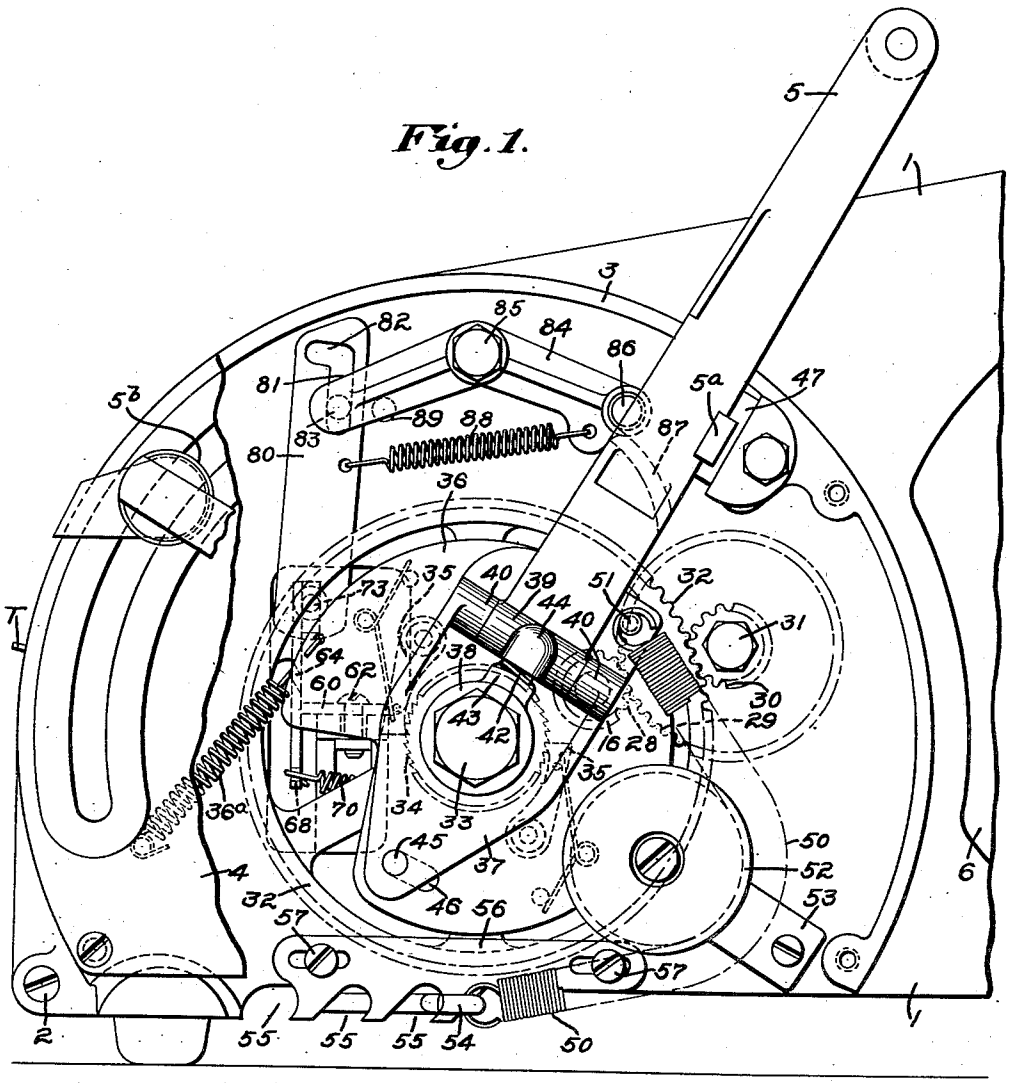
Aug. 18, 1942. T. R. GAUTIER 2,293,433

TAPE SERVING APPARATUS INCLUDING FEEDING MEANS THEREFOR

Original Filed Nov. 29, 1938 4 Sheets-Sheet 1

Fig. 1.



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Original Filed Nov. 29, 1938 4 Sheets-Sheet 2

Fig. 3.

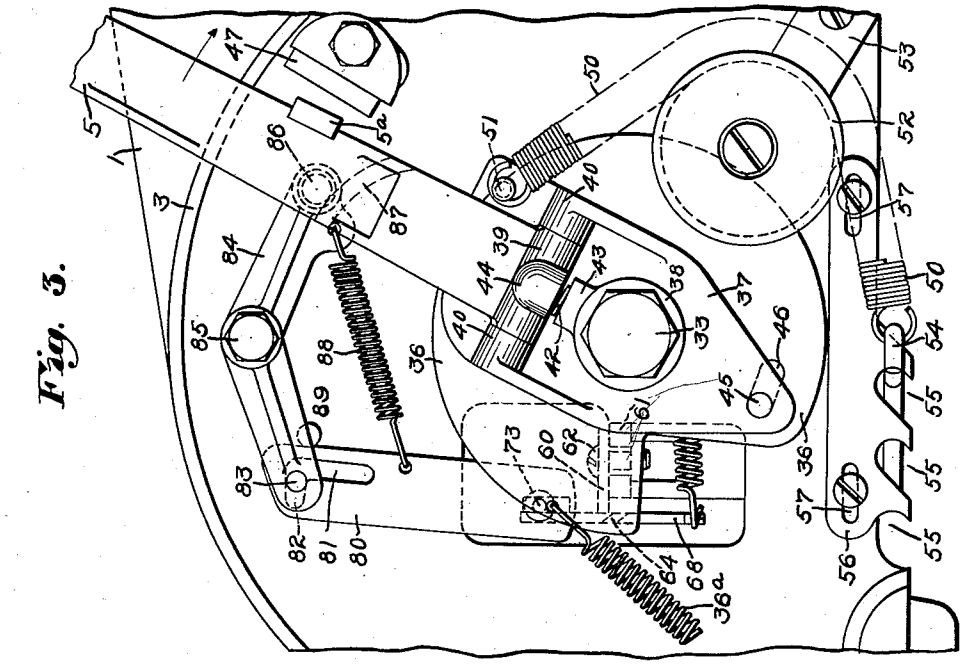
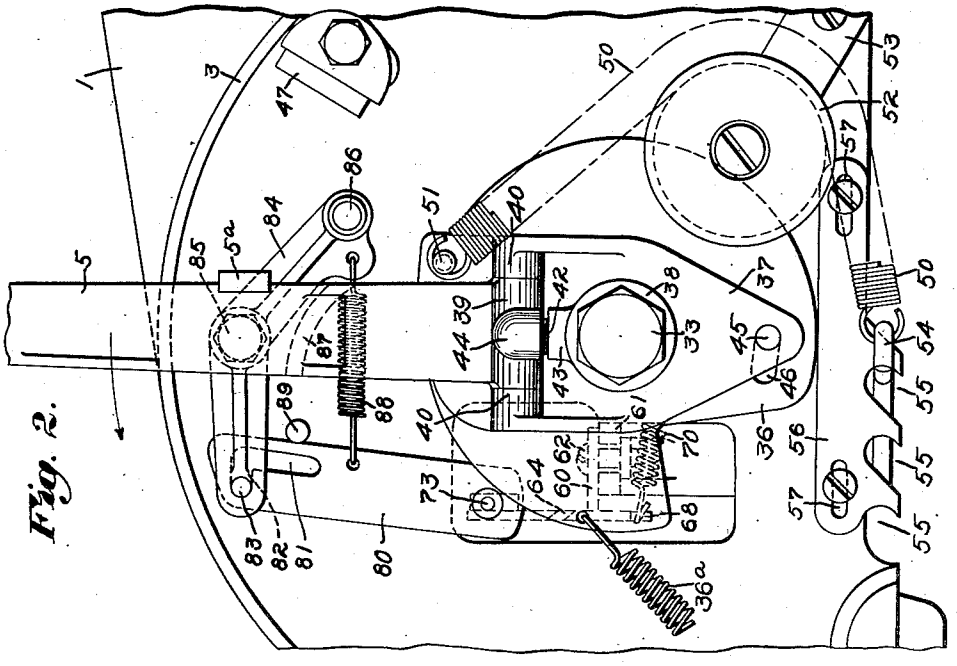


Fig. 2.



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TAPE SERVING APPARATUS INCLUDING FEEDING MEANS THEREFOR

Original Filed Nov. 29, 1938 4 Sheets-Sheet 3

Fig. 4.

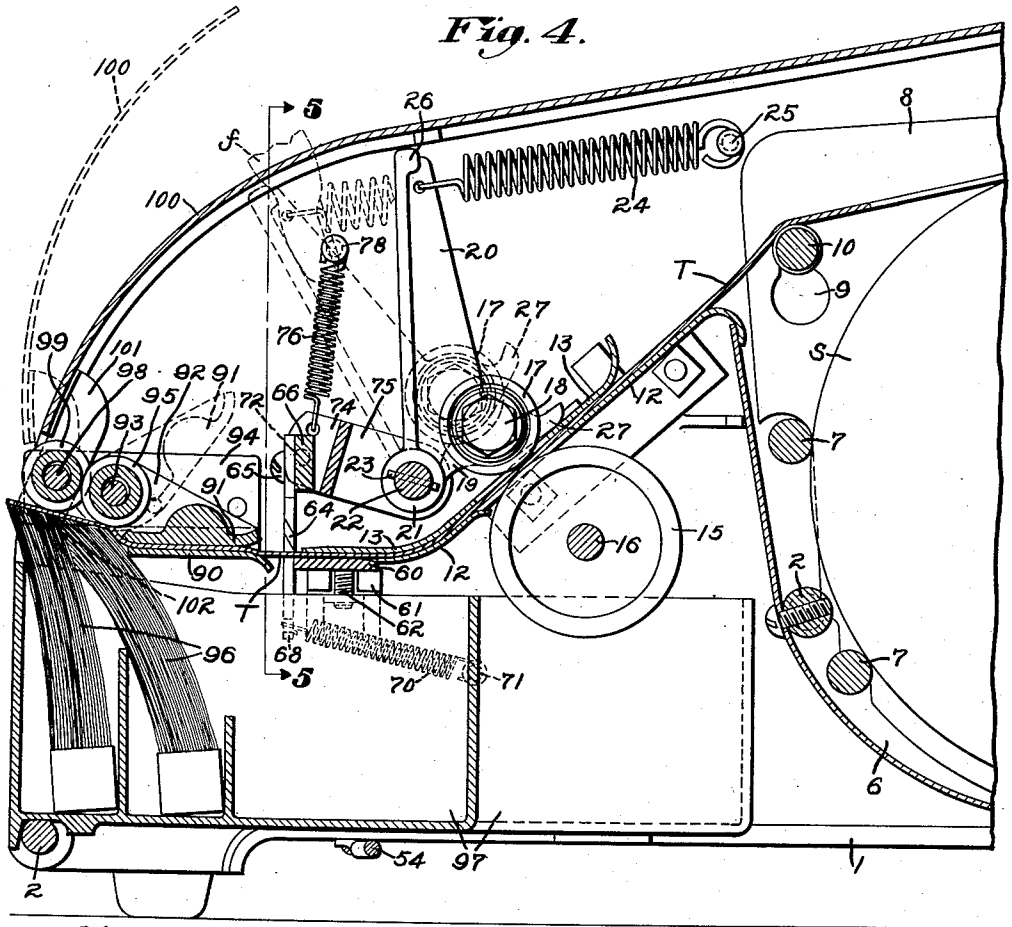
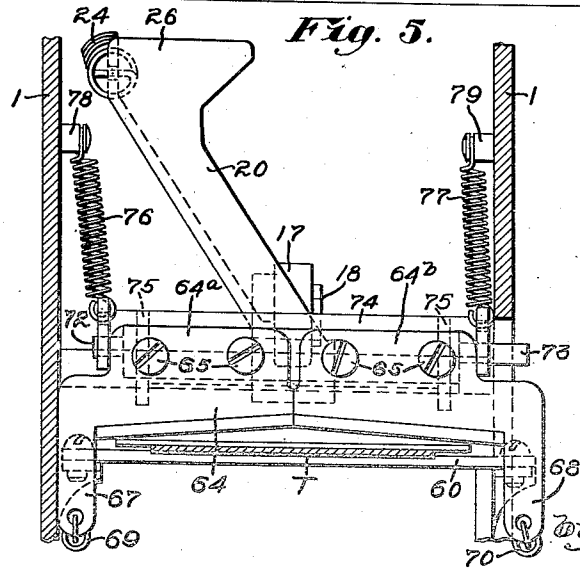


Fig. 5.



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Original Filed Nov. 29, 1938 4 Sheets-Sheet 4

Fig. 6.

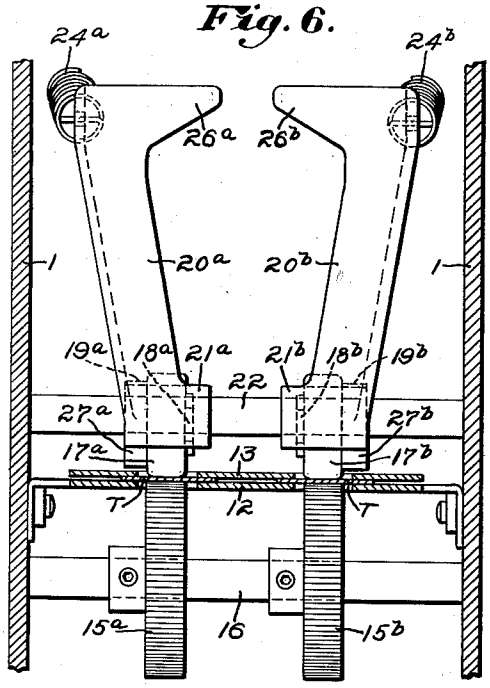
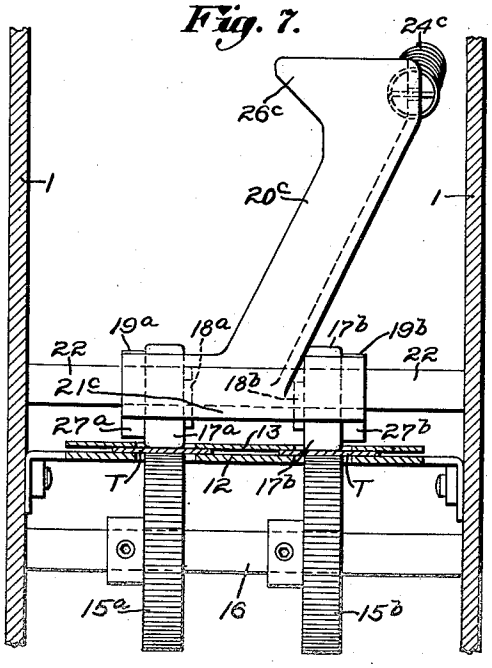


Fig. 7.



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Patented Aug. 18, 1942

2,293,433

UNITED STATES PATENT OFFICE

2,293,433

TAPE SERVING APPARATUS INCLUDING FEEDING MEANS THEREFOR

Trevor R. Gautier, Nashua, N. H., assignor to Nashua Gummed and Coated Paper Company, Nashua, N. H., a corporation of Massachusetts

Original application November 29, 1938, Serial No. 242,936. Divided and this application February 23, 1940, Serial No. 320,301

15 Claims. (Cl. 271—2.4)

This invention relates to machines and apparatus for serving or dispensing strip material, particularly gummed tape, in desired lengths and moistened for application in packaging and other uses for which such material is adapted. One machine of this class is shown in my prior Patent 2,082,733, dated June 1, 1937. While my present invention is applicable to this class of machines in general, in various respects it involves improvement upon the apparatus of said patent. This application is a division of my copending parent application Serial No. 242,936, filed November 29, 1938, which has matured into Patent No. 2,192,132, February 27, 1940.

In the drawings illustrating by way of example one embodiment of the invention,

Fig. 1 is a side elevation of the forward portion of the machine, with the side cover plate broken away to expose certain parts of the feeding and cutting mechanisms;

Figs. 2 and 3 are views corresponding to Fig. 1 illustrating different positions of the operating lever and associated parts during forward and reverse movements respectively, parts of the feed gearing being omitted for clearness;

Fig. 4 is a partial longitudinal vertical section centrally through the machine;

Fig. 5 is a vertical cross section as on the line 5—5 of Fig. 4;

Figs. 6 and 7 are views generally similar to Fig. 5, but taken rearwardly of the movable cutter, showing modifications of the feed roll assembly.

Referring to the drawings in more particular, the machine as a whole comprises a housing including side frames 1 secured in spaced relation as by suitable cross ties, two of which are seen at 2, 2, in Fig. 4. One of the side frames, herein that at the right of an operator facing the machine, is formed with a laterally projecting flange 3, herein of generally circular form, providing a compartment within which the gearing for the feed mechanism, and other operating parts are conveniently housed. This gearing compartment is normally closed by a cover plate 4, see Fig. 1, having an inwardly directed flange complementary to the flange 3 on the machine frame and slotted to provide a path for the operating lever 5 between the cover and side frame, in a generally similar manner as in my prior patent above identified.

As seen in Fig. 4, a roll supply S of the strip material to be dispensed, such as gummed paper tape, is supported in a well 6 at the rear of the housing, by means of a series of transverse rollers, two of which are seen at 7, 7 in Fig. 4. The machine is adapted to handle various different widths of tape, the roll supply S being positioned transversely between laterally adjustable guide plates, a portion of one of which appears at 8 in Fig. 4. Keyhole slots 9 in the plates have reduced portions engageable in selected circumferential grooves in cross rods 10, to hold the plates in selected position similarly as in my prior patent. The rod 10 seen in Fig. 4 is rotatably supported between the side frames, adapting it to serve also as a guide for the tape T coming from the supply.

The tape T is led forwardly from the roll supply past the guide 10 and between an elongated underguide or table 12 and an overlying floating guide or deflector plate 13. The latter may be of a generally similar character as in my patent referred to, said two guides 12 and 13 together providing a throat or feed passage for the tape.

The forward movement of the tape is effected by rotary feed means engageable with its opposite faces. As best seen in Fig. 4, the tape feeding means here includes a lower or inner feed wheel or roll 15 fixed on a shaft 16 rotatably supported between the side frames 1. This lower feed member 15, which is driven by means to be described, is engageable with the under face of the tape, its gummed face, through an appropriate recess in the under guide 12. Opposite said driven feed wheel 15 and in position to engage the top face of the tape through a similar recess in the upper guide or floating plate 13, is a cooperating upper or outer feed wheel or roll indicated as a whole by the numeral 17.

This upper or outer rotary feed element 17 may be of a construction generally similar to that disclosed in my said patent, including an outer annular tire-like member surrounding a stud shaft 18 and having friction-reducing bearing means interposed between it and said shaft. Said stud shaft is carried on a foot or projection 19 at the base of a lever 20 having a bearing collar 21 on a cross shaft 22. Pins 23 hold the lever 20 in position on said shaft accurately to align the upper feed wheel 17 with the lower one.

The upper feed wheel 17 is normally held yieldingly in operative relation with the lower wheel 15, to grip and feed the tape between them, as by a spring 24 having one end attached to the upper end of the lever 20 and its other end secured to the machine framing as at 25. As best seen in Fig. 5, said lever 20 extends upwardly between the side frames to a point where it is readily ac-

cessible for engagement by a finger of the operator, as indicated at *f*, Fig. 4. At its upper end the lever has a finger piece or knob **26** for such engagement.

By thus engaging and depressing the lever the upper feed wheel unit **17** is retracted or lifted away from the under wheel **15** into a position such as represented in dotted lines in Fig. 4. This ready separability of the feed wheels at the will of the operator facilitates threading the tape to and between them when a fresh roll supply is to be installed. Further, this manual retraction of the upper feed unit exposes the underlying parts and permits the floating deflector plate **13** readily to be withdrawn bodily, for inspection or cleaning of the tape guides and associated parts. Release of the finger piece **26** of the lever **20** automatically restores the feed wheels to operative feeding relation. A rearward extension **27** of the foot **19** of the lever **20** acts as a limiting stop for the return of the wheel **17**, by engagement with the upper guide plate **13**, avoiding injury to the surfaces of the feed wheels when no tape is present between them. Said stop **27** also confines the upper guide or deflector plate **13** against undesired vertical displacement.

Referring again to Figs. 1 and 4, the lower feed roll or wheel **15**, fast on its supporting shaft **16**, is driven through a train of gearing, preferably and as herein illustrated of a high ratio, of the order of at least about one to ten as between the operating lever **5** and the feed roll **15**, in a manner broadly similar to that as disclosed in my prior patent already mentioned. This drive mechanism includes a pinion **28** fast on the lower feed roll shaft **16**, which extends outwardly through the righthand frame **1** into the gear compartment. There the pinion **28** meshes with an intermediate gear **29** having fixed on its hub a pinion **30**, both rotatably supported on a stud **31**. The pinion **30** in turn meshes with a large gear **32** on a stud shaft **33** on the side frame.

One-way drive connections, herein of the pawl and ratchet type, are provided between the gear **32** and the shaft **33**, on the one hand, and the operating lever **5** on the other. These connections include a ratchet wheel **34** mounted to rotate with said gear **32** on the shaft **33** and adapted to be driven in the forward or feeding direction through one or more spring-pressed pawls **35** pivoted at the inner face of a pawl-carrier or disc **36** which is loosely positioned on the shaft **33**.

The connections between the operating lever **5** and the shaft **33** further include a plate or connector piece **37** having a bearing collar **38** for loosely supporting it rotatably on the lever shaft **33**. Said piece **37** as illustrated is in effect the base portion of the lever, providing the pivotal mounting for the operating or manual-engaging outer portion of the lever and also being comprised in the connections between the latter and the lever supporting shaft. The lever **5**, or its outer portion to be engaged by the operator, is hinged at its inner end, by means of a bearing sleeve **39** receivable between ears **40, 40** on the piece **37** and there supported for rocking movement in the direction laterally of the machine, that is, at right angles to the main path of the lever, as by a pin held in the ears **40**. A coil spring **42** bears between a seat **43** on the collar **38** of the connector piece **37** and a boss **44** on the lever. This spring tends normally to urge the lever bodily inward about its transverse pivotal axis provided by said pin.

The operating lever **5** carries a laterally projecting feed stop **5***a*, for cooperation with one or more adjustable stop elements, such as the stop **5***b* on the side cover plate **4**, Fig. 1, as more fully illustrated for example in said Patent 2,082,733 and also in my Patents 2,066,617, 2,066,618, and 2,066,619, dated January 5, 1937. As herein shown the lever **5** is afforded an action whereby its stop means may be rendered operative or inoperative, by engagement or avoidance of one or more of the cooperable stops or abutments **5***b*, at the will of the operator, for the purposes of selective feed-length control. Various forms of such feed-length control are disclosed in my said Patent 2,082,733 and claimed in said related patents of January 5, 1937. In the particular example here illustrated the lever itself has capacity for shifting movement, transversely of its main path, by reason of the described movable connections between it and the shaft which supports it, in the general manner as claimed broadly for example in said Patent 2,066,619.

The connector piece **37** is itself operably engaged with the pawl-carrier **36**, through a lost-motion connection comprising a pin **45** on one part, herein the piece **37**, and a slot **46** in the other, herein the pawl-carrier **36**. Hence the latter and the described feed gearing are caused to turn with the operating lever **5** during the greater portion of the forward movement of the lever. During an initial portion of said forward lever movement, however, the described lost-motion connection allows the pawl-carrier **36** and the feed gearing to remain at rest, for purposes to be described. A spring **36***a* connected to said carrier and to a side frame tends to hold the carrier with its slot **46** in the position relative to the pin **45** on the connector piece **37** as seen in Figs. 1 and 3, so that the pin has the length of the slot for free movement before picking up the pawl-carrier at the start of a forward stroke of the operating lever **5** from its rest position of Fig. 1.

The operating lever **5** is automatically returned to its inactive or rest position as shown in Fig. 1, against a back stop **47** on the frame, by an elongated coil spring **50** detachably anchored at one end on a pin **51** outstanding from the connector piece **37** to which the lever is hingedly attached. This spring is bowed intermediate its ends into a generally U-like form, by bending it around a grooved roller **52** rotatably supported on a bracket **53** on the adjacent side frame **1**. Below the roller **52** the spring has its other end removably attached to a hook **54** which is variably positionable lengthwise the machine, said hook being herein pivoted on the frame, in this instance on the side frame remote from the lever, that is, the left side. The hook **54** is adapted to be held selectively in any one of a plurality of downwardly opening notches **55** at the lower part of the frame and formed integrally therein or in a separate element such as the block **56** secured to the right side frame. Said block is shown as adjustable lengthwise the machine as by means of the screw and slot connections with the frame as indicated at **57, 57**.

Thus the degree of tension for the lever return spring **50** as a whole may be regulated quickly and conveniently merely by shifting the spring-attaching hook from one notch **55** to another. By bowing or breaking the spring **50** around the roller **52** in the manner illustrated the spring is in effect afforded a compound or differential action and the speed and force of the return movement of the operating lever **5** is

more nearly equalized over the entire path of travel of the lever. For relatively short strokes of the lever, such for example as a movement from the rest position of Fig. 1 to a position of Fig. 2 the spring tensioning is largely confined to the upper half of the spring, while during longer strokes the spring tensioning is passed along from the upper portion through the remainder of the spring, thus in effect lengthening the spring and decreasing the total tensioning accordingly.

The tape T is advanced by the described feeding means forwardly through the channel provided between the lower and upper guides 12, 13, to and past suitable means for severing the tape into the desired lengths. The severing means herein comprises a fixed blade 60 horizontally disposed crosswise the machine, in substantial continuation of the under-guide 12, and supported on the side frames as by lugs 61 thereon and on which the blade 60 is detachably held as by screws 62. The front portion of this fixed blade 60 presents a cutting edge for cooperation with a movable blade or cutter, indicated as a whole by the numeral 64, of the guillotine type, adapted to be moved across the path of the tape, herein downwardly from above, to shear the tape. The blade proper 64 may be variously shaped at its cutting edge, and may be formed of one or more parts.

As best seen in Fig. 5, the movable cutter 64 is illustrated in this instance as composed of a plurality of separable units 64*a*, 64*b* either and both of which may easily be demounted for sharpening or replacement. The lower cutting edges of said units together form a blade of a shallow inverted V-like formation, giving a progressive cutting action across the tape. Said units are removably secured as by screws 65 to a blade-carrying block 66; see also Fig. 4. At its outer side portions each knife unit 64*a*, 64*b* has depending fingers 67, 68 to which are attached springs 69, 70 adjacent the corresponding side frame and secured thereto as at 71, Fig. 4. These springs bias the movable cutter 64 yieldably toward the fixed element 60, insuring a good shearing action. Said depending fingers 67, 68 of the movable blade also act as vertical guides for the latter, in sliding engagement against the front face of the fixed member 60. The movable element is thus confined and guided for movement in a given plane, herein substantially vertical and perpendicular to the path of the tape.

The movable cutter element 64, including the carrier block 66, is pivotally connected, as by pins 72, 73 at the opposite ends of said block, to a supporting yoke 74 of general U-formation as viewed in plan. This yoke in turn is supported by its rearwardly extending arms 75, 75 which are pivoted for vertical movement on the cross shaft 22 previously described in connection with the upper feed wheel 17. Thus the movable cutter assembly as a whole, including the blade or cutter 64 on the carrier block 66 and the yoke 74 has a horizontal pivotal axis provided by the cross shaft 22 but the cutter proper 64 has substantially a straight vertical movement in parallelism with itself, as permitted by the pivot pins 72, 73 connecting its carrier block to the yoke.

Said movable cutter assembly as a whole is normally held up in raised position clear of the tape path, as shown in Figs. 4 and 5. For this purpose I provide springs 76, 77 at the two sides of the machine, attached to the cutter yoke 74 at their lower ends and having their upper ends held on studs or the like on the adjacent side frames, as at 78, 79.

The cutter device is herein operated automatically upon release of the operating lever 5, and in a positive manner but so as to be released substantially instantaneously. Thus it has a very rapid movement across the tape and return, and only momentarily is ever in a position blocking the tape path. This substantially instantaneous cutting and clearing action of the cutter or knife reduces to a minimum any opportunity for jamming of the tape by its engagement with the cutter, such as heretofore sometimes caused by an unintended tape feeding action produced by rebound of the operating lever or by the momentum of the feed gearing and associated parts, continuing their movement after the feed stroke of the operating lever is complete.

Turning now to the mechanism for so actuating the cutter, and referring particularly to Figs. 1 to 3, the supporting pin 73 at the right end of the blade-carrying block 66 is extended outwardly through the side frame 1, as seen in Fig. 5, and is pivoted at its end in a link or cutter actuator 80. This actuator has at its upper end a cam means, herein an angular slotted formation including an elongated vertical portion 81 and a shorter horizontal portion 82. This slot formation receives a pin 83 projecting laterally at the front end of a rock arm 84 pivoted intermediate its ends on a stud 85 on the adjacent side frame. At the rear end of this rock arm 84 is a cam roll 86 adapted to ride on an arcuate cam 87 at the inner face of the operating lever 5. A spring 88 connected at one end to the rock arm 84, rearwardly of its pivot point 85, and at its other end to the actuator 80, draws the latter yieldably toward the rock arm. Rearward movement of the actuator is limited as by a stop 89 on the adjacent side frame.

In the rearward or rest position of the operating lever 5, against its back stop 47, as represented in Fig. 1, the movable cutter, its actuator 80 and the rock arm 84 have the relative positions substantially as there shown. The cam roll 86 is then resting on the highest portion of the cam 87 on the operating lever, that portion most remote from the axis 33 of said lever. The forward or outer end of the rock arm accordingly is depressed, and the pin 83 thereon stands in the vertical portion 81 of the cam slot formation in the actuator.

When the lever 5 is drawn forward by the operator to obtain a length of moistened tape, said operating lever and its connector piece 37 at first move freely, without actuating the feed gearing, by reason of the lost-motion connection 45, 46 already described. During this initial lever movement, the rear end of the rock arm 84 drops under the action of the spring 88 to the position substantially as shown in Fig. 2, the cam roll 86 riding down and off from the cam 87. The forward end of the rock arm 84 accordingly is elevated, carrying the pin 83 up to the level of the horizontal portion 82 of the slot formation in the actuator. The spring 88 accordingly causes the latter to snap rearwardly, bringing the pin 83 into said horizontal slotted portion 82.

This preparatory or cocking movement of the rock arm 84 and cutter actuator 80 positively

engages these two elements, providing a positive connection between the rock arm 84 and the cutter element 64 itself. Hence when the rear end of the rock arm 84 is subsequently elevated, by re-engagement of the cam roll 86 with the cam 87 during return movement of the operating lever 5, the actuator 80 is positively moved downwardly, forcing the cutter down across the tape path and shearing the tape.

Said depressed, cutting position of the cutter 64, its actuator 80 and the rock arm 84 is illustrated in Fig. 3. In said figure the operating lever has been released after making its forward stroke, has returned sufficiently to actuate the cutter, and the described cutting operation has taken place. The operating lever has not yet fully completed its return movement, as will be seen by noting its position relative to its back stop 47, but the pin 83 at the front end of the rock arm has already moved back along the horizontal cam slot 82, under the action of the lever cam 87, until it is substantially on the point of re-entering the vertical slotted portion 81.

Hence after a very slight further rearward movement of the operating lever, further depressing the front end of the rock arm 84 and carrying the pin 83 off from the shoulder formed by the lower edge of the horizontal cam slot 82, the actuator 80 and the entire movable cutter unit connected to it at 73 are free to rise, under the action of the cutter return springs 76, 77, Fig. 5, previously described. Thus the movable cutter and its operating parts are substantially instantaneously returned to their initial position of Fig. 1, clearing the cutter from the tape path. The entire severing and return movement of the cutter is extremely rapid, being completed during a fractional part of the total lever return movement. The cutter and its actuator 80 are operatively disconnected from the rock arm 84 before the lever has fully returned into engagement with its back stop 47. Thus any possible rebound of the lever can have no effect on the cutter such as might cause it to obstruct the tape path. But by reason of the described preparatory free movement of the operating lever at the beginning of its next forward stroke the cutter actuating parts are again cocked or operatively engaged, in positively connected relation, in readiness for the next cutting action. Further, the lost-motion connection between the operating lever and its connector piece 37 not only provides for said preparatory positive connecting up of the cutter actuator but also insures that possible lever rebound does not actuate the feed mechanism. In addition, the described cutter connections for effecting a positive but rapid cutting and clearing action insure that the knife is open and the tape path clear at the time of any accidental or unintended feeding of the tape. As previously noted, such unintentional feed may occasionally be caused by the overrunning or momentum of the feed gearing, after the forward or feeding stroke of the lever 5 has been completed and the lever has started its return stroke. Such action is more frequent after the machine has been well broken in and is operated at high speed. The cutting action in this instance as in my said parent application, is arranged to take place near the end of the lever return stroke, when such excess feed producing momentum generally will have been dissipated, but nevertheless there may be some such remaining effect at times. The described rapid cut-off and instantaneous clearance of the knife from the tape path practically obviates any jamming effect on the tape at such time. Claims relating to the cutting or severing means are contained in said parent application Serial No. 242,936.

Forwardly beyond the severance point the tape path continues between a bottom guide plate 90 and an overlying deflector or guide plate 91. The latter has lateral bosses or positioning elements 92 at its front portion, see Fig. 4, for pivoting it on a pin 93 held on the side frames in blocks 94. The pin 93 also serves to support rotatably and with capacity for vertical movement, a roller guide means or element 95 composed of one or more longitudinal units or rollers, preferably of the corrugated or circumferentially grooved form as illustrated. Said rotary guide element 95 constitutes tape presser means adapted to rest by gravity on the upper face of the tape, to cause the latter to pass with its under and gummed face in moistening relation with the underlying moistening means.

As shown in Fig. 4, the moistening means is of the capillary or wick type, including one or more inverted brushes 96, 96 upstanding from a liquid reservoir 97 removably positioned between the side frames 1. The described tape guide means including the deflector plate 91 and guiding presser means 95 operatively associated with the moistener means 96 may be similar to that more fully disclosed and claimed in my Patent No. 2,138,474 dated November 29, 1938, resulting from an application copending with my said application Serial No. 242,936 of which this present application is a division.

Certain auxiliary guiding and presser means at the delivery end of the machine and comprised in the moistening mechanism, said means including a forward rotary presser or guide element 99 on a pin 98, disclosed in said parent application, are contained in the subject matter of and claimed in, a separate divisional application of said parent case and need not be more fully described here.

The pin 98 for said forward presser element 99, substantially at the tape delivery point, is further utilized as a pivot support for hinging the forward cover plate 100, Fig. 4. Said cover is adapted to be received on and between the side frames, normally to close in the operating parts at the front portion of the machine. It may extend rearwardly for the full length of the machine or be supplemented by a similar cover part overlying the rear portion of the tape well and pivoted at the back part of the machine frames or housing.

As seen in Fig. 4, the cover plate 100 has fingers 101 at its lower edge pivotally received on said pin 98, allowing the cover to be swung between its closed full-line position of Fig. 4 and an open position as represented in dotted lines in said figure. The underlying parts are thus readily accessible, for adjusting the tape and for cleaning and inspection purposes, including particularly the deflector plate 91 (noting its dotted elevated position in Fig. 4), the finger lever 20 of the upper feed roll 17, the removable top guide plate 13 and the other associated parts. Said cover 100 is not fully opened in its dotted position of Fig. 4 and may be swung forwardly, substantially into a horizontal position, until held by shoulders 102 on the cover-supporting fingers coming into engagement with the inner pin 93 already described and which accordingly may have this additional cover positioning function.

In Figs. 6 and 7 I have shown rotary feed means adapted for dispensing a plurality of tape lengths, from a like number of tape supplies. The views are taken on a line just behind the cutter mechanism, see Fig. 4, down to the tape chute and perpendicularly through the latter, looking toward the rear. Parts not otherwise referred to may be the same as in the previous figures.

Referring now to Fig. 6, the lower and upper guides 12 and 13 provide a feed throat as in the previous example. The driven shaft 16 has fixed on it rotary means, unitary or otherwise, for feeding a plurality of different tapes T, two in this instance. Said rotary means as here shown comprises separate feed wheels or rolls 15a and 15b spaced for engaging the under faces of the tapes T, through corresponding apertures in the lower guide 12. The upper guide 13 is similarly apertured for a like plurality of upper or outer rotary feed elements, wheels, or rolls 17a and 17b in line with the lower wheels 15a and 15b respectively. Said upper feed wheels 17a and 17b individually may be the same as previously described in connection with Figs. 1 to 5, each having a supporting stud 18a, 18b on corresponding feet 19a, 19b at the base of the levers 20a, 20b.

In the example of Fig. 6, the upper feed wheels are adapted to be lifted independently, to move them bodily away from the paths of the tapes, for the purposes described in connection with the earlier figures, referring particularly to Figs. 4 and 5. The levers 20a, 20b accordingly are loosely mounted by means of their bearing collars 21a, 21b for rocking on the cross shaft 22 on the side frames 1, 1, being held in position lengthwise the shaft by any suitable means such as pins or the like. The upper feed wheels 17a, 17b normally are held yieldingly in operative relation with the corresponding lower wheels 15a, 15b as by springs 24a, 24b, similarly as in the earlier single-feed example. Stops 27a, 27b on the lever feed 19a, 19b limit the in-movement of said upper wheels, also as in said earlier example.

The individual release levers 20a, 20b extend up between the side frames for convenient access by the operator, and each has at its upper end a finger piece or knob 26a, 26b for manipulating it to lift the corresponding upper feed wheel 17a or 17b independently. Said levers and their finger pieces may be substantially the same, or arranged as left and right members in a manner as illustrated in Fig. 6.

In the embodiment of Fig. 7, a plurality of lower and upper feed wheels is provided, similarly as in Fig. 6, corresponding reference numerals being used for like parts. In this instance, however, the plurality of upper wheels is arranged to be lifted simultaneously for separation from the under rotary means, by a single manipulating or release lever 20c, acted on by its spring 24c, and having a finger piece 26c. At its lower portion said lever 20c has a single elongated bearing collar 21c whereby it is supported for rocking movement on or with the cross shaft 22. The wheel supporting rearward projections 19a, 19b are both integral with said collar 21c. Thus a manipulation of the common lever 20c, similarly as explained in connection with Fig. 4, serves to lift the plurality of upper wheels 17a and 17b together.

An arrangement with independent control of the plural upper feed wheels, as in Fig. 6 is desirable for certain types of installations, particularly where different weights or other character of tape is to be dispensed by the plural feed units. In other cases a simultaneous control for the upper wheel release is preferred, for example, where the machines are in practically constant use and hence require more frequent replenishment of the tape supplies. Also, both lower feed wheels need not operate at the same time but may be controlled by separate operating levers such for example as those of my Patent No. 2,099,647 dated November 16, 1937. The illustrated examples of Figs. 6 and 7, wherein plural lengths of tape are fed simultaneously are particularly useful for shipping rooms and similar points where the packages or other objects to be taped require several pieces of tape of the same length, as for transverse application to more or less elongated parcels, packages, boxes and the like.

My invention is not limited to the particular embodiments thereof illustrated and described herein, and I set forth its scope in my following claims:

1. In a tape dispensing machine, a frame, a support for a tape supply, feed rolls to advance the tape from the supply, gearing to drive said rolls in one direction, an operating lever for said gearing movably supported on the frame to have forward and return motions, a stop in the path of the lever and a stop on the lever for engagement therewith, said lever including a base portion providing the pivotal support for the lever and an outer or manual portion, means pivotally connecting the two lever portions to afford for the manual portion a shifting movement transversely of the lever path to bring the stop on the lever into or out of line with the stop in the lever path, and spring means bearing between and carried by the two lever portions and normally urging said manual portion into one of its said positions relative to the stops.

2. In a machine for dispensing lengths of gummed tape moistened for application, a frame, a support for a tape supply, feed rolls to advance the tape from the supply, gearing to drive one of said rolls including a gear fixed on the driven roll shaft and an initial or outer gear, a ratchet wheel angularly fixed relative to said initial gear, a pawl-carrier mounted coaxially with the ratchet wheel and carrying one or more pawls engageable with the latter to turn it on movement of the carrier in one direction but permitting movement of the carrier relative to the ratchet wheel in the opposite direction, and an operating lever including a connector piece having lost-motion connection with the pawl carrier to afford an initial non-feeding motion for the lever in the direction in which movement of the pawl carrier turns the ratchet wheel.

3. In a machine for dispensing lengths of gummed tape moistened for application, a frame, a support for a tape supply, feed rolls to advance the tape from the supply, gearing to drive one of said rolls including a gear fixed on the driven roll shaft and an initial or outer gear, an operating lever movably supported on the frame to have a forward and a return motion, one-way drive connections including a ratchet-wheel element and a pawl-carrier element having a pawl engageable with said wheel, said connections operatively interposing the initial gear and the operating lever, and means including a connector piece moving with the operating lever and having lost-motion connection with one of said elements, for operatively associating the lever and

said drive connections so as to permit an initial feedingly non-operative cutter-connective motion for the lever in its direction of forward movement.

4. In a tape dispensing machine, a frame, cover means for closing in the frame at its top, a support thereon for a tape supply, rotary means to feed the tape from the supply, said means including a driven roll engageable with one face of the tape, gearing to drive said roll, a second roll adapted to engage the other face of the tape in opposition to the driven roll to advance the tape between them, and means on the frame and below its cover means for rotatably supporting said second roll with capacity for bodily movement toward and from the tape, said means comprising a lever element having said roll rotatably mounted thereon, a pivotal support on the frame for said lever element, and spring means acting on the lever element normally to present its roll in tape feeding relation to the driven roll, said lever element including a manual operating portion presented conveniently to the operator upon opening of the frame cover means to retract said lever-carried roll at will.

5. In a tape dispensing machine a frame including laterally spaced side members, a support thereon for a plurality of tape supplies, driven rotary means engageable with corresponding faces of the plurality of tapes from the supplies, a wheel for each tape, to engage the other face thereof in opposition to said driven rotary means so as to advance the tapes, a supporting lever for rotatably mounting each wheel with capacity for bodily movement toward and from the corresponding tape, independent pivotal supporting means for said levers, and spring means acting on the levers normally to present their tape-engaging wheels in feeding relation to the driven rotary means, said levers being disposed between the frame sides and each having a manual operating portion presented conveniently to the operator to retract at will the corresponding tape-engaging wheel.

6. In a tape dispensing machine, a frame including laterally spaced side members, a support thereon for a plurality of tape supplies, driven rotary means engageable with corresponding faces of the plurality of tapes from the supplies, a wheel for each tape, to engage the other face thereof in opposition to said driven rotary means so as to advance the tapes, a common supporting lever for rotatably mounting said plurality of tape-engaging wheels with capacity for bodily movement toward and from the corresponding tape, a pivotal support for said lever, and spring means normally urging the tape-engaging wheels into feeding relation to the driven rotary means, said wheel-supporting lever being disposed between the frame sides and having a manual operating portion presented conveniently to the operator to retract at will said plurality of tape-engaging wheels simultaneously.

7. In a tape dispensing machine, a frame including laterally spaced side members, a support thereon for a plurality of tape supplies, driven rotary means engageable with corresponding faces of the plurality of tapes from the supplies, a wheel for each tape, to engage the other face thereof in opposition to said driven rotary means so as to advance the tapes, means rotatably supporting said wheels with capacity for bodily movement from and into tape-feeding relation to the driven rotary means, spring means normally urging the wheels into said relation, and lever means disposed between the frame sides and conveniently accessible to the operator for moving said wheels bodily away from the driven rotary means.

8. In a tape dispenser, a housing including a support for a tape supply, opposed rotary feed means adapted to advance the tape from the supply, a pivoted operating handle for said feed means, said handle having forward and return movements, a coil spring to effect its return movement, said spring having one end connected to a part moving with the handle so as to be tensioned during forward movement of the latter, means on the housing for anchoring the other end of the spring, said means including a plurality of receiving formations respectively at different distances from said first end of the spring, and means at the anchoring end of the spring for engaging it selectively with one or another of said formations correspondingly to regulate the spring tensioning.

9. A tape dispenser according to claim 8 wherein the plurality of receiving formations for variably anchoring one end of the spring are carried by an element which is itself adjustable to increase or decrease the spring tensioning as afforded by the given receiving formation.

10. In a tape dispenser, a housing including a support for a tape supply, opposed rotary feed means adapted to advance the tape from the supply, a pivoted operating handle for said feed means, said handle having forward and return movements, a coil spring to effect its return movement, said spring having one end connected to a part moving with the handle so as to be tensioned during forward movement of the latter, an adjustably positionable element on the housing for anchoring the other end of the spring, means for attaching said last-mentioned spring end to said element, and means for securing said element in different adjusted positions on the housing to vary the spring tensioning accordingly.

11. In a tape dispensing machine, a housing, a support thereon for a tape supply, rotary tape-engaging feed members, an operating handle for said feed members, said handle having a forward and a return movement, one-way drive connections between the handle and one of the feed members, said connections including a ratchet-wheel element and a cooperating spring-pressed pawl element, one of said elements moving with the driven feed member and the other adapted to receive movement from and with the operating handle in the course of forward movement of the latter, and a connector piece having lost-motion connection between said movement-receiving element and the operating handle affording the latter an initial forward movement during which it is inoperative with respect to the tape feed members.

12. In a tape dispensing machine, a frame, a support for a tape supply, rotary feed means to advance the tape from the supply, one-way-drive mechanism for actuating the tape feed means, said mechanism including a transverse shaft on the frame, a lever base portion pivotally supported by said shaft for forward tape-feeding motion and reverse return motion, a connector element providing a lost-motion connection between the one-way-drive mechanism and said lever base portion so as to afford a non-actuating movement for the latter at the initial stage of

its forward motion, a tape-length-determining stop on the frame, a lever handle portion extending from the lever base portion substantially radially of said transverse supporting shaft and cooperable with said stop, and a hinge connection between the lever base and handle portions permitting the handle portion to be moved axially of said shaft and relative to the lever base portion for varying the cooperative relation of the lever handle portion and said stop.

13. A tape dispenser comprising, in combination, a housing including spaced sidewalls providing between them a support for a tape supply roll, tape guide means defining a path for the tape, feed rolls in paired relation at opposite sides of the tape path respectively, an operating lever having a forward and a return movement, drive gearing between the operating lever and one feed roll, an arm rotatably carrying the other roll, a cross-shaft between the housing sidewalls supporting said arm for tilting movement toward and retraction from the tape path adjacent the driven roll, spring means urging said arm into tape feeding relation of its roll with the driven roll, a closure plate on the housing movable to open and to close the same over the feed rolls and drive gearing, and a lever pivotally mounted on said cross-shaft and connected in fixed angular relation to said roll-carrying arm, said lever projecting upwardly toward the closure plate and there presenting a manual portion for ready engagement by the operator in an open plate position thereby to retract the arm-carried feed roll.

14. In a tape dispensing machine, a housing, a support thereon for a tape supply, rotary tape-engaging feed members, a pivotally supported operating handle for said feed members, said handle having a forward and a return movement, one-way drive connections between the handle and one of the feed members, said connections including a ratchet-wheel element and a cooperating spring-pressed pawl element, one of said elements moving with the driven feed member and the other adapted to receive movement from and with the operating handle in the course of forward movement of the latter, connector means providing a lost-motion connection between said movement-receiving element and the operating handle, a coil spring for effecting return movement of the operating handle, means moving with the handle and having one end of said spring attached to it, said spring extending from said attaching means angularly with respect to the handle pivot and having its other end anchored in the housing, and spring guiding means spaced radially from the handle pivot between the latter and an intermediate portion of the spring and engageable laterally with the spring intermediate its ends so as to arch it away from the handle pivot for differential tensioning of the spring as between handle movements of different lengths.

15. In a tape dispensing machine, a frame including laterally spaced side members, a support thereon for a plurality of tape supplies in roll form, feeding mechanism for the plurality of tapes including driven rotary means engageable with corresponding faces of the plurality of tapes from the supplies, a wheel for each tape, to engage the other face thereof in oppositon to said driven rotary means so as to advance the tapes, means for rotatably mounting the tape wheels with capacity for bodily movement toward and from the corresponding tapes, and spring means normally urging said wheels into tape-feeding relation to the driven rotary means, together with channel means including upper and lower guides defining tape paths along which the feeding mechanism is adapted to advance lengths of the respective tapes simultaneously in side by side relation for common delivery and severance.

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