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PLURAL LENGTH TAPE DISPENSING MEANS

Filed May 21, 1936

2 Sheets-Sheet 1

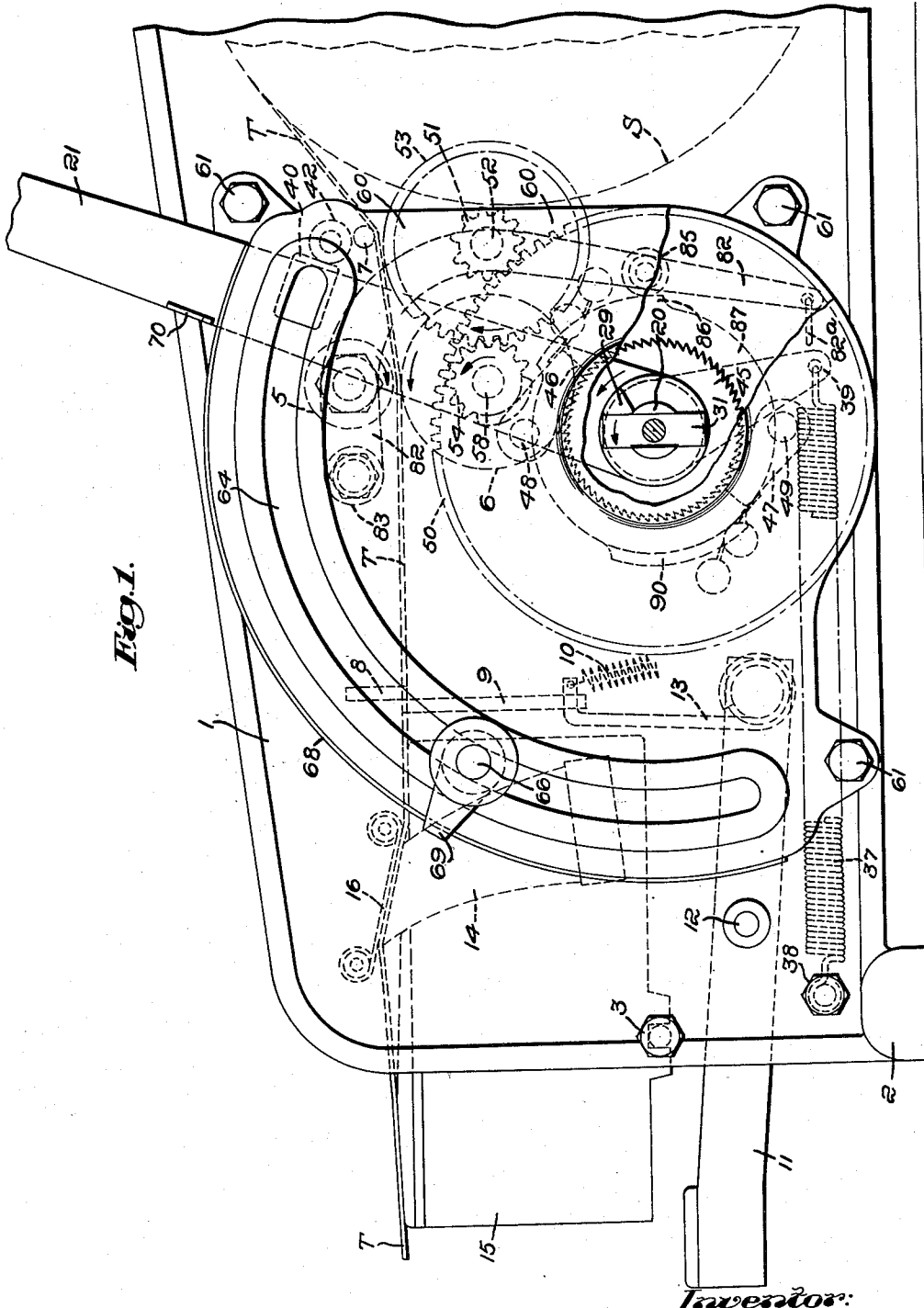


Fig. 1.

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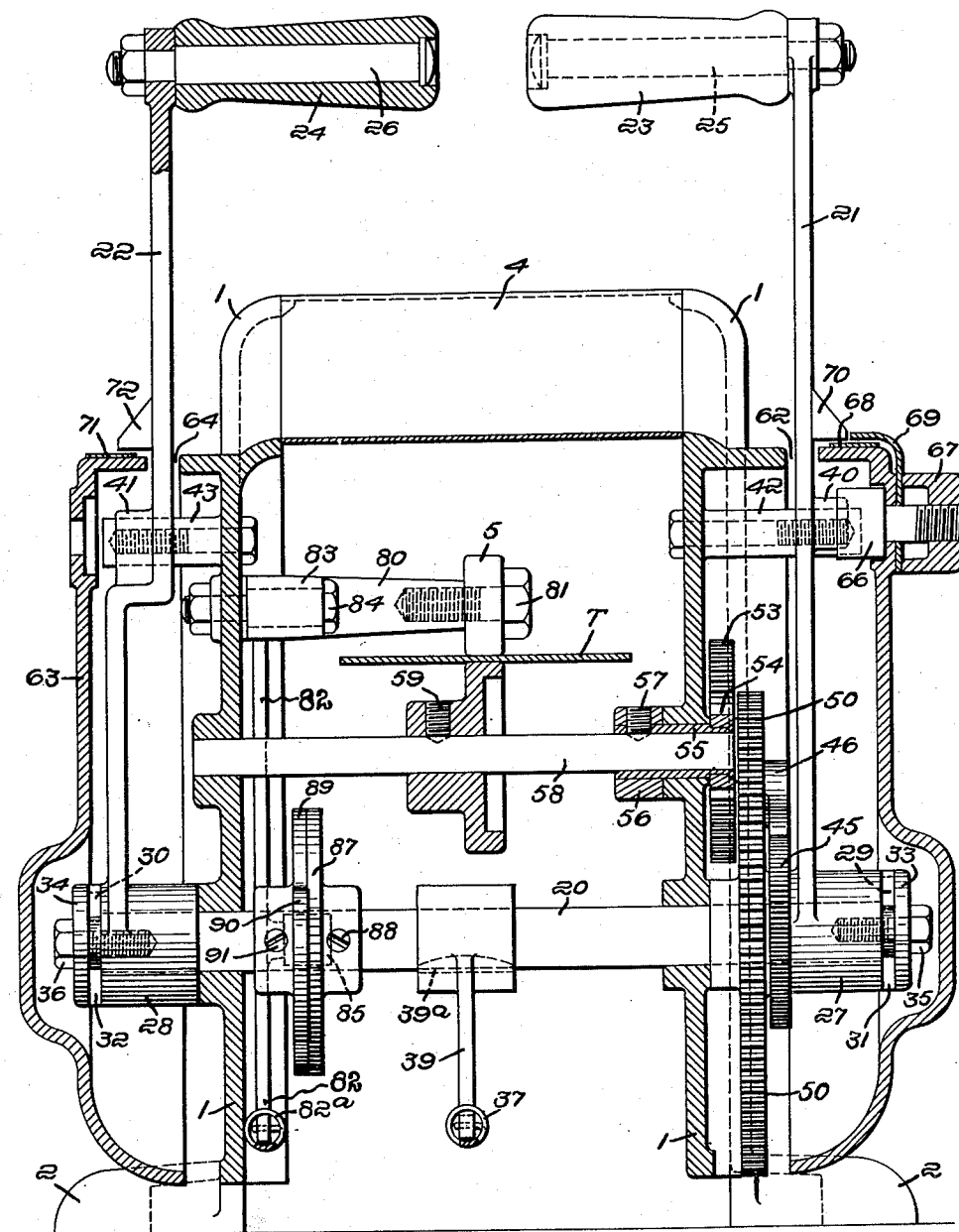
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PLURAL LENGTH TAPE DISPENSING MEANS

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2 Sheets-Sheet 2

Fig. 2.



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PLURAL-LENGTH TAPE DISPENSING
MEANS

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14 Claims. (Cl. 271—2.4)

My present invention relates to means for dispensing strip material such as gummed tape, for packaging and like purposes, and more particularly aims to provide improved mechanism for delivering selectively strips of required different lengths.

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

Fig. 1 is a right side elevation of the forward portion of a machine in accordance with the invention; and

Fig. 2 is a vertical section through the machine of Fig. 1, illustrating the feed means.

The machine of the illustrative embodiment comprises a pair of spaced side frames 1, 1 suitably supported as by the feet 2 and connected as by cross bolts, one of which is seen at 3. A movable top cover is indicated at 4 in Fig. 2.

The tape T is supplied from a tape roll S in a chamber provided between the rear portions of the side frames. It is drawn off from the supply and advanced by a pair of pinch feed rolls, including the upper roll 5 and the lower driven roll 6, the tape being suitably guided to the feed rolls as by a guide roll 7.

Beyond the feed rolls 5, 6, the tape T is advanced past a severing means, herein comprising a fixed upper blade 8 and a movable lower blade 9. The latter is normally held below the path of the tape as by a spring 10 and is arranged to be operated to sever the tape, at the will of the operator, through the medium of a cut-off lever 11 pivoted on the frame as at 12 and operatively connected to the movable blade 9 as by a pivoted link 13.

Beyond or forwardly of the severing means, in the direction of the tape feed, the tape is fed past suitable moistening means illustrated as a brush 14 projecting from a liquid reservoir 15 removably supported between side frames, as upon the cross bolt 3. The tape is guided across the moistener 14, with its under gummed face in moistening relation with it as by an overlying guide 16. Thus the machine is adapted to present to the operator moistened lengths of tape available at the delivery end of the machine, at the left in Fig. 1, in readiness to be severed for use, by depressing the cut-off lever 11.

In connection with wrapping cartons, bundles and other packages, especially where the articles are of a more or less standard size, at least two different tape lengths are frequently required with considerable regularity, these lengths corresponding to the main dimensions of the package. It is also desirable that the operator be

able to repeat either given length any number of times or to shift from one length to the other instantly. Accordingly my present invention provides feed and length control means subject to instant selective actuation to give either of a plurality, two in the illustrated embodiment, of different tape lengths, each of which is predeterminedly adjustable.

Referring again to the drawings, the feed mechanism herein comprises a main shaft 20, see particularly Fig. 2, journaled in the side frames and projecting laterally beyond them. Associated with the shaft 20 is a plural operating means including a right feed lever 21 and a left feed lever 22 each equipped with a hand grip 23 and 24 respectively, located conveniently to the hand of the operator. The grips 23, 24 are rotatably supported as on bolts 25, 26 so that they may be disposed in the facing inner position as illustrated or may be set at the outside of the feed levers, or one inside and the other outside, to suit the particular operator and circumstances of use.

The hubs 27, 28 of the feed levers 21, 22 are loosely received upon the ends of the shaft 20. The levers are operatively associated with the shaft in such manner that forward movement of either of them will turn the shaft in the feeding direction but such movement of one of them is not communicated to the other but leaves the latter at rest. For this purpose the lever hubs are formed with operating lugs 29, 30, see Fig. 1, projecting at their outer ends. These lugs stand behind radially projecting keys 31, 32 set into diametral slots in the respective outer ends of the shaft 20 and held in place as by the washers 33, 34 and bolts 35, 36. A portion of the side cover plate 60, referred to later, has been broken away in Fig. 1 and a section taken through the bolt 35 just inside the washer 33 to expose the feed lever hub 27 and key 31 set in the end slot of the shaft 20.

It will be apparent that through the described means the forward movement of either feed lever 21 or 22 in the direction toward the left in Fig. 1 will cause its operating lug 29 or 30 to abut the corresponding shaft key 31 or 32 and hence to rotate the shaft in a counter-clockwise direction as viewed in that figure, but without moving the other lever. Each lever is automatically returned in the rearward or non-feeding direction, toward the right in Fig. 1, herein by means of a return spring 37 having its forward end anchored as by the stud 38 and connected at its rear end to an arm 39 keyed on the shaft 20 as indicated at 39^a.

Fig. 2. The return movement is communicated from the shaft 20 through the respective key 31 or 32 to the operating lug 29 or 30 of the particular lever which has been advanced at any time, so that the common spring 37 is operative to move either lever rearwardly in the return direction. Laterally projecting stops 40 and 41 on the respective levers 21 and 22 are engageable with back stops 42 and 43 on the side frames, for limiting the return movement of the levers.

Rotation of the main operating shaft 20 in the counter-clockwise direction, through the forward or feeding movement of either operating lever, serves to actuate the lower feed roll 6 so as to advance the tape T between the latter and the upper pinch roll 5, which latter also may be driven if desired but as illustrated is an idler rotated from the lower roll by engagement upon the upper face of the tape. The drive connections between the shaft 20 and the lower roll 6 include a suitable gear train and one-way drive means.

As herein illustrated said connections comprise a toothed ratchet disk 45 fast on the shaft 20 and is adapted to be engaged by one or more pivoted spring-pressed pawls two of which are shown at 46 and 47. These pawls are pivotally mounted as at 48, 49 upon one face, herein the outer face, of a relatively large gear 50. This gear 50 is loosely received on the shaft 20 and meshes with a pinion 51 on the same stud shaft 52 with an intermediate gear 53. The latter in turn meshes with a drive pinion 54 on a bushing 55 secured on the lower feed roll shaft 58 where it is removably held as by the collar 56 and the set screw 57. The shaft 58 and bushing 55 have bearing support upon the right side frame and the other end of the shaft is suitably journaled in the opposite frame. The lower feed roll 6 is adjustably secured on the shaft 58 as by the set screw 59. Thus forward movement of either feed lever 21 or 22 actuates the feed rolls in a tape feeding direction, but the latter remain at rest during the return of either feed lever, by reason of the described one-way or pawl and ratchet drive connection between the shaft 20 and the feed rolls. On the drawings the arrows indicate the direction of movement of the corresponding parts when the tape is being fed.

The described gear train and the lower portion of the operating lever 21 are housed within a cover plate 60 demountably secured to the adjacent side frame 1 as by bolts 61, Fig. 1. The cover plate has the general form of a quadrant, in the illustrated form, its upper and forward edge portion being formed along an arc struck from the center of the shaft 20 and being spaced from the side frame sufficiently to afford an operating slot or channel 62 for the projecting lever 21. A similar but oppositely disposed cover plate 63 and operating slot 64 for the feed lever 22 are provided at the opposite or left side of the machine. Each of the cover plates 60 and 63 is formed with an arcuate slot 64 and 65, concentric with the shaft 20, for the reception of an adjustable stop 66.

In the operation of the machine, either of the levers 21 and 22 may be utilized as a short-length feed member and the other one for longer lengths. In the adjustment of the parts as illustrated in Fig. 1 the stop 66 at the right side of the machine is set back from the front end of the slot 64 approximately one-third of the total available feed stroke for the lever 21. It will be assumed that the corresponding stop, if any

is being used, for the left feed lever 22 is at a lower position and hence that the lever 21 is set for use as the shorter length feed member. In order to have the stop 66 appear in Fig. 2 it is shown positioned farther back along the slot 64 than in Fig. 1, at a point corresponding to a setting for a much shorter length of tape than in Fig. 1.

As best seen in Fig. 2, said stop 66 comprises a bolt-like member of which the head constitutes the stop proper. The outer end of the stop, projecting outwardly through the cover plate 60 is threaded for the reception of a thumb nut 67 whereby the stop may be loosened for shifting along the slot 64 to the point corresponding to the desired length of tape, where it may be secured by retightening the thumb nut. To assist in setting the stop a graduated index 68 may be provided along the upper exposed flange of the cover plate, or upon an adjacent portion of the side frame 1, and the stop is equipped with a pointer 69 movable along the index. This index may also be utilized for visually measuring out any desired length of tape, a cooperating pointer 70 being provided, as upon the feed lever, for use in reading the scale or index 68 to determine the length which has been fed at any point during the forward movement of the feed lever. The corresponding adjustable stop (not seen in the figures), movable in the slot 65 of the left cover plate 63, may likewise be supplied with a setting pointer for cooperation with a corresponding index or scale 71, and the feed lever 22 desirably is likewise provided with a pointer 72 to assist in reading the scale in obtaining visually measured lengths of tape.

It will be seen that the described feed mechanism makes instantly available to the operator either of two different lengths of tape, through the selective use of one or another of the feed levers, one serving as a long-length control member and the other being utilized for the short-length control. Either of the selectively available lengths may be varied and predeterminedly set for any required tape measurement within the limits of a single feed stroke, which stroke may be repeated if desired, fully or partially, as below pointed out, before the tape is cut off. Thus a single full stroke of either lever will deliver accurately a given predetermined tape length, depending upon the positioning of its adjustable front stop or stops. In some instances both levers and the cooperating stops may be set to supply the same lengths, if the machine is to be used by two different operators working from its opposite sides, but the disclosed arrangement is particularly adapted for instantly supplying either of two selective lengths. It will also be understood that either of such lengths may be varied at the will of the operator, merely by stopping the particular lever short of its front stop and using the visual scale and pointer for making any desired measurement, or by repeating the feed stroke any desired number of times, either fully or partially, before the tape is cut off.

The disclosed mechanism has the important advantage that once the settings for the plural feed means have been made, in accordance with the predetermined requirements, the operator may instantly obtain either of two lengths merely by selecting the correct lever and moving it forward until it is positively stopped, without having to give attention, visually or otherwise, to passing some intermediate stop while the feed stroke is being made, or without having to con-

trol the back stroke or starting point of the levers. While I have illustrated the levers and their stroke-length control stops as arranged for varying the forward limits of movement, the normal full return or back position of the levers not being varied and being the same for both levers, it will be apparent that generally similar results, as to immediate selectivity, may be obtained by variably and predeterminedly controlling the return positions of the levers, as by the use of stops similar to the members 66 located behind the levers, either additionally to or alternatively for the illustrated front stops.

In the illustrated embodiment I have shown other means contributing to the delivery of accurate, measured lengths of tape. It sometimes happens, with machines of the general type here concerned, that the feed lever or other operating member will rebound to some extent after its return movement and thus tend to feed out a short amount of tape, beyond that desired. This is further objectionable because it may interfere with the severing operation. Also at the forward limit of a feed stroke, particularly if the latter is stopped abruptly, the feed means may tend to overrun and so advance an additional undesired length. By the means referred to these objections are removed.

Referring to the drawings, the upper feed roll 5 is illustrated as an idler freely rotatable with respect to its supporting arm 80, as upon the bolt 81 on said arm. The two feed rolls are relatively separable, in this instance the upper feed roll being bodily movable toward and away from the lower feed roll 6 and into and out of operative feeding relation with the tape passing between the rolls. For this purpose the arm 80 is formed as a lateral projection from a curved lever 82 having at its upper end a hub 83 rockably supported on a stud 84 on the adjacent and herein the left side frame 1. The curved lever 82 extends downwardly at the rear of the main operating shaft 20. At a point substantially opposite the latter it carries a cam roll 85 adapted to be engaged by the high part 86 of cam member 87 adjustably fixed on the shaft 20 as by the set screw 88, Fig. 2. A similar cam member 89 having a high portion 90 is also adjustably secured to the shaft as by the set screw 91, the two cam members being adjacent and in effect constituting parts of an adjustable cam element, both parts of which are cooperable with the cam roll 85 on the curved lever 82. The cam roll is yieldingly held in operative relation with the cam element as by a spring 82^a.

In the adjustment of the parts as illustrated in Fig. 1, the cam portion 86 is set to engage the cam roll 85 and so to shift the lower end of the curved lever 82 outwardly, shortly before or just as the particular lever 21 or 22 reaches its full return position. The lever is thus moved in a counter-clockwise direction with respect to its pivot 84 and hence bodily carries the upper feed roll 5 upwardly and away from the tape and from the lower feed roll 6. Hence operative feeding engagement of the tape is interrupted and rebound of the lever, which is generally small in extent, if any, will be inoperative to advance the tape objectionably. The other cam member 89, 90 performs a similar function in connection with the forward feed strokes of the levers, the cam being set in adjusted position appropriate to that of the lever feed stop for the lever which is using the longer stroke. In some instances the adjustable cam means such as illustrated may be uti-

lized, either in addition to the lever control stops or independently of them, for predeterminedly varying the lengths of the tape feed by setting the cams or either of them to effect separation of the feed rolls at the desired point either in connection with the feeding stroke of one or the other of the levers, or its return stroke, or both. At such times, if desired, the adjustable lever stops such as the member 66 may be dispensed with, and if selectivity as between two lengths afforded by the respective levers 21 and 22 is desired the shaft 20 may be made in two relatively movable sections, or separate shafts may be employed, each section or shaft having a cam element, and a gear train operable on the common lower feed roll 6.

My invention is not limited to the particular illustrative embodiment herein shown and described, and I set forth its scope in my following claims.

I claim:

1. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, a rock shaft and means to return it to an initial angular position, one-way drive and gearing connections between the shaft and one of the feed rolls, a plurality of independent hand levers having each an operating and a return movement, said levers operatively associated with the shaft to turn it in one direction thereby selectively to feed tape lengths corresponding to the extent of the operating movement of the selected lever, and positive means to limit the lever movements.

2. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, a rock shaft having an operative and a return movement, one-way drive gearing directly connecting the shaft and one of the feed rolls, a plurality of selectively operable feed levers having each a feeding movement and a return movement, abutment connecting means between each lever and the shaft to turn the latter in the operative, feeding direction, spring means for reversely turning the shaft thereby to effect the return movement of each lever, and adjustable stop means individually and variably to limit the feeding movements of the levers.

3. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, a rock shaft on the frame, a pivoted operating lever having a feed movement and an opposite return movement, interengageable abutment members on the shaft and lever for communicating movement from the lever to the shaft in the feeding direction and reversely in the return direction and whereby the shaft may turn in the feed direction independently of the lever, ratchet and drive means connecting the shaft and one of the feed rolls, and spring means to return the shaft and the lever to their initial angular position.

4. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, a rock shaft, a pivoted operating lever having a feed movement and an opposite return movement, interengage-

able abutment members on the shaft and lever for communicating movement from the lever to the shaft in the feeding direction and reversely in the return direction and whereby the shaft may turn in the feed direction independently of the lever, ratchet and drive means connecting the shaft and one of the feed rolls, spring means to return the shaft and the lever to their initial angular position, and other operating means for turning the shaft in the feeding direction independently of said lever and constructed and arranged to remain inoperative during operation of the lever.

5. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, a rock shaft, a single train of one-way drive connections between the shaft and one of the feed rolls, spring means biasing the shaft in the non-feeding or return direction, two independent feed levers pivotally supported adjacent opposite ends of the shaft, and an operating member on each lever and corresponding abutment means on the shaft whereby either lever will serve to rock the shaft in the feeding direction while leaving the other lever at rest and whereby each lever is returned by the reverse turning of the shaft.

6. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, one of said rolls being bodily separable from the other, a rock shaft on the frame, one-way drive connections between the rock shaft and the feed rolls to cause them to feed tape when the shaft is turned in one direction, spring means to return the shaft in the opposite direction, an operating lever pivoted to have a feeding movement from and an opposite return movement to an initial rest position, disengageable connections between the lever and the shaft whereby feeding movement of the lever turns the shaft in the feeding direction and return movement of the shaft returns the lever, means to limit the lever movement in each direction, and cam means operated by the shaft to separate the rolls as the feed lever is returned to its rest position.

7. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, one of said rolls being bodily separable from the other, a rock shaft on the frame, one-way drive connections between the rock shaft and the feed rolls to cause them to feed tape when the shaft is turned in one direction, spring means to return the shaft in the opposite direction, an operating lever pivoted to have a feeding movement from and an opposite return movement to an initial rest position, disengageable connections between the lever and the shaft whereby feeding movement of the lever turns the shaft in the feeding direction and return movement of the shaft returns the lever, means to limit the lever movement in each direction, cam means operated by the shaft to separate the rolls as the feed lever is returned to its rest position, and a second operating lever similarly movable and having similar disengageable connections with the shaft, whereby either lever will remain at rest during operation of the other,

said cam means similarly functioning to separate the rolls on return of the second lever to its rest position.

8. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, one of said rolls being bodily separable from the other, a rock shaft on the frame, one-way drive connections between the rock shaft and the feed rolls to cause them to feed tape when the shaft is turned in one direction, spring means to return the shaft in the opposite direction, an operating lever pivoted to have a feeding movement from and an opposite return movement to an initial rest position, disengageable connections between the lever and the shaft whereby feeding movement of the lever turns the shaft in the feeding direction and return movement of the shaft returns the lever, means to limit the lever movement in each direction, cam means operated by the shaft to separate the rolls as the feed lever is returned to its rest position, a second operating lever similarly movable and having similar disengageable connections with the shaft, whereby either lever will remain at rest during operation of the other, said cam means similarly functioning to separate the rolls on return of the second lever to its rest position, and means relatively to vary the lengths of the feeding movement of said levers.

9. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, one of said rolls being bodily separable from the other, an operating lever for said feed rolls, said lever having feeding and return movements, spring return means for the lever, one-way drive connections between the lever and one of the rolls, limiting means for the lever return movement and with respect to which the lever under the action of its spring return means is susceptible to a rebound in the feeding direction, and cam means associated with the lever and its spring return means and drive connections for movement in one direction during feeding movement of the lever and oppositely during return movement thereof to effect separation of said rolls as the lever is returned and in such manner as to render possible rebound of the lever ineffective to feed tape.

10. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, one of said rolls being bodily movable to and from operative feeding relation to the other roll, one-way drive connections for the rolls, including a gear train and a manual operating lever, said lever having a feeding movement and a return movement, and cam and spring means cooperating with the operating lever in both directions of movement thereof for shifting the movable roll into feeding relation near the beginning of the feed movement of the lever and out of said relation as an accompaniment of the return movement of the lever.

11. In a tape dispensing machine, in combination, a support for a tape supply, a pair of opposed rolls engageable with the opposite faces of the tape to advance it from the supply for moistening and severance, drive mechanism for the rolls including a gear train and a manual

operating lever having a feeding movement and a return movement, a lever return spring, one of said rolls being bodily movable to and from operative feeding relation to the other roll, and cam means operating with the lever during both movements thereof whereby the movable roll is shifted into feeding relation at the start of the feeding movement of a lever and is shifted out of such feeding relation as the operating lever completes its return movement.

12. In a tape dispensing machine, in combination, a support for a tape supply, a pair of opposed rolls engageable with the opposite faces of the tape to advance it from the supply for moistening and severance, drive mechanism for the rolls including a gear train and a manual operating lever having a feeding movement and a return movement, one of said rolls being bodily movable to and from operative feeding relation to the other roll, a movable arm supporting the bodily movable roll for said movement thereof, spring means intermediate said arm and a fixed part and urging the roll into feeding relation, and cam means connected with the lever for movement in one and the opposite direction during the feeding and the return movements of the lever respectively, said cam means acting upon the movable arm so that the movable roll is shifted out of such feeding relation as an accompaniment of completion of movement of the operating lever in either and both directions.

13. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, drive mechanism for the rolls including a manual operating lever having a feeding movement and a return movement,

an arm having a fixed pivot on the frame, said arm rotatably supporting one of the rolls for bodily movement thereof to and from operative feeding relation to the other roll, spring means acting on said arm so as to urge the roll into feeding relation, rotary cam means associated with the operating lever and roll drive mechanism for opposite movement during the respective movements of the lever, and an element carried by said arm and engageable by said cam means positively to shift said movable roll from, and permit its return to, said feeding relation at a predetermined time with respect to the lever movement in one or the opposite direction, said spring means acting to maintain the bodily movable roll under a uniform pressure upon the tape opposite the other roll during the entire period of each feeding relation of the rolls.

14. In a hand-operated machine for dispensing dry-gummed tape, in combination, a frame, a support thereon for a supply of dry-gummed tape, opposed rolls for advancing the tape for moistening and severance, said rolls being separably supported upon the frame, an operating shaft, one-way drive and gear connections between the shaft and one of the feed rolls, a plurality of hand levers each movable in feeding and opposite return directions and operatively associated with the shaft to turn it during lever movement in the feeding direction thereby selectively to feed tape lengths corresponding to the extent of movement of the selected lever, and means associated with said shaft and cooperating with each of the hand levers to effect separation and return of the rolls at predetermined times.

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