

PRINTING CYLINDER

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Fig. 1.

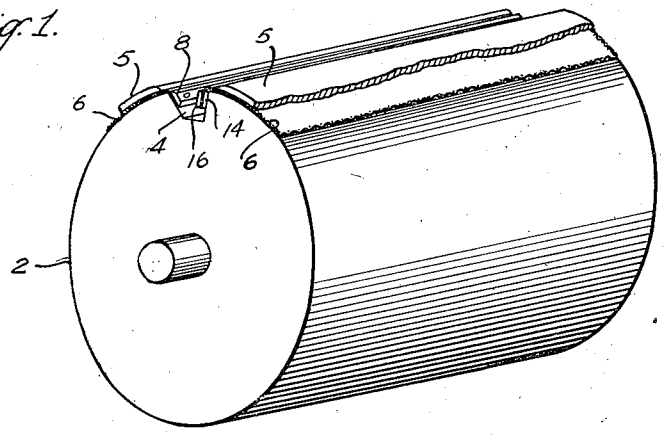

Fig. 4.

Fig. 2.

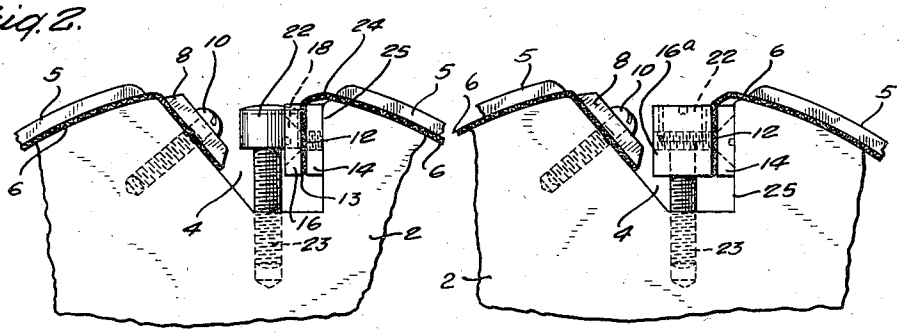

Fig. 3.

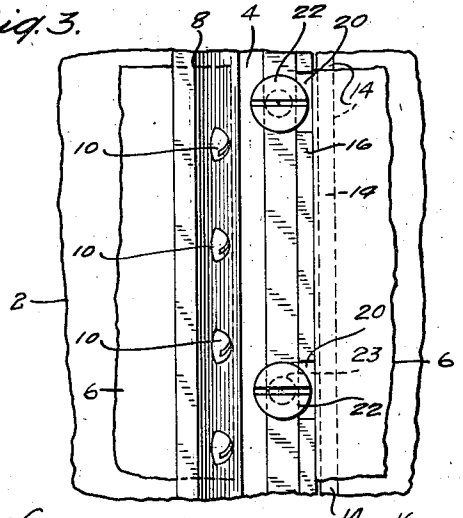

Fig. 5.

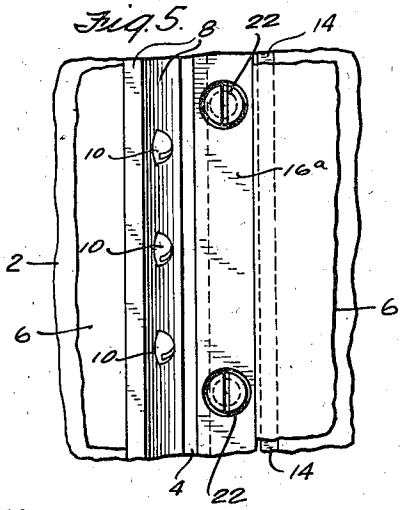

Fig. 6.

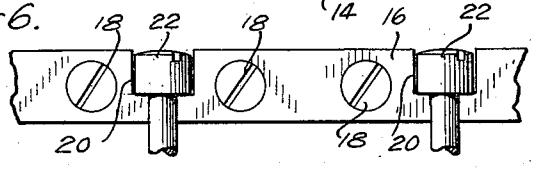

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Fig. 7.

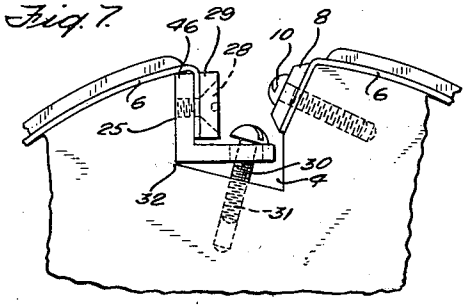


Fig. 9.

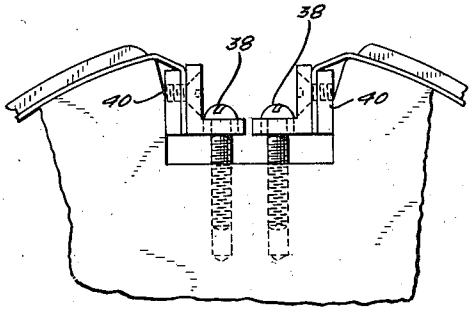
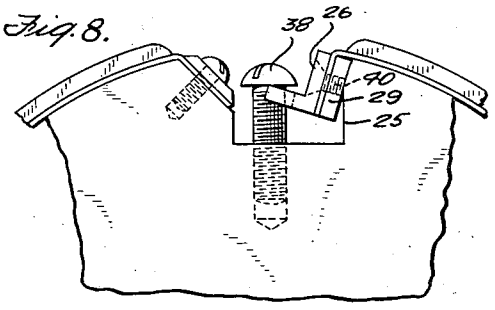


Fig. 8.



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Patented Mar. 10, 1936 2,033,205

UNITED STATES PATENT OFFICE

2,033,205

PRINTING CYLINDER

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Application July 18, 1934, Serial No. 735,729

1 Claim. (Cl. 101—415.1)

The present invention relates to a printing cylinder and to means for attaching thereto a flexible-base printing surface. While the invention has been developed to overcome difficulties which I have encountered in the application of printing surfaces to the printing cylinders of paper bag machines, the invention is not limited to a cylinder used on such a machine, but has application to printing cylinders generally where a flexible-base printing surface is employed.

An object of the invention is to make it possible to use more of the cylinder surface than is possible with cylinders with which I am acquainted.

A further object is the provision of means for securing the printing surface to the cylinder, permitting more convenient and more rapid attachment and detachment of the printing surface to the cylinder.

Printing cylinders in common use on bag machines with which I am familiar necessitate a recess in the cylinder surface which occupies a relatively large portion of such surface. Furthermore, in the devices at present in use, each end of the flexible base of the printing surface is mounted upon a roller having a pawl and ratchet mechanism for giving to the base the necessary tension about the cylinder. It frequently happens that resort must be had to make-ready and this, of course, necessitates the loosening or removal of the printing surface from the cylinder while the make-ready is being placed. With the forms of cylinder at present in use, one end of the printing surface must be entirely detached from the cylinder and this consumes considerable time.

The shafts which support the rollers about which the ends of the base of the printing surface are wound are made as small as possible so that they do not take up any more room than is absolutely necessary. Therefore, where the cylinder is quite long these rods are apt to bend and give all kinds of trouble. Furthermore, devices of the type referred to are expensive to make and there is a further difficulty in properly balancing the cylinder. This is an important factor where the cylinder rotates at high speed as it necessarily must in a paper bag machine.

The disadvantages pointed out are all overcome by the present invention, the various advantageous features of which will become apparent from the following description and claim when taken in connection with the accompanying drawings in which:—

Figure 1 is a perspective view of a cylinder showing one form of means for attaching the printing surface thereto, such printing surface having a flexible-base;

Figure 2 is a sectional view on an enlarged scale of a portion of the cylinder showing one form of the attaching means for a flexible-base printing surface;

Figure 3 is a top plan view of a portion of the cylinder showing the form of attaching means illustrated in Figure 2;

Figure 4 is a view similar to Figure 2 showing another form of attaching means;

Figure 5 is a top view of a portion of the cylinder shown in Figure 4;

Figure 6 is a detail of one element of the clamp shown in Figure 2; and

Figures 7, 8 and 9 are different modifications of the flexible-base printing surface securing means.

Referring to Figures 1 and 2, a portion of the cylinder is indicated at **2**, which cylinder is provided with a recess **4** extending longitudinally thereof. A printing surface **5** having a flexible base **6** is adapted to have one end secured within the recess of the cylinder preferably by means of a bar **8** extending the width of the cylinder and within the recess and adjustably secured to the cylinder by the screws **10**. The printing surface **5** is wrapped about the cylinder and the other end **12** of the flexible base thereof may be secured within a clamp which securely holds the end of the base independently of its attachment to the cylinder. In the construction shown in Figure 2 the clamp, indicated as a whole by **13**, comprises two flat bars **14** and **16**. The bar **14** is tapped at intervals along its length for the reception of screws **18**, the heads of which are countersunk. The bar **16** is provided with notches **20**, Figure 6, with which engage the heads of screws **22** tapped into the cylinder surface as indicated at **23**. Adjustment of the screws **22** will cause the clamp **13** to move downwardly in contact with the wall **25** of the recess to thereby tension the base **6**, said screws also acting to secure the clamp to the cylinder. The recess in the cylinder may be slightly rounded at **24** to make it easier to tension the base of the printing surface and to prevent undue wear.

When it is necessary to use make-ready the screws **22** are loosened and the clamp **13** taken out of the recess while the screws **18** hold the end of the base **6**. After the make-ready has been properly placed the clamp is put back in the recess, the screws **22** being properly positioned

within the notches **20** and screwed down. The screws **18** having once been driven flush with the surface of the bar **16** require no adjustment.

With this construction the gap in the cylinder surface made by the recess **4** is relatively small compared with the gap in the cylinder which is necessitated with devices for this purpose now in use.

The construction shown in Figure 4 differs from that shown in Figure 2 in the fact that the member **16***a* of the clamp is somewhat modified. The bar is wider, thereby giving a wider seat for the shoulder of the screws **22**. There is another difference in that the screws **22** pass through holes in the bar **16***a* instead of through notches therein as in the Figure 2 construction.

In the constructions previously described, the clamp is moved edgewise along the wall **25** of the recess and the base **6** of the printing surface is turned over the edge of the recess and therefore the pull of the clamp is at an angle to the cylinder surface.

In the constructions shown in Figures 7 to 12, inclusive, the pull of the clamp is substantially tangential to the cylinder surface.

In the Figure 7 construction one end of the flexible-base **6** is secured by the bar **8** just as in the Figure 2 construction. The clamp which secures the other end, however, is somewhat differently made and functions in a different manner. This clamp comprises an angle bar **26**, one member of which is threaded to receive screws **28**. A flat bar **29** holds one end of the flexible-base **6** between it and one member of the angle bar. The other surface of the angle bar is notched or apertured to receive screws **30** threaded into the cylinder surface as indicated at **31**. The parts are shown in Figure 7 with the flexible-base in its untensioned state. When the screws **30** are screwed down, however, the angle bar pivots about its fulcrum **32** which bears against the lateral wall **25** of the recess **4** near the bottom thereof and the pull on the flexible-base is substantially tangential to the cylinder surface.

The Figure 8 construction is similar to the Figure 7 construction except that the clamp has the angle iron on the opposite side of the flat bar **29** and the bar **29** pivots about a flattened surface **40** of the lateral wall **25** of the recess.

In the Figure 9 construction two angle bars similar to the angle bar shown in Figure 8 constitutes two clamping means and each angle bar pivots about a flattened portion **40** of each lateral wall of the recess, the screws **38** acting as in the Figure 8 construction. The clamps act to apply tension to both ends of the flexible base in a direction which is substantially tangential to the cylinder surface.

What I claim is:—

The combination with a printing cylinder having a recess in the surface thereof, of means for securing one edge of a flexible-base printing surface within said recess, a clamp for holding the other edge of said printing surface, said clamp comprising two bars between which the edge of the printing surface is inserted, screws engaging said bars for clamping the edge of said surface, one of said bars having a series of recesses in the edge thereof and screws threaded into the cylinder, the heads of the screws engaging said recesses respectively for moving the clamp edgewise in the cylinder recess, said screws also acting to secure the clamp to the cylinder.

GEORGE W. POPPE.