May 7, 1940. R. F. OHNTRUP 2,199,753

WEB-FEEDING AND END-GUMMING MACHINE

Filed Feb. 25, 1939 3 Sheets-Sheet 1

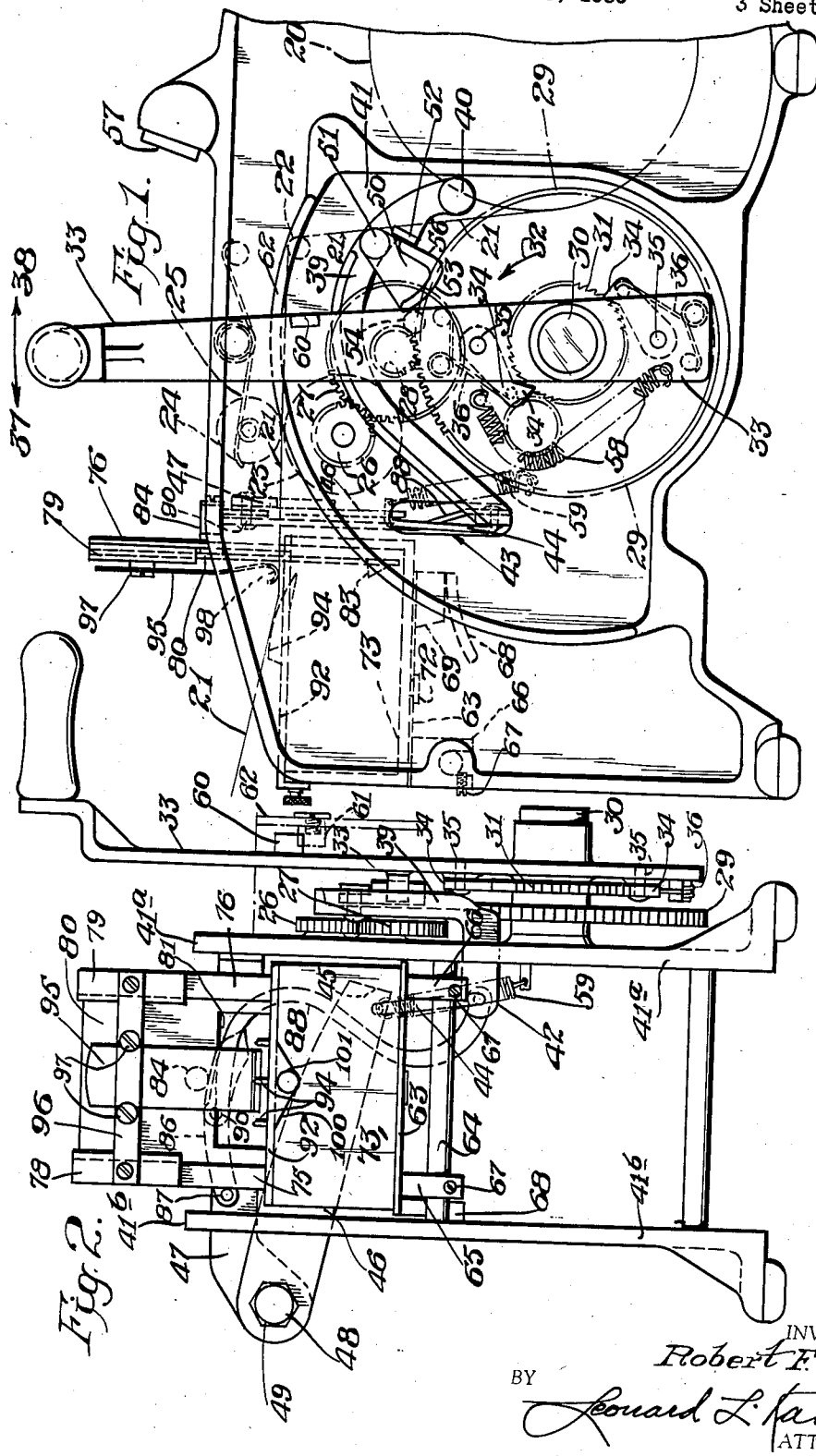


Fig. 1.

Fig. 2.

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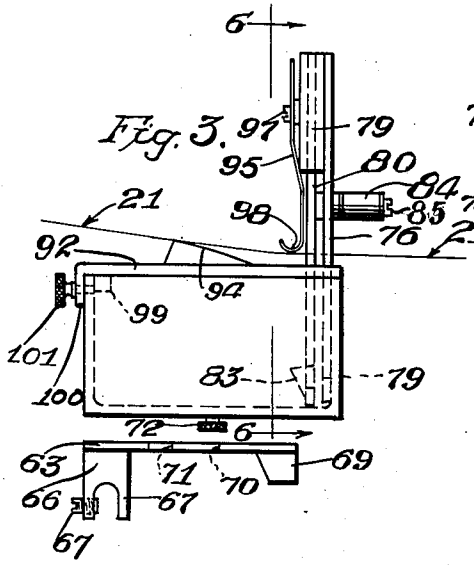


Fig. 3.

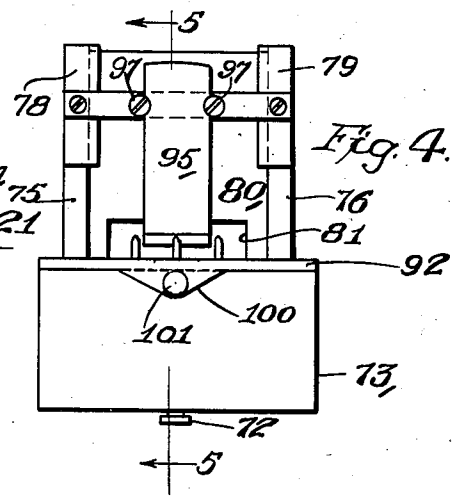


Fig. 4.

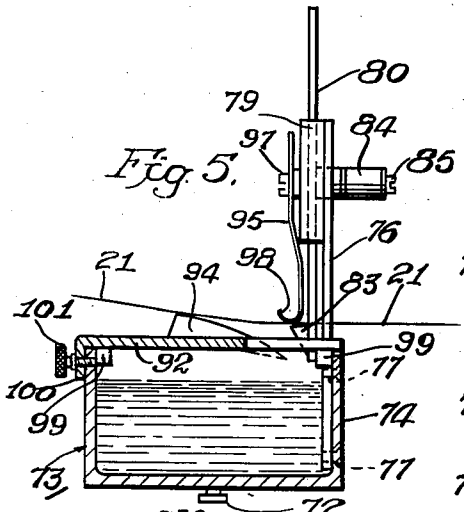


Fig. 5.

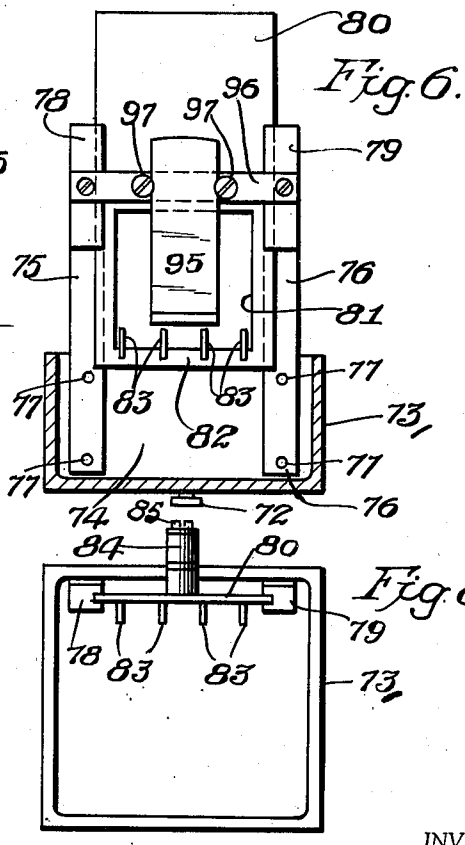


Fig. 6.

Fig. 8.

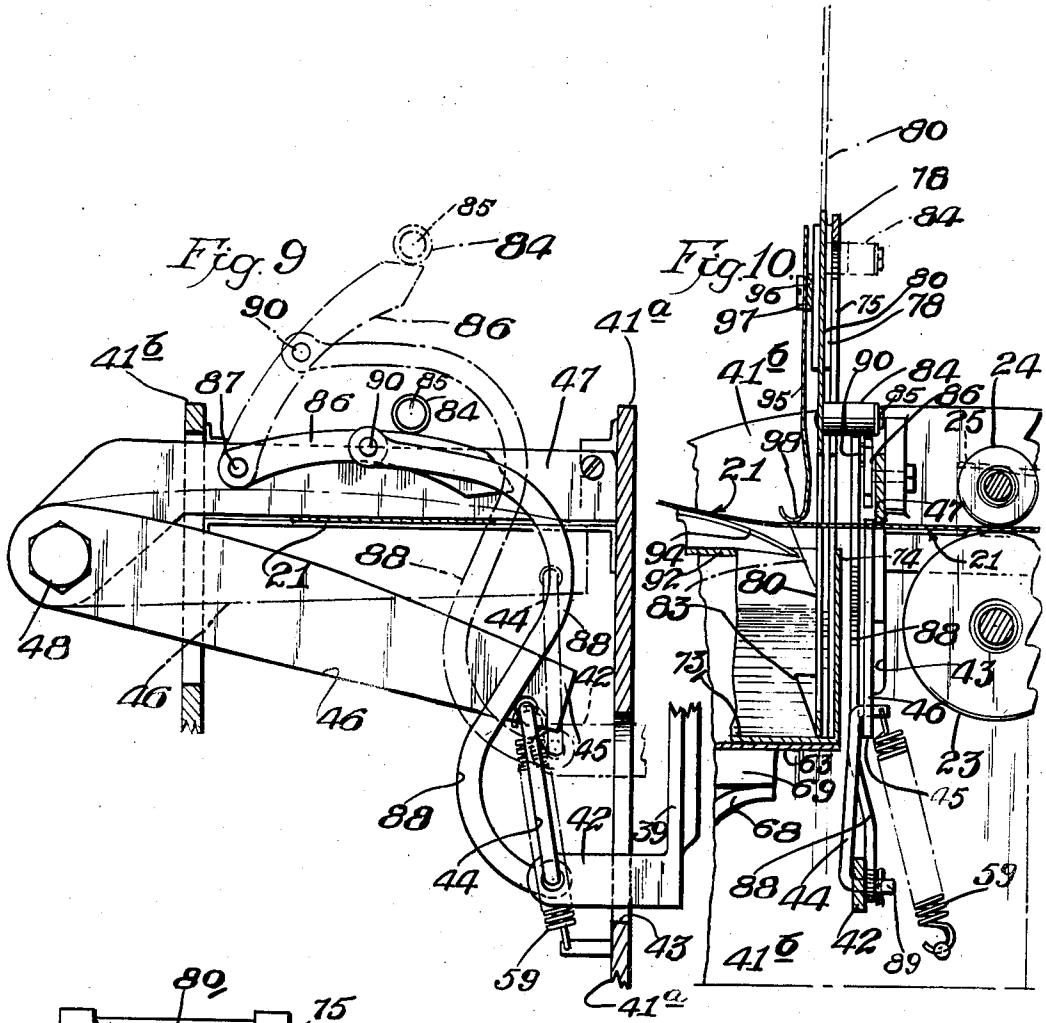
Fig. 7

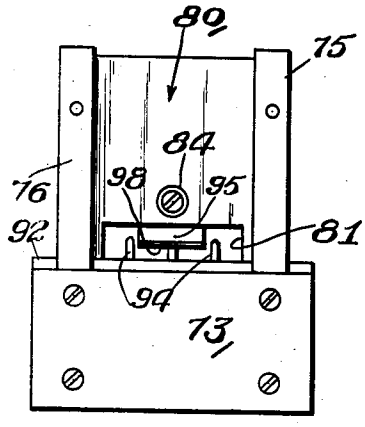
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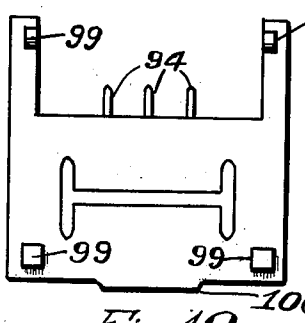
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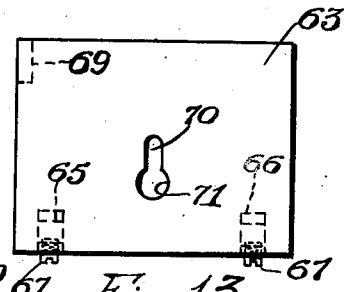
WEB-FEEDING AND END-GUMMING MACHINE

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Fig. 11.


Fig. 12.


Fig. 13.

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UNITED STATES PATENT OFFICE

2,199,753

WEB-FEEDING AND END-GUMMING MACHINE

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Application February 25, 1939, Serial No. 258,447

6 Claims. (Cl. 91—14.5)

The present invention relates to the combination of strip-serving and end-gumming or spot-gumming device or means, and also to end-gumming or spot-gumming means applicable to or adapted for use with other strip-serving machines.

One of the objects of the present invention is to provide end-gumming or spot-gumming means in combination with strip-serving means, whereby a strip of paper preferably initially ungummed, is given predetermined gummed areas of limited extent at predetermined points along its length, so that a paper strip for binding or wrapping or retaining purposes (or other purposes) may be supplied with its adhesive characteristics limited to a small area just sufficient to adhesively secure the overlapping ends of the paper strip or band.

In wrapping or packaging many articles where a paper strip or band of paper is used, it is not desirable to have the entire paper surface adhesive because of its adhesion to the product or to the general wrapper of the product. Thus, for instance, in putting a paper band around a pair of socks or several pairs of socks as they are banded preparatory to packaging in a box, it is only necessary that the overlapping ends of the paper band shall be adhesively secured and it is indeed undesirable to have the whole extent of the paper band in an adhesive condition. Similarly, in applying paper bands (as for instance, the paper bands bearing a trade-mark or other matter, around a loaf of bread), either beneath the main wrapper or on the outside of the main wrapper, it is only necessary to have one end of the paper strip adhesive so that it will attach itself adhesively to the other overlapping end of the paper strip. Likewise, in wrapping an article completely in a wider sheet of paper, it is desirable to have only the overlapping marginal end of the paper sheet in an adhesive condition so that it will attach itself only to the opposite end of the same sheet when the ends are brought into overlapping relation around the article being wrapped.

One of the objects of the present invention is to apply a spot or spots of adhesive or like fluid to a strip or sheet of paper near the end or terminal margin thereof in a position such that it will adhesively engage the opposite end or marginal zone when the two are brought into overlapping relation; without, however, imparting any adhesive qualities to the rest of the strip or sheet.

A further object of the present invention is an end or spot applicator which will function in combination with and as a part of a strip or sheet serving machine, either of the type adapted to serve a strip or sheet from a roll from which predetermined lengths are cut with each serving, or of the type serving pre-cut strips or sheets from a stack.

For the purpose of illustrating the invention, there is shown in the accompanying drawings one form thereof which is at present preferred, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Referring to the drawings in which like reference characters indicate like parts:

Figure 1 represents a side elevational view of a strip-serving and spot-gumming machine embodying the present invention, with part of the outer casing omitted in order to expose to view the gears and related driving mechanism.

Figure 2 represents a front elevational view of the same.

Figure 3 represents a side elevational view of the end or spot-gumming device shown detached from the strip-serving means and with the applicator means in the lowermost position.

Figure 4 represents a front elevational view of the same.

Figure 5 represents a section on line 5—5 of Figure 4, but with the applicator means raised into the uppermost or gumming position.

Figure 6 represents a section on line 6—6 of Figure 3 but with the applicator means raised into the uppermost or gumming position.

Figure 7 represents a top plan view of the parts shown in Figures 3 to 6.

Figure 8 represents a similar top plan view but with the lid and spring paper retainer removed.

Figure 9 represents a front elevational view of the operating levers and links.

Figure 10 represents a side elevational view of the same, and also of the web-feeding, cutting and guiding means.

Figure 11 represents a rear elevational view of the end-gumming means.

Figure 12 represents an alternative form of lid and paper guide construction.

Figure 13 represents a top plan view of the supporting platform.

In the machine shown in Figures 1 and 2, a roll of paper designated generally by the numeral 20

is used for supplying a continuous strip or web indicated by the line 21, which passes over the stationary or idle guide 22 and then between the driving roll 23 and the idle counter-pressure roll 24 which is held against the paper by pressure of a pair of similar springs 25 at the two ends of the trunnions or spindle which carries the roll 24 in vertically adjustable guides. The movement of the driving roll pulls the paper strip 21 from the roll 20, the amount of paper fed being determined by the extent of the rotary movement of the roll 23.

The paper-driving roll 23 carries a pinion 26 which is in mesh with the gear 27. The gear 27 carries a smaller pinion 28 affixed thereto on the same shaft, and the pinion 28 is in turn driven by the main gear 29. The main gear 29 is freely pivoted upon a central stationary pivot 30, and has affixed thereto the ratchet wheel 31, so that any movement of the ratchet wheel 31 in the direction of the arrow 32 will cause a similar rotary movement of the main gear 29. To the same pivot 30, the main operating handle lever 33 is also loosely pivoted. The operating lever 33 carries a pair of similar opposed pawls 34 carried on suitable pivot pins 35 on the lever, and urged by suitable springs 36 into operative engagement with the ratchet teeth of the ratchet wheel 31. By this means, any movement of the lever in the direction of the arrow 37 will correspondingly displace the ratchet wheel 31 and the gear 29 and hence will correspondingly rotate the paper-driving roll 23, while the return movement of the lever 33 in the direction of the arrow 38 will have no effect upon these parts.

A lever 39 has one end thereof pivoted at 40 to the frame portion 41 and the other end thereof is bent inwardly at an angle to form the inturned portion 42 which enters through an opening 43 in the frame member 41. The free end of the inturned portion 42 of the lever 39 is connected by means of a pivotal link 44 to the free end 45 of the pivoted and movable blade 46 of a pair of shears of which the member 47 is the stationary shear element; the movable and stationary elements being pivotally connected at 48 and being held in operative engagement with each other by a helical compression spring interposed between the bolt head or nut 49 and one of the blades.

To a suitable point on the curved lever 39, a switch cam 50 is pivotally mounted about the pivot 51 and adapted to be brought against the stop 52 on the lever by gravity. The cam surface 53 of the switch cam 50 is such that when the small pivoted idle roller 54 carried by the lever 33 is moved rearwardly in the direction of the arrow 38 upon the return stroke of the lever 33, the roller 54 will engage the cam surface 53 and will thereby raise the lever 39 upwardly, and thereby elevate the movable shear 46 so as to cause the same to shear off the paper strip which has been previously fed out during the forward stroke of the lever 33 in the direction of the arrow 37. When the roller 54 has passed the surface 53, it permits the lever 39 to drop again, and thus the shear 46 is lowered again for the next paper-feeding movement of the lever 33 in the direction of the arrow 37. When the lever 33 is moved in the direction of the arrow 37 on the paper-feeding stroke thereof, the switch cam 50 remains inoperative because the roller 54 merely engages the surface 56 thereof and merely swings the switch cam 50 upwardly about its pivot 51 without raising the lever 39. For this reason, during the paper-feeding strokes of the lever 33 in the direction of the arrow 37, the cutter 46 remains inoperative in its lowermost or clearance position.

The lever 33 is suitably spring tensioned as for instance by the spring 58 so as to cause it normally to return to its limiting position against the stop 57 and the cutter 46 is likewise spring tensioned by a spring 59 so as to pull it into its lowermost or clearance position indicated in Figures 2 and 9.

A lug 60 may be provided on the lever 33 projecting outwardly therefrom to serve as an abutment for an adjustable stop to limit the forward or paper-feeding movement of the lever 33 in the direction of the arrow 37. Thus, any adjustable stop 61 carried by an outer casing 62 will serve to engage the lug 60 and thereby limit the forward or paper-feeding movement of the lever 33; the adjustment serving therefore to determine the length of paper strip to be fed and cut for the adjusted stroke of the lever 33.

Between the frame members 41*a* and 41*b*, a supporting platform 63 is provided, preferably supported upon the tie-rod 64, which interconnects the two frame members, as for instance by the slotted or bifurcated lugs 65 and 66 which straddle the rod 64 and to which they may be affixed by the set screws 67; the platform 63 being affixed by welding (or otherwise) to the lugs 65 and 66. The opposite end of the platform 63 in turn rests upon the lateral projection 68 extending from the frame member 41*b*; the spacer member 69 serving properly to space the inner end of the platform 63 so that it may be substantially horizontal.

A slot 70 is provided in the platform 63, having an enlarged end 71 at its outer end, for receiving the headed retaining pin 72 extending from the bottom of the liquid tank or reservoir 73, for detachably securing the latter to the platform 63.

To the innermost wall 74 of the tank or reservoir 73, a pair of upright members 75 and 76 are fixedly secured, as for instance by screws 77 or by any other suitable means (either internally as shown, or externally). The upright members 75 and 76 carry guides 78 and 79, which serve slidably to support any suitable vertical slide 80. In the particular illustration of the invention herein shown, the slide 80 is shown as a plate-like member with a square part cut out as at 81 to provide an opening through which the paper strip may be fed, and to the lower portion 82 of which the applicator fingers 83 are secured.

The slide 80 is adapted normally to rest in a lowermost position indicated in Figures 3 and 10, with the applicator fingers 83 thereof immersed in the liquid or adhesive pool in the tank or reservoir 73, and to be raised into an elevated position indicated in Figures 5 and 6 after the paper-feeding has stopped and more or less simultaneously with the cutting off of the paper which takes place at a point just behind the applicators 83, so that the end of the paper strip will be dabbed with adhesive in the spots corresponding to the fingers 83.

An idle roller 84 is secured to the slide 80 by means of a pivot screw 85 around which it may freely revolve.

To the stationary shear member or cutter member 47, a lever arm 86 is pivotally secured as at 87; the lever 86 extending beneath the slide elevating roller 84. A curved link 88 is interposed between the pivot 89 on the inturned end 42 of the lever 39 and a pivot 90 on the lever 86, so that each time the lever 39 is raised, the applicator slide 80 will be correspondingly raised.

The top plate 92 is recessed as at 93, to clear the applicator slide, and carries a plurality of paper guides 94 spaced in staggered relationship to the applicator fingers 83, so that the adhesive areas on the paper will not come in contact with the guides 94. A spring-pressed or spring-like retainer finger 95 is adjustably secured to a cross-bar 96 by means of set screws 97, and is provided with a curved and resilient contact portion 98 adapted to bear against the top surface of the paper more or less in alignment with the applicator fingers 93, so that the applicator fingers 83 will firmly apply the adhesive carried thereby to the under-surface of the paper. The contact portion 98 is preferably slightly ahead of the applicator fingers 83, so that the paper will tend to flex slightly under the influence of the applicator fingers 83.

The upper plate 92 is mounted on the reservoir and provided with lugs 99 for maintaining it in alignment with the reservoir, and may also be provided with the downwardly extending lug 100 for receiving the knurled set-screw 101, by means of which it may be more firmly secured in place.

By the present invention, a paper roll without any adhesive thereon initially, may be cut to predetermined lengths and adhesive applied to one of the cut ends simultaneously with the cutting thereof so as to be suitable for application to packages and goods with only the overlapped ends of the paper adhesively united. Likewise, the trailing end portion of precut strip (taken and fed from a stack) may be similarly spot-gummed.

The link 88 is so curved or shaped as to clear the path of the paper.

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

Having thus described the invention, what is hereby claimed as new and desired to be secured by Letters Patent is:

1. In a web-serving machine, means for intermittently serving predetermined lengths of webbing, a liquid reservoir adapted to contain a pool of liquid, a plurality of web guide fingers for guiding the web above the reservoir, a reciprocatory liquid applicator element adapted to move intermittently from the liquid pool into contact with the web, and means interconnecting said intermittent web-serving means and said reciprocatory liquid applicator element for moving the latter in timed relation to the web movements.

2. In a web-serving machine, means for intermittently serving predetermined lengths of webbing, a liquid reservoir adapted to contain a pool of liquid, a plurality of web guide fingers for guiding the web above the reservoir, a reciprocatory liquid applicator element adapted to move intermittently from the liquid pool into contact with the under surface of the web, and means interconnecting said intermittent web-serving means and said reciprocatory liquid applicator element for moving the latter in timed relation to the web movements.

3. In a web-serving machine, means for intermittently serving predetermined lengths of webbing, a liquid reservoir adapted to contain a pool of liquid, a plurality of web guide fingers for guiding the web above the reservoir, a plurality of applicator fingers spaced transversely across the web in staggered relation to the web guide fingers and adapted to move intermittently from the liquid pool into contact with the web, and means interconnecting said intermittent web-serving means and said reciprocatory liquid applicator element for moving the latter in timed relation to the web movements.

4. In a web-serving machine, means for intermittently serving predetermined lengths of webbing, a liquid reservoir adapted to contain a pool of liquid, a plurality of web guide fingers for guiding the web above the reservoir, a plurality of applicator fingers spaced transversely across the web in staggered relation to the web guide fingers and adapted to move intermittently from the liquid pool into contact with the under surface of the web, and means interconnecting said intermittent web-serving means and said reciprocatory liquid applicator element for moving the latter in timed relation to the web movements.

5. A web-serving machine including means for intermittently feeding predetermined lengths of webbing, a movable shear for cuting the webbing at the end of said feeding stroke, and a liquid applicator connected with said shearing means for applying liquid to the zone generally adjacent the cut end of the web, said liquid applicator including a reservoir and a liquid applicator element adapted to move alternately up and down for dipping into the liquid content of the reservoir and for contacting the under side of the web.

6. A web-serving machine including means for intermittently feeding predetermined lengths of webbing including a manual operating lever adapted to be moved in one direction for feeding the web, a pair of shearing elements, one stationary and one movable, means interconnecting the manual operating lever with the movable shear for actuating the latter upon the return movement of the lever, a generally reciprocatory liquid applicator closely adjacent to said shears and applicator-actuating means interconnecting said applicator with said shears and borrowing its motion therefrom and arranged to apply liquid over a limited area on the underside of the web at a point closely adjacent to the shears on the terminal zone of the cut piece of webbing.

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