

Dec. 18, 1945.

P. S. MADSEN

2,391,062

ADHESIVE TAPE DISPENSING DEVICE

Filed Oct. 9, 1940

3 Sheets-Sheet 1

Fig. 1.

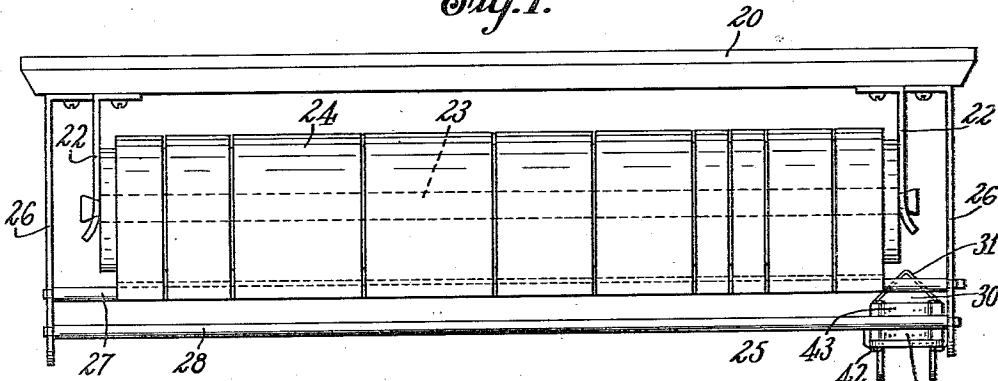


Fig. 2.

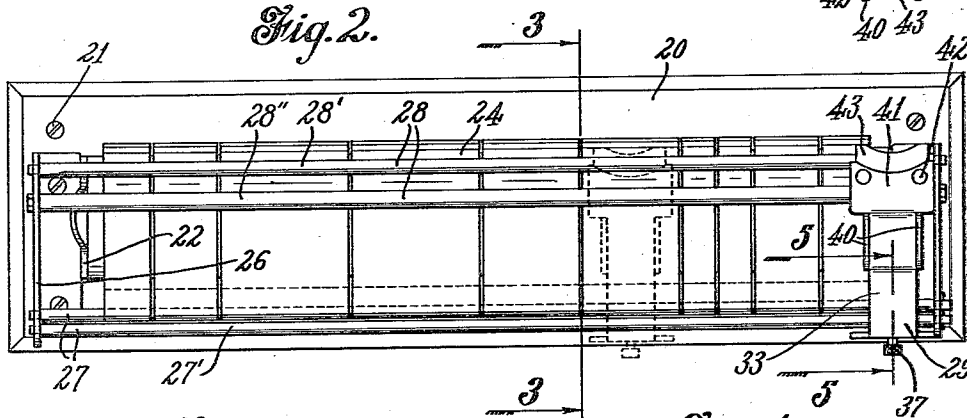


Fig. 3.

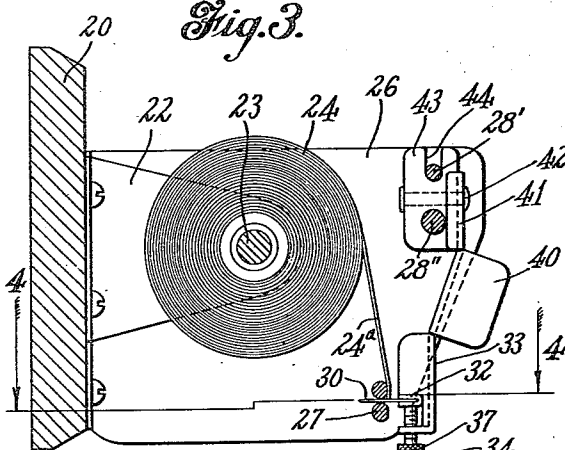
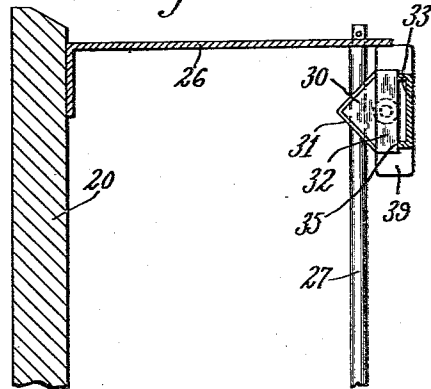


Fig. 4.



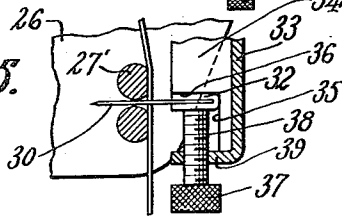
Inventor

Paul S. Madsen

Rockwell Bartholomew

Attorneys

Fig. 5.



Dec. 18, 1945.

P. S. MADSEN

2,391,062

ADHESIVE TAPE DISPENSING DEVICE

Filed Oct. 9, 1940

3 Sheets-Sheet 2

Fig. 6.

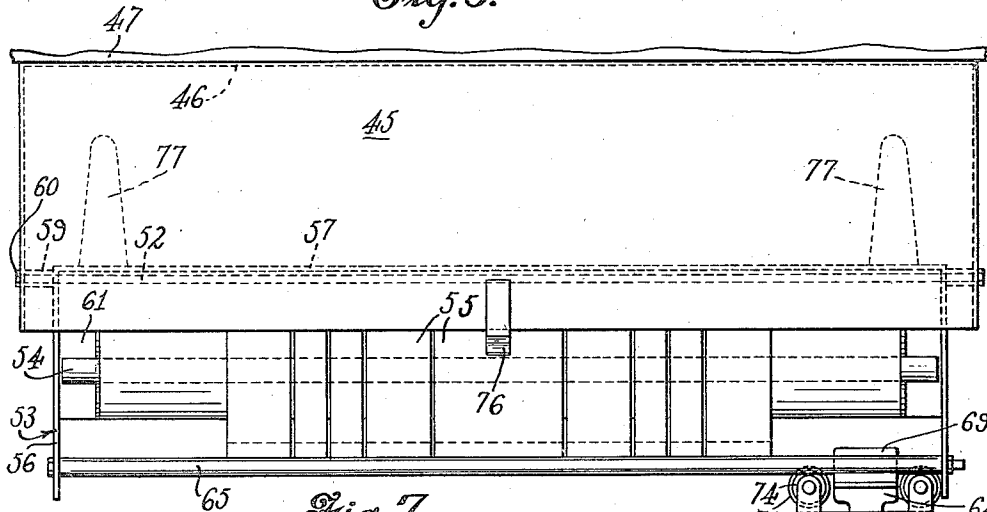


Fig. 7.

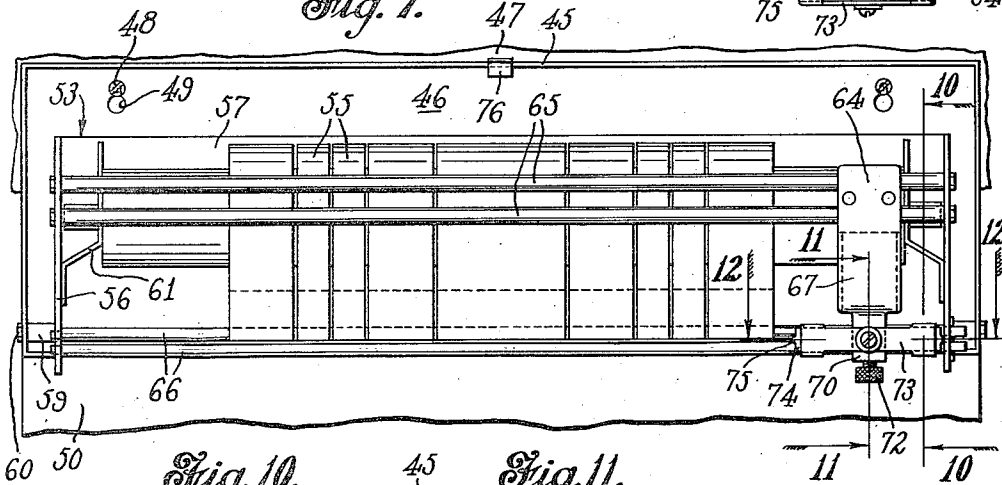


Fig. 10.

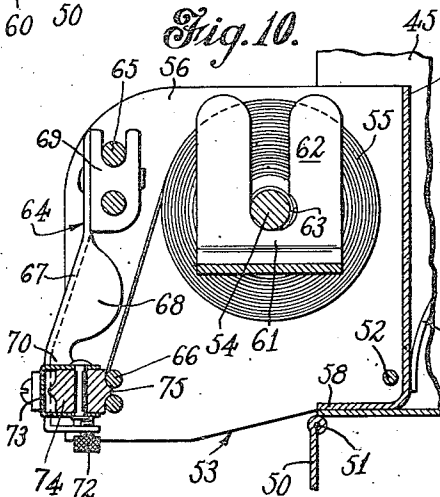


Fig. 11.

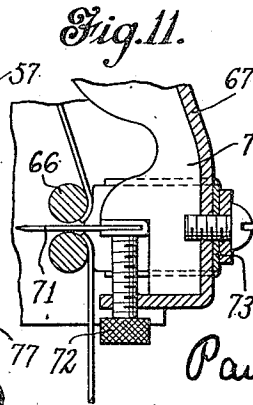
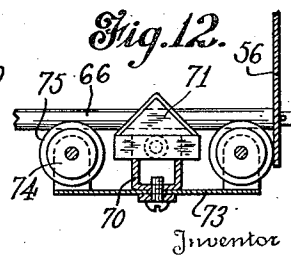


Fig. 12.



Inventor

Paul S. Madsen,

By Rockwell & Bartholomew

Attorneys

Dec. 18, 1945.

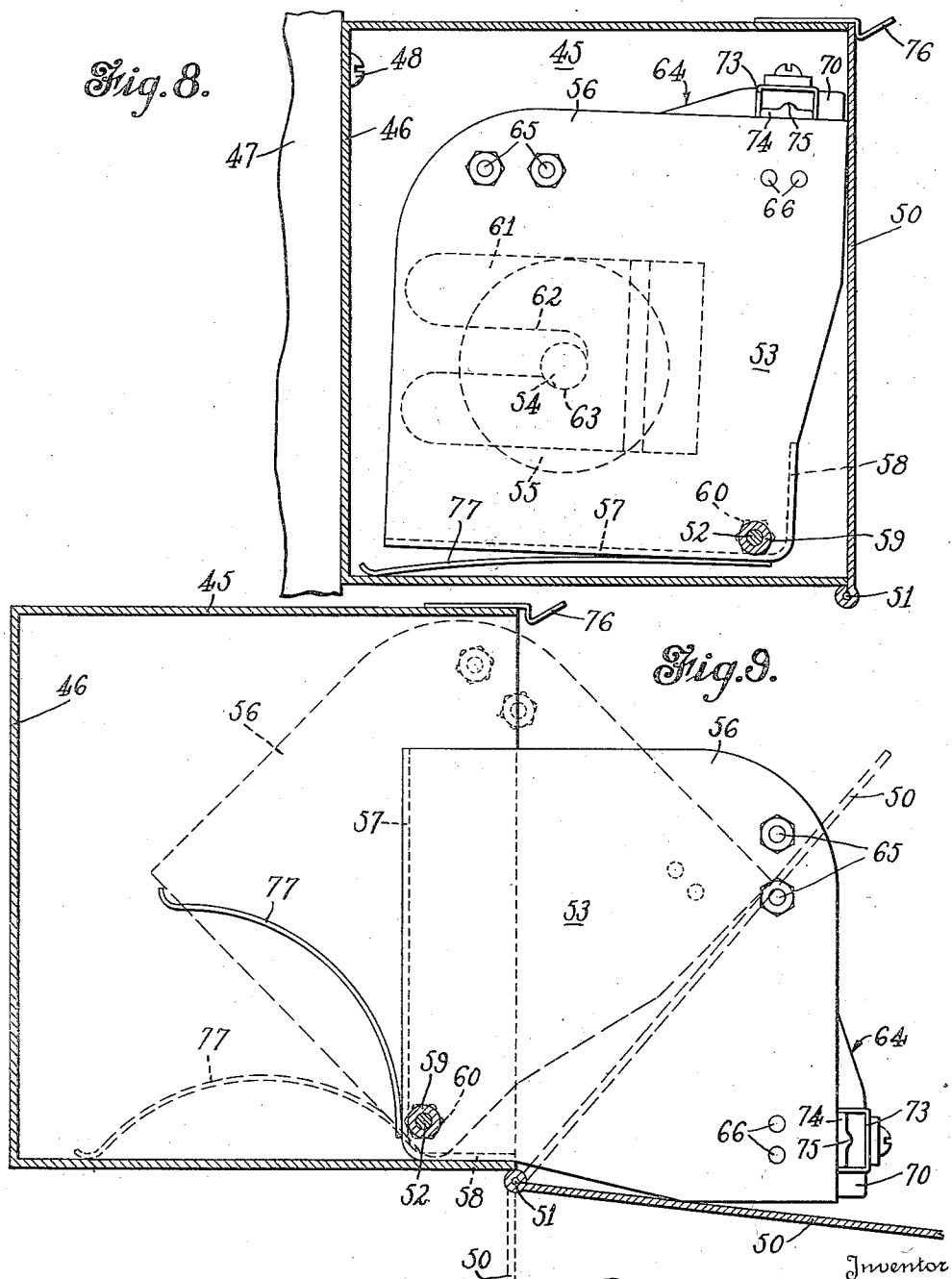
P. S. MADSEN

2,391,062

ADHESIVE TAPE DISPENSING DEVICE

Filed Oct. 9, 1940

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,391,062

ADHESIVE TAPE DISPENSING DEVICE

Paul S. Madsen, Bethany, Conn., assignor to The
Seamless Rubber Company, New Haven, Conn.,
a corporation of Connecticut

Application October 9, 1940, Serial No. 360,397

7 Claims. (Cl. 242—55.5)

In hospitals and in the offices of physicians it has been customary to provide a bracketed roller, like that of a roller towel, acting as a support for rolls or spools of the well-known adhesive tape or surgical plaster. These rolls have been of assorted widths so as to permit a certain amount of choice in that respect. So mounted on a conveniently located wall or other support, the tape was intended to be accessible, so that when it was desired to use a piece of the required width and of the desired length the appropriate roll was unrolled or unwound to the desired length and the piece cut off by means of scissors or shears.

It has also been proposed to cut adhesive tape so mounted by bringing the free end portion of the roll downward against a stationary knife that was supposed to sever the tape at the required point.

My invention relates to devices or appliances of this general nature, and one of the objects is to improve such devices in structure and in effectiveness and convenience of operation.

More particularly it is aimed to provide a device of this character in which the operation of cutting off the tape to the required length can be performed with greater facility and convenience.

A marked advantage of my improved device arises from the fact that the operation of cutting off the tape to the required length can be performed by the physician or nurse by using one hand, thus leaving the other hand free for other work.

Another object is to provide a novel and useful means for holding the tape while being cut, and a novel and useful means for cutting it while so held.

Another object is to provide a device capable of convenient operation, in which the rolls of tape, when the device is not in use, are fully enclosed and protected from dust and dirt.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a top plan view of a tape dispensing device embodying my invention;

Fig. 2 is a front view thereof;

Fig. 3 is an enlarged section on line 3—3 of Fig. 2;

Fig. 4 is a section on line 4—4 of Fig. 3;

Fig. 5 is a section on line 5—5 of Fig. 2, although in this case a small portion of tape is shown depending from the lower guide;

Fig. 6 is a top plan view of a modified form of the device, this being of the enclosed type;

Fig. 7 is a front view of the device shown in Fig. 6;

Fig. 8 is an enlarged sectional view showing the casing closed;

Fig. 9 is a view similar to Fig. 8 showing the casing in the open position; and

Figs. 10, 11 and 12 are sections on lines 10—10, 11—11 and 12—12 of Fig. 7.

In the form of the device shown in Figs. 1 to 5, inclusive, the rolls of adhesive tape, of assorted widths, are mounted on a bracketed roller or shaft such as commonly used for mounting a roller towel. At the front of this device or fixture is mounted a novel dispensing and cutting mechanism comprising at the lower part a guide or trackway in front of which are pendant the free ends of the tape rolls, and to which a portion of the tape is adapted to be adhesively fastened in position for cutting. This guideway, comprising two rods or members, separated at a slight interval, has a sliding knife projecting between the members or rods adapted to be moved from one side of the device to the other for the purpose of cutting the tape. The knife is also guided by an upper guideway and provided with a convenient manipulating handle, as hereinafter described.

In this form of the device, 20 indicates a foundation board adapted to be secured to a conveniently located wall, as by means of screws 21, and 22 indicates brackets on this foundation board providing bearings for a rotary shaft or roller 23. On this shaft or roller are rotatably mounted rolls 24 of the usual adhesive tape or surgical plaster, these rolls usually being of assorted widths, as shown, and being mounted on the shaft side by side. These rolls can be mounted on the shaft on individual spools if that is desired, but the arrangement shown is simpler.

At the front of the device, as indicated at 25, is a longitudinally directed guide structure which may be conveniently mounted by means of brackets 26 extending outward from the foundation board or support 20. This guide structure 25 includes a lower guideway 27 and an upper guideway 28, each of these guideways being preferably constituted by a pair of round rods the ends of which are engaged and held in openings in the brackets 26. Guided on the guide structure 25 is a knife or cutter member, generally indicated at 29, and comprising a reciprocable member extending from the upper guide 28 downwardly over the lower guide 27, and provided with a cut-

ter or knife 30 adapted to operate in the space between the members of the lower guide.

It will be observed that the guide 27 is constituted by rods 27' located one above the other in close juxtaposition. The knife 30 extends between these rods in the manner shown in Figs. 4 and 5. This knife 30 has a cutting edge 31 of V shape, so that it is adapted to cut the tape when traversed in either direction.

Except that it is provided with a V-shaped cutting edge, the knife 30 is similar to a single edge safety razor blade, the blade being provided at the rear or butt end with a reinforcement 32. The knife carrier 33 is constituted by a sheet metal member arranged vertically in the space between the upper and lower guides and provided at its lower portion with inturned side edge portions 34 that are cut away at 35 to provide shoulders 36 against which the knife blade is positioned in the manner shown in Fig. 5, said blade being held in place by a set screw 37, whose shank 38 bears against the knife at the lower part of the latter to press it upward against the shoulders 36. The set screw 37 has its shank threaded through an inwardly turned lug 39 at the lower end of the knife carrier.

At a point about midway between the lower and upper guides the knife carrier is provided at the sides with means such as integral outwardly bent lugs 40 which act in conjunction to provide a convenient fingerpiece for grasping and manipulating the knife carrier. Above the lugs 40 the carrier plate has a portion 41 to the rear of which is suitably fastened as by rivets 42 a guide member or body 43 engaging and operating along the upper guideway 28. In order to make the structure more noiseless in operation and obviate the need of using a lubricant, the guide member or body 43 may be conveniently formed of a suitable fibrous substance, at least in those parts which engage the metal guide rods 28' and 28'' forming the upper guideway. I prefer to provide the fiber body or block with a groove 44 at its upper part, said groove being open to the upper part of the block and accommodating the upper guide rod 28'. The lower guide rod 28'' of this guideway passes through a bore in the lower portion of the fiber block.

It will be understood that the upper guideway provides the main support for the reciprocable knife carrier, but that as the knife projects between the members of the lower guide-way, the latter guideway has some supporting and guiding effect.

It will be noted that the lower guideway 27 is in such a location that it lies behind the pendant free end portions of the tape rolls. This is shown particularly in Fig. 3, where the pendant free end portion of a roll is shown at 24^a. This view also shows the lower extremity of the tape as being adhesively secured to the upper rod of the knife guide, at the front of this rod. In this particular case the fronts of the upper and lower rods 27' are flattened, as shown in Fig. 5, so that the tape can be adhesively secured to them very conveniently.

The improved device can be used very conveniently for cutting off a piece of tape of the required width and length. The end of a given roll of tape can be readily pulled downward to the required extent and the tape then brought against the lower guideway in position for cutting at the desired point, the tape being adhesively secured to the front of the guideway. This requires the use of only one of the operator's hands. The

same hand can then be used to grasp the knife carrier by the lugs 40 and reciprocate the carrier so that the knife, moving in the space between the lower guide members encounters the tape stretched between and adhesively secured to said guide members, and cuts the same with a shearing cut due to the inclination of the cutting edge of the knife.

In Fig. 2 of the drawings I have shown the device in a condition in which the lower ends of the tapes are adhesively secured to the upper member only of the lower guide, it being assumed that the knife has been used to cut pieces from all of the tapes. The device is in condition for instant use. The roll from which it is desired to obtain tape has its end portion grasped by the hand and drawn downwardly to the required extent, after which the tape is conveniently moved rearwardly or laterally to a slight extent so as to adhesively secure it by its tacky adhesive material at the required point to and across the knife guide. The operator's hand is then shifted to the knife carrier, which will be conveniently available either at the right side of the tape or at the left side, and the knife can then be moved in the required direction for severing the tape along a line which is coincident with the middle of the guideway. The severed piece is then grasped and pulled off from the lower member of the guideway.

In this form, the brackets 22 are made of spring material, and they can be sprung out of position to permit taking out of the rotary shaft so that when the rolls of tape are used up new ones can be placed in position. When the knife becomes worn a new knife can be readily substituted. The knife acts very effectively in cutting the fabric owing to the fact that the latter, in straightened or somewhat stretched condition, is held in place across the narrow intervening space by the side members of the guide, to the front faces of which side members the tape is adhesively secured by the adhesive material carried by the tape at its rear or under side.

In the modified form shown in Figs. 6 to 13, inclusive, the structure for mounting the rolls of tape and providing for the severing and dispensing of the tape is similar to that previously described, but in this case a casing or cabinet is provided in which the rolls of tape are enclosed, and by which they are protected from dirt and dust when the device is not in use. In this particular case also I have illustrated a form in which the mounting for the rolls of tape is movable outwardly of and back into a box-like casing adapted for mounting on a suitable supporting wall, and provided with a cover, which when opened permits the dispensing device to be moved outward to a convenient operative position, and which when closed, after the dispensing device has been moved back into the casing, causes the rolls of tape to be fully covered and protected.

In this form, the casing is shown at 45, and this is preferably an elongated casing of approximately square cross section constructed of suitable material such as sheet metal and having a rear wall 46 adapted to be secured to a suitable supporting wall 47 by means such as screws 48 engaging keyhole slots 49. The front wall 50 of the casing is pivoted at the lower boundary, as indicated at 51, to provide a swinging cover for the casing. This cover can be swung outwardly and downwardly until it reaches the pendant position shown in dotted lines in Fig. 9.

Within the casing 45, at its lower front portion,

is means such as a hinge rod 52 providing a hinge mounting for a swinging support 53 carrying the roller or shaft 54 and its rolls 55 of adhesive tape. The support 53 can be conveniently formed of sheet metal having end walls 56 connected integrally to a longitudinal wall 57. In the position shown in Fig. 8 this longitudinal wall 57 is at the lower part of the support. It is, however, provided with an integral continuation or lip 58 arranged at right angles to its main portion, and having the function hereinafter explained. The hinge rod 52 above mentioned passes through the end members 56 of the support in the angle between the parts 57 and 58, and means such as spacing sleeves 59 are arranged in the spaces between the end walls of the casing and the end walls of the support, and the hinge rod 52 is held in place by means such as nuts 60 at the ends.

The end walls of the support 53 are provided with resilient forked brackets 61 for the supporting roller or shaft 54, the forked portions 62 of the brackets being substantially horizontal in the position of Fig. 8, and being provided with notches 63 which engage roller 54 in such a manner that the latter will not be displaced.

In this form the sliding knife carrier is shown at 64, and in general it is similar to the knife carrier previously described, and extends between upper and lower guideways, similar to those previously described. The upper guideway is constituted by a pair of rods 65, the ends of which are secured in the end members 56. The lower guide is constituted by rods 66 arranged close together, as before. These rods also have their ends fastened in the end members 56. The knife carrier has a front sheet metal member 67, which in this case is provided with inwardly bent side walls 68 by means of which the member can be readily grasped for manipulation. Back of the plate 67, at the upper part thereof, is a fiber block 69 guided on rods 65 in the manner previously described. At its lower part the plate 67 is of narrow U-shaped form, as shown at 70 in Fig. 12, and the knife 71 is held in place by a set screw 72 in a manner similar to that previously described, the knife, as before, having angularly arranged cutting edges.

In this form of the device I employ means operating in advance of the moving knife for pressing that portion of the tape which is to be cut into contact with the knife guide, so that, if the step of pressing that portion of the tape into adhesive contact with the guide, by manual operation, has been omitted, the pressing action will, nevertheless, be effected. This pressing means, moreover, preferably operates to force the web into the guide to an extent, and to form a valley in the web or a crease-like formation into which the knife will follow for severing the web. This pressing means, moreover, is also preferably of a resilient character, having a roller or the like pressed by a spring firmly into engagement with the web material held by the guide. In the form shown I employ for this purpose a resilient metal strip 73 extending laterally in both directions, that is, right and left, from the part 70, and carrying at the respective ends presser rollers 74. Each of these rollers is provided with a peripheral rib 75 entering the space between the rods of the guide. The action of the spring mounting 73 is to hold the rollers 74 firmly but yieldingly against the guide in the position shown in Fig. 10.

It will be understood, therefore, that in the operation of cutting a piece of tape of a desired length it is merely necessary to unwind the roll

to the required degree and pull down the tape until the place at which severance is to occur is in front of the knife guide. Then as the knife is moved laterally to the place where the tape is located (either from the right or left, as the case may be) one of the rollers will move along the guide and will engage a portion of the tape and roll it into the guide ahead of the advancing knife, which will cause a creasing of the tape so that the knife will operate in the crease or fold. The action of such a pressing and creasing device in advance of the knife or cutter insures the operation of the knife under optimum conditions, and renders the device more efficient. It is obvious that such a device can if desired be used in connection with the appliance first described.

It will be noted that in the form now under discussion the cover or lid 50 is held in the closed position by means such as a spring catch 76. The mounting for the series of tape rolls has attached thereto means such as leaf springs 77, which in the closed position of the device shown in Fig. 8 urge the roll mounting toward an outwardly projecting position relatively to the casing. For this purpose each of the springs 77 has one end attached to the wall 57 of the mounting, while the other end is arranged to press against the bottom of the casing, the pressure, however, being insufficient to release the catch or holding device 76 for the cover. Upon releasing the catch 76, the springs swing the roll mounting on its pivot in a forward direction so that it can be readily moved to the operative position shown in Fig. 9 as the cover of the device is opened. Fig. 9 shows the position of the cover as the roll mounting reaches the fully operative position in which the lip or wall member 58 comes into engagement with the floor of the casing, acting as a stop. The cover is then permitted to continue its swinging movement until it reaches the depending position shown in dotted lines in Fig. 9, in which position it is out of the way. In the operative position the frame supporting the knife is substantially vertically disposed in front of the shaft or roller on which the tape rolls are mounted. The operation of cutting off the tape from any one of the rolls can, therefore, take place in the manner previously described.

After the tape cutting operation has been completed, the device can be readily restored to the closed position shown in Fig. 8. In doing this, the cover 50 is first swung up to engage the roll mounting or support. Thereafter, by swinging the cover, the roll support can be swung back to the stored-away position, being pushed ahead of the cover. The springs 77 are re-energized by being somewhat confined and straightened between the roll support and the floor of the casing. The normal curve of these springs is shown in full lines in Fig. 9. The catch 76, acting on the cover 50, restrains the outward movement of the roll support and thereby maintains the springs in the energized position. Upon release of the catch, the unit comprising the tape roll support and the tape severing device is projected by the springs toward the outward operative position.

By my invention the cutting of adhesive tapes to the required length can be performed much more easily and conveniently than heretofore. In using the device there is also a considerable saving of time. Yet the structure is such that the device can be manufactured at relatively low cost.

While I have shown two forms of the tape cut-

ting and dispensing device, it is to be understood that the invention can take various forms and that various modifications and changes in the organization of parts and in the details can be made without departing from the principles of the invention or the scope of the claims.

What I claim is:

1. In a dispensing device for adhesive tape in roll form, a mounting on which the roll is rotatably supported, means providing points of securement spaced lengthwise of the tape to which the tape is adapted to be secured by its adhesive material while being cut, and means guided by said first means for creasing the tape between the points of securement preliminary to cutting.

2. In a dispensing device for adhesive tape in roll form, a mounting for the roll, a guideway arranged transversely to the roll providing spaced points of securement to which the tape is secured by its adhesive material while being cut, and means guided by said guideway for pressing the tape into a valley in the guideway.

3. A dispensing device for adhesive tape in roll form, comprising a mounting for a roll, a guide arranged transversely to the tape issuing from the roll presenting spaced points in close proximity to each other lengthwise of the tape at which the tape is secured by its adhesive material while being cut, a knife mounted to cut the tape between the points of securement, and a member constituted by a roller connected to and operating in advance of the knife to press the tape material into the space between the side members of the guide.

4. A dispensing device for adhesive tape in roll form, comprising a mounting for a roll, a guide arranged transversely to the tape issuing from the roll presenting spaced points in close proximity to each other lengthwise of the tape at which the tape is secured by its adhesive material while being cut, a knife mounted to cut the

tape between the points of securement, a member located and operating in advance of the knife to press the tape material laterally against the guide, and a resilient member pressing said last member in the direction of the guide.

5. A dispensing device for adhesive tape in roll form, comprising a mounting for a roll, a guide arranged transversely to the tape issuing from the roll presenting spaced points in close proximity to each other lengthwise of the tape at which the tape is secured by its adhesive material while being cut, a knife mounted to cut the tape between the points of securement, and a member constituted by a roller connected to and operating in advance of the knife to roll upon and then compress the tape material laterally against the guide to cause firm adhesion thereto.

6. In a dispensing device for adhesive tape in roll form, a mounting for the roll, a guideway arranged transversely to the tape on the roll providing spaced points of securement to which the tape is secured by its adhesive material while being cut, means guided by said guideway for compressing the tape into adhesive engagement with the guideway by a rolling action, and a tape-severing knife guided by said guideway.

7. In a dispensing device for adhesive tape in roll form, a mounting for the roll, a guideway arranged transversely to the tape on the roll providing spaced points of securement to which the tape is secured by its adhesive material while being cut, and a carriage member guided by said guideway, said carriage member having mounted thereon a tape-severing knife and a tape compressing roller element arranged in advance of said knife, whereby upon movement of said carriage member across said tape the tape is first rolled into firm adhesive engagement with said guideway and thereafter severed.

PAUL S. MADSEN.