

May 15, 1934.

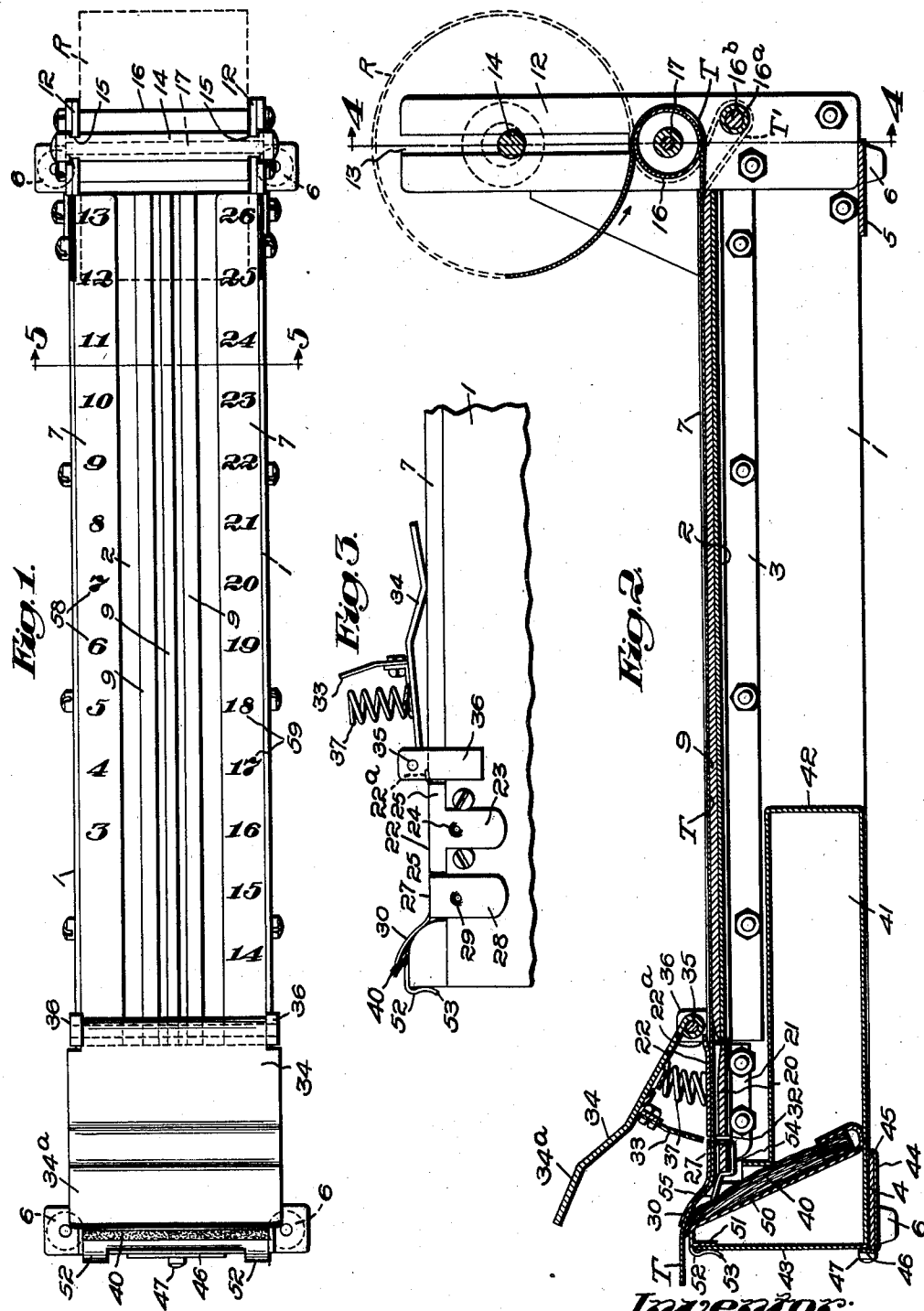
R. W. PHILLIPS

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STRIP SERVING DEVICE

Filed March 31, 1931

2 Sheets-Sheet 1



Inventor:

Russell W. Phillips
by Emory, Booth, Varney & Townsend, Attys

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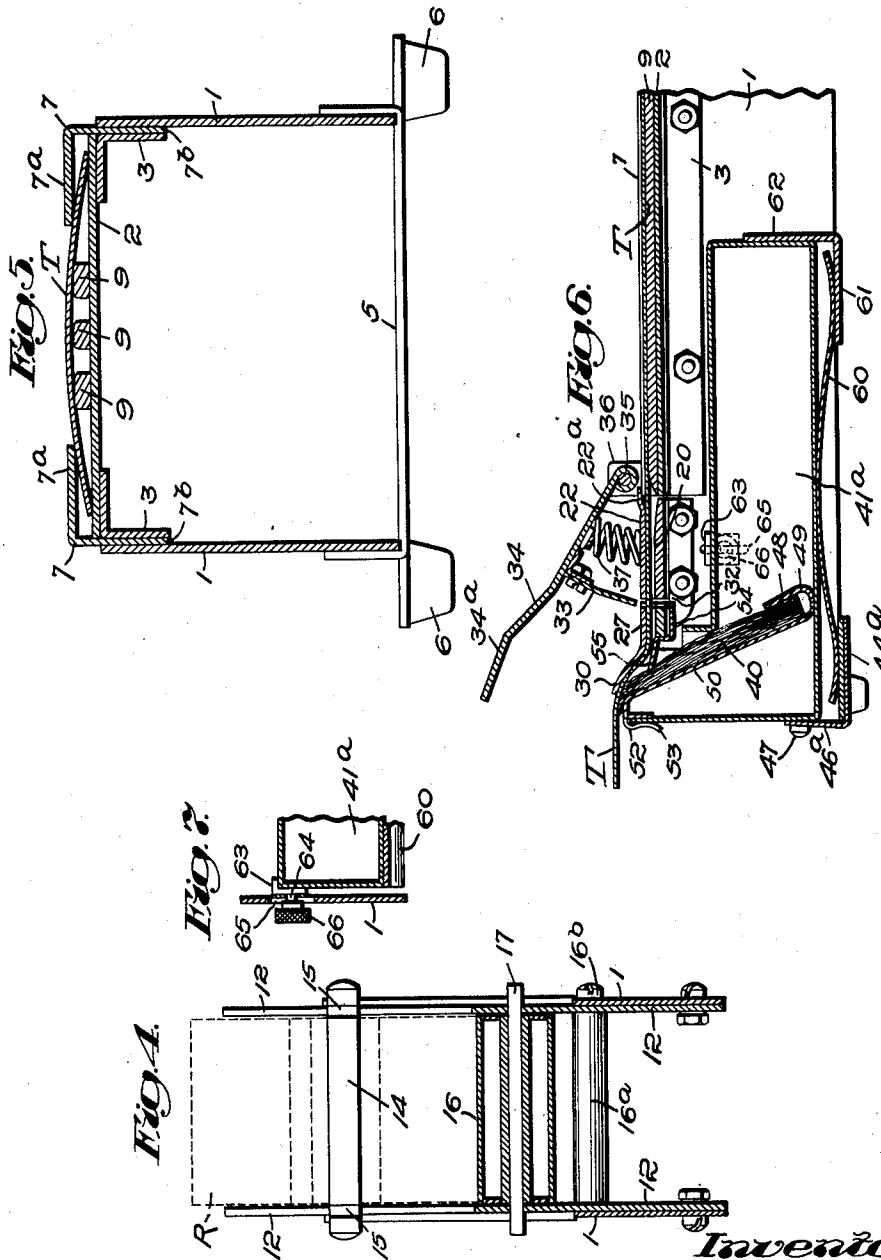
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UNITED STATES PATENT OFFICE

1,959,294

STRIP SERVING MEANS

Russell W. Phillips, Rockville Center, N. Y., assignor, by mesne assignments, to Nashua Gummed & Coated Paper Company, Nashua, N. H., a corporation of Massachusetts

Application March 31, 1931, Serial No. 526,659

7 Claims. (Cl. 164—42)

My present invention relates to means for delivering, or delivering and moistening, strip material such as gummed tape of various compositions, labels in strip form, etc., particularly in connection with packaging, labeling and the like purposes wherein lengths of the strip material are delivered, rendered adhesive as by moistening, and severed, and the invention aims to provide simplified and otherwise improved mechanism of the class described.

In the drawings illustrating certain embodiments of the invention, by way of example,

Figure 1 is a plan view of a strip server or tape dispenser embodying one form of the invention;

Fig. 2 is a longitudinal vertical section through the device of Fig. 1;

Fig. 3 is a side elevation of the upper portion of the front or delivery end of the device showing a portion of the cutting mechanism in its operative position;

Fig. 4 is a vertical cross-section on the line 4—4 of Fig. 2;

Fig. 5 is a similar section on the line 5—5 of Fig. 1;

Fig. 6 is a view corresponding to the front or left hand portion of Fig. 2, showing a modified form of moistening means; and

Fig. 7 is a vertical cross-section illustrating a stop means which may be employed in the device of Fig. 6.

Referring first to Figs. 1, 2 and 5, the device as a whole comprises a housing or frame, herein including the longitudinal side members, walls or side frames 1, 1 supporting a substantially horizontal platform or feed table 2, as by means of the angle strips 3, integral with or secured to the side frames in any suitable manner, as by bolting. The side frames are desirably further cross connected and braced as by the front cross strap 4, Fig. 2, and the similar rear cross piece 5, Figs. 2 and 5, suitably fastened. The housing so formed preferably rests on cushioning feet 6 carried by the cross members 4, 5, either between the side frames or on lateral extensions of the cross members, as illustrated.

The platform or table 2 extends substantially the entire length of the device and constitutes the bottom member of a feed throat or channel through and by means of which the strip or tape T is fed to the cutting and moistening means. This channel comprises in addition to the bottom element 2, the oppositely disposed side guides 7, see particularly Fig. 5, which serve to guide the strip transversely and to retain it in the desired substantially horizontal feed path. They are herein formed as angled strips, the horizontal portions or lips 7a of which are spaced above the channel bottom 2 and extend inwardly, in opposition, from the frame sides 1, with their depending portions 7b held between the latter and

the angle strips 3. The construction and manner of assembly of the housing and feed channel may be widely varied, including substantially integral sheet metal or other formations, that illustrated being but exemplary of one form of centrally open feed channel or throat, and a support therefor. The strip material T is adapted to be fed or advanced through this channel, herein with its adhesive or gummed face down. The central longitudinal portion of its ungummed or upper face is exposed, between the channel sides, for direct engagement by the operator's finger or fingers, while its side edges are enclosed and guided by the overhanging side portions 7 of the channel.

Preferably I provide for a minimum of frictional engagement of the strip material, and particularly its gummed face, with the feed channel. To this end the platform or bottom element 2 of the latter has one or more longitudinal rib-like elements or raised formations 9, three being shown in the present instance; see Figs. 1 and 5. These ribs are constructed and arranged to produce a flexing or arching of the tape T as it is fed and delivered, substantially in the manner seen in Fig. 5. Thus a relatively small area of the gummed or under surface of the strip makes contact with any portion of the feed throat, affording a free feeding movement of the strip and minimizing any likelihood of sticking or jamming. Also, by delivering the strip or tape in flexed or arched condition it is somewhat stiffened longitudinally, resisting the tendency to coil. Accordingly the delivered tape tends to remain conveniently extended, facilitating its handling and application for the intended purpose.

The strip material T is advanced or fed by the operator merely by pressing one or more fingers directly upon its upper face and drawing his hand forwardly, moving the strip with it. The raised formations or ribs 9, which need not be continuous, may be conveniently spaced and arranged to lie under the one or more fingers of the operator's hand as he feeds the strip, and act to confine his hand to a straight-line feeding motion. Claims for strip feeding and guiding means, including an open-top manual-feed channel, and also including provisions for transversely arching the strip or tape, of which the mechanism above described in one embodiment, are contained in my copending application S. N. 451,773.

The material to be fed, generally in roll form, is operatively supported adjacent the rear or entrance end of the feed channel in any suitable manner. In the present example I have provided novel roll-holding means, including a pair of spaced uprights 12, Figs. 1, 2 and 4, rising from or secured to the machine side frames. These uprights have substantially vertical slots

13, Fig. 4, extending downwardly from their upper ends, receiving a floating spindle 14 of a diameter larger than the width of the slots but having annular grooves or like formations 15 for sliding and guiding cooperation with and in the slots. The spindle 14 is thus held in place transversely of the machine but is free to move vertically.

At or near the lower ends of the slots 13 is a roller 16 suitably journaled in and between the uprights as by means of the shaft 17. Preferably this shaft is so located and the roller 16 is of such diameter that the latter is substantially tangential at its lowest point to the rearwardly extended plane of the feed channel, as clearly seen in Fig. 2, whereby the strip T leading from the supply roll R will be guided directly and substantially horizontally into the feed channel.

The machine is adapted for use with strip supply rolls wound with the gummed face of the tape either outside or inside, but preferably the latter. To mount a roll, the spindle is lifted out of the slots 13, inserted axially through the roll R, and is then merely dropped, with the roll, into operative position between the uprights 12. The free or leading end of the strip is led rearwardly over the roller 16, down around the latter and forwardly into the feed throat. Thus the strip roll R floats upon the roller 16, and the latter serves not only as a means for guiding the strip into the feed channel but also cooperates with the supply roll and its floating spindle to afford a braking and tensioning action on the strip. In this manner the tension upon the strip in the feed channel is kept substantially uniform, and the roll supply is prevented from overrunning or backing up, avoiding objectionable retraction or other undesired movement of the strip. In the instance of strip rolls wound gum side out, the same braking and tensioning effects may be obtained merely by mounting the roll to unwind clockwise, Fig. 2, and by conducting the strip about a supplemental roller 16a provided for the purpose, substantially in the manner indicated by the dotted lines T' at the right in Fig. 2, said roller being rotatably supported on the frame sides in any convenient manner, as by the pin 16b, Figs. 2 and 4. Strip roll supporting means, of which that above described is one embodiment, is claimed generically, and also specifically, in my copending application S. N. 603,778 while strip reversing means broadly, in connection with strip guide means, is generically claimed in my copending application S. N. 451,773.

At the forward end of the machine, the strip is fed up to and past suitable cutting or severing means, and moistening means, whence it is delivered for application. The feed channel as above described may, if desired, be structurally continuous up to the delivery point, but in the illustrated example, referring now to Fig. 2, I have shown an auxiliary feed and cutting platform or table 20 constituting a forward extension of the bottom 2 of the feed channel. This member 20 is supported on and between the side frames 1 in any suitable manner as by the brackets 21 bolted or otherwise attached to the side frames.

The strip or tape T coming from the feed channel is advanced across the table 20 and below suitable means forming with the latter an enclosed guide or tape throat. Herein said enclosing and guiding means comprises a rear clip-like guide element 22 having depending spring fingers

23, Fig. 3, adapted to be sprung downwardly over the side frames 1, whereby it is readily detachable. Each such finger 23 may be provided with an inward projection or nub 24 adapted to snap into a like depression in the adjacent side frame 1, to assist in retaining the clip in operative position. The upper side portions of this guide 22 are of general T shape, as seen in Fig. 3, the front and rear arms 25 of the T heads being arranged to seat upon the upper edges of the respective side frames, while its rear edge may be upset to overlap the front portions of the channel sides 7, as at 22a.

In advance of this rear guide member or clip 22 is a generally similar clip-like guide member 27 having depending spring portions 28, Fig. 3, and positioning nubs 29 for cooperation with the side frames. At its front portion it is formed with a forwardly and upwardly projecting somewhat resilient lip 30 beneath which the strip is delivered directly to, across and in contact with the moistening element 40, to be more fully described. As will appear, this front element 27 may herein directly cooperate with and act as a portion of the feed means, the cutting means and the moistening mechanism. If desired its fore edge may constitute a stationary knife or severing element, against which the strip may be deflected and cut or torn off, being for that purpose serrated or otherwise formed. Other embodiments of displaceable guide means associated with a strip path are disclosed and claimed in my copending application S. N. 603,778, generic claims therefor being contained in the present application as well as generic claims for the above described construction wherein the fore portion of a guide element constitutes a stationary severing means against which the strip may be deflected and severed.

Main cutting means of the shear type is desirably provided. Referring to Figs. 1, 2 and 3, the feed and cutting table 20 is slotted as at 32, and the front and rear guides or clip members 22 and 27 are spaced, in vertical alignment with said slot 32, thus affording a passage for down travel across the path of the tape by a movable knife or blade 33 mounted on a depressible actuator or finger plate 34, the latter being supported for vertical movement as by pivoting on a cross shaft 35 mounted in extensions or posts 36 rising from the side frames. The knife 33 and its actuator are normally held up, substantially in the position shown in Fig. 2, as by means of a suitable spring 37 herein attached to the actuator 34. The forward edge of the portion of the table member 20 to the rear of the slot 32 is adapted to cooperate with the movable blade 33 in the manner of a fixed cutting element against which the strip is severed, while the rear edge of the front guide 27 may assist in guiding the movable blade, tending to urge it toward the fixed portion of the shear, insuring a proper severing action. It will be noted by reference to Fig. 3 that the entire movable severing mechanism may be thrown rearwardly into an inoperative position, completely exposing the normally underlying parts and permitting the guides 22 and 27 readily to be removed, giving access directly to the surface across which the strip is delivered.

Referring again to Fig. 2, it will be seen that the cutter actuator 34, when in its normal use position extends forwardly adjacent the path of the strip, with its rear portion adjoining the front end of the open feed channel. Thus the operator's fingers acting to advance the strip through the

feed channel bring up against the actuator at the end of the feed stroke. It accordingly serves as a feed limiting stop, terminating the strip feed at a definite point. The forward portion of the actuator is extended beyond the knife 33 and is deflected somewhat upwardly and forwardly as at 34a. This forward portion of the actuator is thus constructed and arranged to lie in the normal path of and to conform to the heel of the operator's hand at the end of a feed stroke. A natural straight-line and substantially horizontal movement of the operator's hand, with his fingers in direct pressing contact upon the strip during its feeding movement brings his hand into engagement with the knife actuator as his fingers are stopped by the rear portion of the latter. A continued movement of the operator's hand in the same general and substantially horizontal line will then cause the actuator to be cammed down or depressed, thus effecting severance of the strip. Obviously also the strip may be cut at any time by down pressure on the blade actuator. Manual feeding, feed limiting, guiding and severing means of which the means above described is one embodiment, and including in some instances length determining or indicating means of which one example is herein disclosed, as described below, is claimed generically in my copending application S. N. 451,773.

For moistening the strip I may employ any suitable form of moistening means but I have herein shown a moistener of the reservoir and brush type presenting novelty in itself and also cooperating with the previously described mechanism in a peculiar manner. Turning again to Fig. 2, the front portion of the machine housing is adapted to receive a reservoir or tank 41 including an enclosed rear portion 42 and a preferably higher front portion 43. The reservoir is operatively supported between the side frames 1 and upon the front cross member 4, where it is removably held as by a spring member 44 the rear portion of which is bent around or otherwise attached to the cross member 4, as at 45. The forward edge of the spring member 44 is upturned as at 46 to form an abutment or positioning element at the base of the reservoir front wall 43. This retaining member is readily movable to release the reservoir for withdrawal, as by depressing its knob or finger piece 47.

The moistening element proper is illustrated as a wick or brush 40; see particularly Fig. 2. The brush itself may consist merely of a multiplicity of hairs or bristles set into a suitable anchoring composition, as indicated at 48. It is removably held directly in the clip-like lower portion 49 of the inclined bristle supporting plate or support 50, which desirably extends substantially the full length of the bristles, to support and align them approximately to their extreme free ends. Means is provided, preferably integrally, at the upper end of the bristle support 50 for removably holding it in place in the reservoir and in the desired relation to the other portions of the machine. For this purpose it is formed with a transverse depending flange 51 adapted to rest against the inner face of the reservoir front portion 43. At suitable points, herein at its front side portions, the material of the brush support is bent to form a plurality of resilient hook-like clips 52 adapted to engage over the top of the reservoir front wall and to clamp the latter between them and the flange 51. The bottom portions of said clips are desirably slightly outturned as at 53 to facilitate removal

of the brush support from the reservoir. It will be noted that in accordance with the described construction the reservoir, brush and brush support may be removed bodily as a unit, or the brush element may be removed while leaving the reservoir in place, direct access to the brush being obtained merely by removing the front guide 27.

From the foregoing description taken in connection with the drawings, particularly Fig. 2, it will be understood that the strip is adapted to be advanced by the operator's fingers, through the feed channel, across the cutting table 20 and below the guides 22, 27 up to and across the moistening element, for delivery in wetted condition. The forward lip 30 of the front guide 27 constitutes a stationary plate-like element overlying the brush moistener, holding the strip in proper moistening relation with the hairs or bristles as it passes over the latter, between them and said stationary lip.

Additional means may be provided to guide and align the upper portions of the brush bristles and to control the amount of moisture conducted by them to the under face of the strip. As seen in Fig. 2, I employ for this purpose a somewhat resilient plate-like member 54 secured to the front portion of the cutting table 20 and having an upwardly and forwardly projecting front portion 55 adapted to engage the adjacent upper portions of the brush bristles, substantially in the manner shown.

In cooperative relation with the feed channel and with the feed stop or limiting means provided by the rear portion of the knife actuator 34, I desirably employ means whereby various lengths of the strip material to be fed may be accurately predetermined. As illustrated, an index 58 is provided along the feed channel, herein upon one of the side guides 7. This index is graduated in units of strip length, for example, inches, and is figured with respect to the rest position of the leading end of the strip, which, after severance, is just to the rear of the movable blade 33, as it is left upon completion of the feeding moistening and severance of any particular strip length, allowance being made for the constant distance from the cut-off point to the point of forward limit of the feeding action at the rear portion of the cutter actuator, as previously described. In other words, the zero point of the index would be said feed stop point.

In Fig. 1 I have shown the index of the left guide 7 as including the numerals 3 to 13 inclusive. Any desired length of strip corresponding to the indicated units of the index may be obtained by the operator merely by placing his finger upon the strip, to begin the feed stroke, opposite the proper index unit. When his fingers bring up against the rear edge of the knife actuator, to complete the stroke, the designated length of strip will have been fed past the cutter. If greater lengths are desired than may be obtained by a single feed stroke, the feeding may be continued, prior to cutting off the strip, and in this connection I have provided a supplemental index 59, herein upon the right hand side guide 7, graduated in units running serially from the highest unit of the left hand index 58, that is, herein, from 14 to 26 inclusive. Thus any strip length up to a maximum equal to twice that obtainable by a single feed stroke may be had by first making one full stroke and then placing the fingers opposite the index unit of the auxiliary index corresponding to the total length desired. Additional supplemental indices may be provided parallel

with those shown, to care for lengths in excess of that obtainable by the two full feed strokes, the graduations extending serially from the highest of the first auxiliary index 59.

5 In Figs. 6 and 7 I have illustrated a modified form of moistening means cooperating in a novel manner with the related parts of the machine. Parts not otherwise referred to may be assumed to be the same as in the figures previously described. In said figures, the reservoir 41a containing the brush 40 and the other parts previously mentioned is bodily supported for vertical yielding movement, whereby the moistener is yieldingly urged upwardly against the under face 10 of the strip, or, in the absence of the strip, against the under face of the stationary lip 30.

Any suitable spring means may be employed, such as one or more leaf springs 60 secured to the under face of the reservoir, or resting independently on under supporting means, herein including the front cross strip 4 and a supplemental cross member 61 carried by the machine side frames 1. The rear cross strip 61 includes an upturned portion 62 serving as a rear stop for the reservoir and as a guide for its vertical movement. 25 The releasable reservoir retaining clip 44a has its portion 46a of greater vertical extent than in the previous figures, to cooperate with the reservoir in various vertical positions thereof and to serve as a guide for its forward wall.

Adjustable stop means may be provided accurately to determine the vertical position of the reservoir and of the brush, or to adjust the same as the brush becomes worn, or for any other reason, or to control the tension upon the supporting spring means. In Figs. 6 and 7 I have shown one such adjustable stop 63, adapted to engage over the top of the reservoir. This stop is fixed to the inner end of a pin 64 which is 30 vertically movable in a slot 65 in one of the side frames 1. The outer end of said pin is threaded to receive a clamping nut 66. The position of the stop may be adjusted by releasing the clamping nut and moving the stop up or down in the side wall slot to locate the reservoir in the desired vertical position. Similar stops may be provided at both sides of the machine if desired.

It will be understood that the disclosed mechanism, in any of the forms shown, is equally adapted for use with pre-gummed strips or tape, which are rendered adhesive by moistening, or with non-gummed strips or tape which it renders adhesive by application of liquid adhesive thereto, and the terms such as "gummed tape" and "moistening means" as herein employed, both in the description and in the claims, in conformity with usage in the art, refer to either or both such practices, that is, they refer to rendering the strip adhesive, broadly, either by moistening a gummed surface or by applying liquid adhesive to a surface not previously gummed.

Moistening or adhesive-rendering means as herein disclosed is claimed in my copending continuing application S. N. 603,777 and/or divisional applications thereof.

My invention is not limited to the particular embodiments herein shown and described, its scope being pointed out in the appended claims.

I claim:

70 1. In a strip serving device, a support for a strip supply, means to feed the strip along a given path, a blade adapted for downward sever-

ing movement across the strip path, a plate pivoted above the tape path on an axis transverse thereto, said plate carrying said blade and constituting an actuator therefor, and spring means connected to said actuator to hold it and the blade normally above the strip path, said blade, actuator and spring means forming a unit adapted to be thrown back out of normal position, for access to underlying parts.

2. In a strip serving device, a support for a strip supply, means presenting a supporting surface centrally beneath the strip for feeding of the strip along it, strip guide means bridging said feed surface near its delivery end, and a cutter movable across the strip path rearwardly of the fore end of said guide means, said guide means and feed surface constructed to afford a passage for the cutter transversely across the strip path, the forward portion of said guide means including a forwardly directed lip against which the strip may alternatively be deflected for severance.

3. In a strip serving device, a support for a strip supply, means presenting a supporting surface centrally beneath the strip for feeding of the strip along it, guide means bridging said feed surface near its delivery end and forming therewith a covered strip-confining channel, and a lip-like element at the forward portion of said guide means adapted to serve as a stationary severing means against which the strip may be deflected and severed.

4. In a strip serving device, a support for a strip supply, means presenting a supporting surface centrally beneath the strip for feeding of the strip along it, a strip cutter movable across the path of the strip, a removable clip-like strip-confining element spanning the feed surface to the rear of the path of the cutter, and a similar removable clip-like element forwardly of the cutter path, the strip as fed being guided beneath said elements.

5. In a strip serving device, a support for a strip supply, means presenting a supporting surface centrally beneath the strip for feeding of the strip along it, a strip cutter movable across the path of the strip, a removable clip-like strip-confining element spanning the feed surface to the rear of the path of the cutter, a similar removable clip-like element forwardly of the cutter path, the strip as fed being guided beneath said elements, and means providing a stationary severing edge against which the strip may alternatively be deflected for severance.

6. In a strip serving device, a support for a strip supply, means presenting a supporting surface centrally beneath the strip for feeding of the strip along it, and frictionally retained, readily removable clip-like means spanning said feed surface adjacent its forward end and forming therewith a covered strip-guiding and confining channel.

7. In a strip serving device having a frame, strip-roll supporting means on the frame, strip guide means for conducting the strip from a supported roll for delivery, a cutter overlying the strip path, an actuator for depressing the cutter to sever the strip, a pivot pin for the cutter actuator, supports for the pivot pin on the frame, and a strip guide displaceably received on the frame and overlying the path of the strip intermediate said pivot pin and the cutter.

RUSSELL W. PHILLIPS.