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METHOD AND MEANS FOR RENEWING WEB ROLLS IN A PRINTING MACHINE

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Fig. 1.

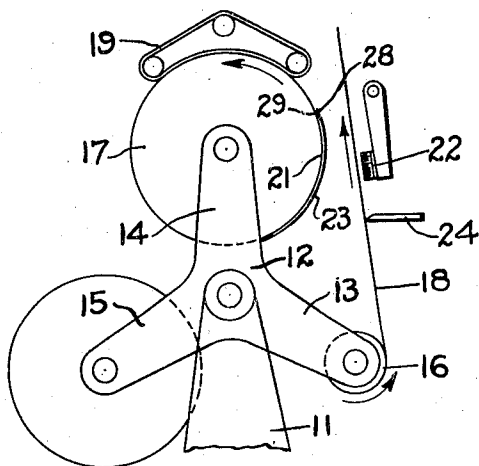


Fig. 2.

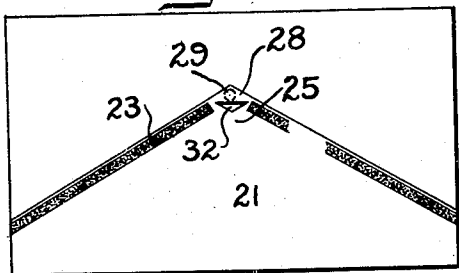


Fig. 3.

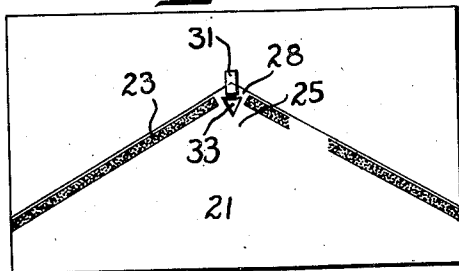


Fig. 4.

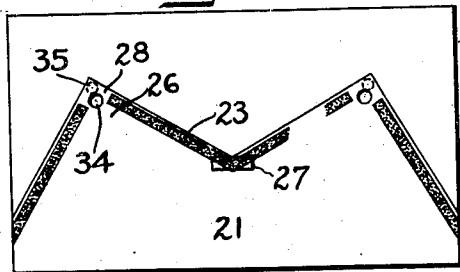
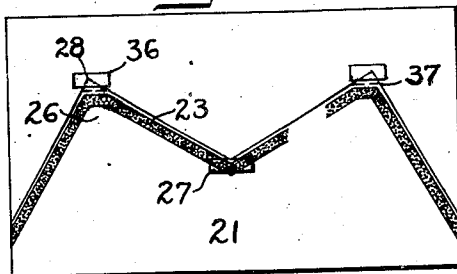


Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD AND MEANS FOR RENEWING WEB
ROLLS IN A PRINTING MACHINE

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6 Claims. (Cl. 242—58)

This invention relates to the preparation of a web roll for use in a machine operating upon a web, and more particularly to the method of preparing the web end of a replacement roll and for holding it to the roll body, previous to joining it to the web running from an expiring web roll.

This invention is particularly adaptable for use in connection with the web renewing means of a type of roll changing mechanism whereby the machine operation is not interrupted while such change is being made and the webs of the respective rolls are being joined. In the use of such mechanism, it is customary to apply adhesive to the leading end of the web of the replacement roll, and, after causing its speed of rotation to substantially equal the speed of the running web, to cause engagement between the running web of the web expiring roll, with the adhesive covered area of the leading end of the new web, to join them together. The web of the web expiring roll is then severed and the new web follows the old into the machine.

The leading end of the web of the replacement roll must be firmly held to the roll body while the roll is being rotated and until the join is made, and a number of different means have been employed for this purpose.

An object of the invention is to provide a method of preparing the leading end of a web of a roll of web material, whereby it may be firmly secured thereto and may be quickly separated therefrom when it is joined to the running web of an expiring web roll.

It is also an object of this invention to provide a method of and means for, holding a web end to the body of a web roll that are simple and inexpensive, as well as convenient, practical, and efficient in use.

Embodiments of the invention are illustrated in the accompanying drawing, wherein:

Figure 1 illustrates, somewhat diagrammatically, a web supply mechanism to which the features and principles of this invention may be applied to increase the efficiency of its operation;

Figure 2 shows the leading end of a web roll secured to the body thereof by a method of and a means for so doing which embodies the features of this invention, the web end, in this instance, being in the form of a salient angle.

Figure 3 shows a somewhat modified form of a web end holding means;

Figure 4 shows another form of web and holding means, the web end in this instance being formed as two salient angles; and

Figure 5 shows a web end of a form similar to that shown in Figure 4, but having a somewhat modified form of securing means.

The web supply mechanism illustrated in Figure 1 is of the non-stop type used in association with web printing machines. This mechanism includes a supporting member 11 upon which is rotatably mounted a reel 12 having a plurality of radially extending arms 13, 14 and 15. Web rolls are mounted upon the aforesaid arms and may be disposed in various positions by rotating the reel 12. Herein, an expiring web roll 16 is shown mounted upon the arm 13 and a replacement web roll 17 is shown mounted upon the arm 14. During its travel into the machine, the web 18 of the roll 16 is disposed closely adjacent the periphery of the roll 17. The replacement web roll 17 is rotated to attain the speed of the running web by a roll driving belt 19.

After the leading end 21 of the web of the roll 17 is prepared, as will be subsequently described, and when the web 18 on the web expiring roll 16 is nearly exhausted, the mechanism is operated to cause a brush-like member 22 to press the running web 18 against the roll 17, whereupon it adheres to the web end 21, due to an adhesive disposed therebetween in the form of a strip 23, and separates it from the roll. A web severing knife 24 is then operated to sever the web 18, whereby the new web is drawn into the machine. All of the above devices are actuated in such a manner that there is no interruption in the operation of the machine and therefore the delivery of products therefrom is substantially continuous.

In the preparation of the web end 21 for its connection with the running web 18, it may be given the form of a single salient angle, as at 25, in Figures 2 and 3, or formed with additional salient angles as at 26, in Figures 4 and 5. The strip of adhesive 23 in both forms follows the form given the web end, but is spaced slightly from the edge thereof. In the latter form of web end, a reinforcing strip 27 may be pasted or otherwise secured, at the corner formed, intermediate the sides of the web, by the meeting of the inner sides of each of the angles 26. The outer sides of each of the angles 26 extend until they run off the adjacent sides of the web at the ends of the roll 17.

As shown in Figure 2, the apex 28 of the salient angle 25 of the web end, is permanently secured to the next course of the web on roll 17 by disposing a spot of adhesive 29 therebetween. In Figure 3, the web end 21, at the apex 28, is joined to the next course of the web by a gummed

sticker or tab 31, secured to both and overlapping the edge of the apex. Directly following the points of connection at the spot of adhesive 23 and the gummed tab 31, the web end 21 is perforated as at 32 and 33, respectively. The perforation is extended across the apex 23 in each instance sufficiently to leave only a determined amount of web material between each end of the perforation and the sides of the salient angle.

In the forms shown in Figures 2 and 3, the strip of adhesive 23 extends along the side of the salient angle from spaced apart points adjacent the perforations to each edge of the web at the roll ends. The combined width of the web material, between the ends of the perforation and the adjacent edge of the salient angle is preferably less than the width of web material disposed between the spaced apart ends of the strip of adhesive 23, at the apex 23. This arrangement insures that the web weakening effect of the perforation will cause the web to part between the perforation and the angle sides, rather than at another point, when the web end 21 is pulled away from the roll 17 by the running web 18 after adhering thereto, as above described. The perforations 32 and 33 are herein shown triangular in form with one side thereof disposed intermediate the sides of the salient angle and substantially parallel to the roll axis. In Figure 3, the point of the triangular shape of the perforation 33, opposite the aforesaid side thereof, is disposed between the ends of the adhesive strip 23 to reduce the width of the web material therebetween.

A somewhat similar arrangement is shown in Figure 4, wherein round perforations 34 are provided directly following a spot of adhesive 35 disposed between each of the apices 28 of the angles 26 of the web end 21 and the next course of the web on roll 17. Also, for similar reasons, the perforations 35 are so disposed that the combined width of the web material between the same and each of the angle sides is less than the width of the material between the spaced apart ends of the adhesive strips 23, adjacent the same. In Figure 5, the web end 21 is secured to the next course of the web on roll 17 by a gummed sticker or tab 36 disposed across the apex of each angle 26. The web material at this point may be weakened, in comparison with adjacent portions thereof, by the provision of perforations as shown in Figures 2, 3, and 4, or by the mutilation of the web material along a line as shown in dotted lines at 37.

By the provision of perforations as shown in Figures 2, 3, and 4, or the comparatively weakened web portion of the form shown in Figure 5, the normal strength of the web material is weakened between the point of attachment of the web to the roll, and the portion of the web directly following the point of adherence of the web end to the web 18 of the web expiring roll, whereby a quick parting of the web material will take place when the web join is made. At such moment, the web portion at the apex of the salient angle will part from the web end, by quickly tearing from the same, substantially along a line extending between the sides of the salient angles 25 or 26. In view of the above, it will be apparent that the method of preparing a roll end as herein described obviates the use of specially formed or weakened tabs or the like, while firmly holding the web end and permitting its quick release from a roll, without causing undue strain to be imposed upon the web, premature parting thereof,

nor interference in the continuous operation of the machine.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the embodiments shown be considered in all respects as illustrative and not restrictive, reference being had to the claims rather than to the foregoing description to indicate the scope of the invention.

What we claim is:

1. In combination, a web of a web roll having its leading end in the form of a salient angle, a strip of adhesive extending along each side of the angle, and means disposed at the apex of said angle to connect the leading end of said web to the next course of the web on said roll; said strip of adhesive being interrupted at the apex of said angle, and said web being perforated adjacent the apex and between the ends of the strip of adhesive where the same is interrupted.

2. In combination, a replacement web roll having its outer web end in the form of a salient angle, a strip of adhesive extending along each side of the angle, a sticker disposed at the apex of the angle to connect the leading end of said web to the next course of the web on the roll, said leading end having an aperture disposed adjacent the said apex of the angle, and between adjacent ends of the strips of adhesive, whereby when a running web is pressed against the replacement roll and joined thereto by the adhesive, the web end will rupture between the aperture and the sides of the angle and be freed from the roll.

3. The method of preparing the outer end of the web of a web roll for splicing it to a running web, which includes removing surplus material and leaving the said web end in the form of a salient angle, cutting through a portion of the material adjacent the apex of the angle, securing the web end to the next course of the web roll by means secured to the web end at the apex and to the next course, and applying adhesive to the outer side of the web end along each side of the salient angle and extending only to and not including the portion cut.

4. The method of preparing the outer end of the web of a web roll for splicing it to a running web, which includes removing surplus material and leaving the said web end in the form of a salient angle, cutting through a portion of the material adjacent the apex of the angle, securing the web end to the next course of the web roll by adhesive applied to the under side of the apex and to the next course, applying adhesive to the outer side of the web end along each side of the salient angle and extending only to and not including the portion cut.

5. The method of preparing the outer end of the web of a web roll for splicing it to a running web, which includes removing surplus material and leaving the said web end in the form of a salient angle, cutting through a portion of the material adjacent the apex of the angle, securing the web end to the next course of the web roll by a sticker secured to the web end at the apex and to the next course, and applying adhesive to the outer side of the web end along each side of the salient angle and extending only to and not including the portion cut.

6. The method of preparing the outer end of the web of a web roll for splicing it to a running web, which includes removing surplus material and leaving the said web end in the form of a salient angle, cutting through a portion of the

5 material adjacent the apex of the angle, securing the web end at the apex of the angle to the next course of the web roll by means of adhesive that is stronger than the web adjacent the apex of the angle, and applying adhesive to the outer side of the web end along each side of the salient angle and extending only to and not including the

portion cut, whereby the web material will be severed adjacent the apex of the angle when a running web is brought into contact with the adhesive on the outer side of the web end.

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