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ADHESIVE TAPE DISPENSER AND APPLIER

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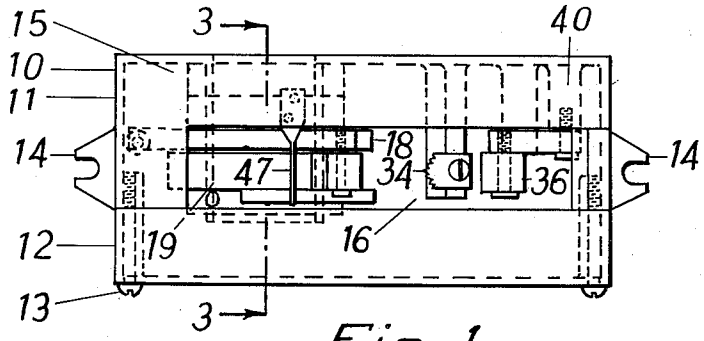


Fig. 1.

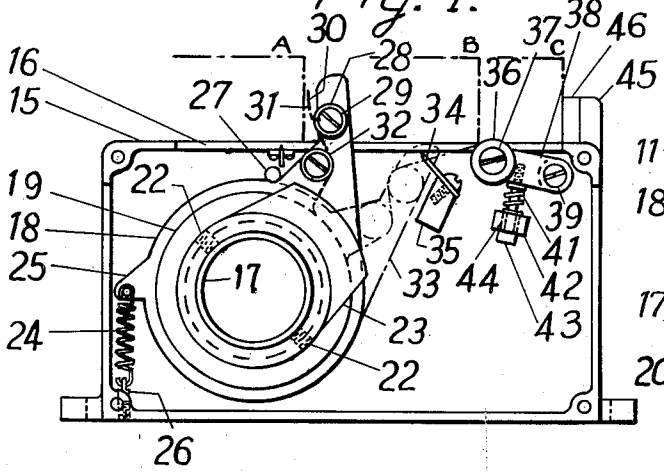


Fig. 2.

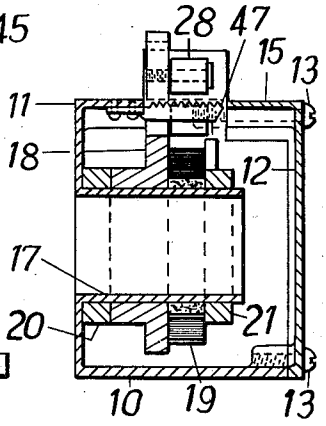


Fig. 3.

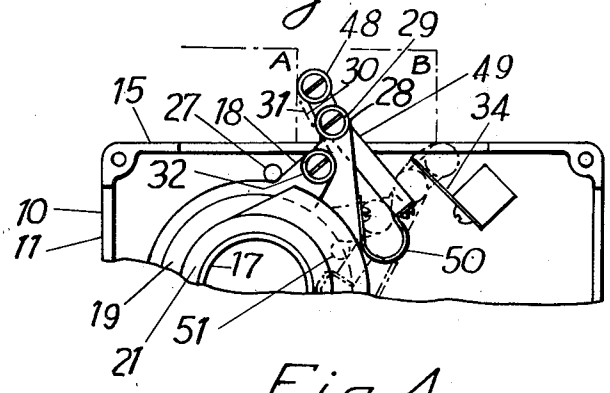


Fig. 4.

INVENTORS
Burton H. Locke
Howard A. Johnson

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ADHESIVE TAPE DISPENSER AND APPLIER

Burton H. Locke, Framingham, and Howard A. Johnson, Melrose, Mass.

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6 Claims. (Cl. 216—21)

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This invention relates to improvements in devices for taping around the edges of boxes or packages, or the like, utilizing pressure-sensitive coated adhesive tape, whereby the tape is dispensed from a roll and applied to the edges of boxes or packages, or the like, to seal the cover thereto or the edge thereof, by the movement of the article.

The objects of the invention are to provide a simple device whereby a strip of pressure-sensitive coated tape will be dispensed from a roll and applied around the edge of the article by the simple medium of sliding the article over a surface of the frame of the device; and to provide a device that is inexpensive to produce and one that will require but a minimum of maintenance due to the simple mechanism involved. Other objectives are to provide means that will permit the utilization of different widths of tape and means whereby strips of tape can be severed from the roll for other uses when required.

In order to accomplish our objectives, we conceive to utilize the linear movement of the article over a portion of the frame to dispense the tape directly from the roll and to sever the applying portion from the roll during said movement, in conjunction with the swinging motion of an arm pivotly mounted coaxially with the roll of tape, and actuated by the moving article, to control the dispensing and severing of the tape and to return the freed end of the tape to proper position for subsequent application to an article.

In the accompanying drawing:

Figure 1, is a plan view of our improved dispensing and applying device.

Figure 2, is a side elevation of same with the cover section of the housing removed.

Figure 3, is a sectional elevation taken on line 3—3, of Figure 1.

Figure 4, is a fragmental view showing another tape adhering means.

Our improved adhesive tape dispenser and applier comprises a housing 10 comprising a main section 11 for mounting the mechanism therein and a cover section 12 for enclosing the same. In this instance, section 12 is attached to section 11 by means of screws 13 extending through cover 12 and having threaded engagement with section 11. However, cover 12 could be hinged to main section 11, or fastened thereto, by any other suitable conventional means. The bottom of housing 10 is provided with slotted ears 14 for use in attaching the device to a bench or table and an upper flat surface 15 for supporting a box or package, or the like, in traveling over

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same in the process of applying a portion of tape around an edge of the article. There is a slot 16, in surface 15, through which the tape is dispensed and the dispensing and applying controlling mechanism operates. Slot 16 is generally formed in section 11 and arranged so that one side of same is open to facilitate threading the tape through the mechanism when the cover 12 is removed.

There is a sleeve 17 secured in section 11 and extending inwardly to rotatively support a pressure yieldable arm 18 and a roll of pressure-sensitive coated adhesive tape 19 which are retained axially thereon by means of a spacer 20 intermediate said arm and section 11 and a collar 21 which is held on sleeve 17 by means of set screws 22. It will be noted that arm 18 is always retained in the same axial relation on said sleeve by its abutment with spacer 20 and that collar 21 can be slid on sleeve 17 to properly abut, and thereby guide, various widths of tape that may be used in the device and then locked in position. Obviously, collar 21 is removed when the roll of tape is replenished and is again secured in position to permit free rotation of the said arm and roll of tape and will prevent excessive axial movement of the parts. Collar 21 is provided with a flange portion 23 to further guide the travel of the tape.

Arm 18 is normally brought to a pressure yieldable upright position extending up through slot 16 by means of a spring 24 attached to a projecting ear 25, on said arm, and to a bolt 26 attached to section 11, of housing 10, and is there positioned by means of abutment with a pin secured in said section 11.

A roll 28 is rotatively mounted on a stud 29 secured in arm 18 and is positioned above surface 15, of housing 10, when arm 18 is normally upright for the purpose of backing up the tape in contacting an article "A." The outer surface of roll 28 is preferably of a resilient structure, such as rubber or the like, to afford resilient backing for tape 30 and thereby assure even pressure contact as the article is brought in pressure contact therewith in the process of adhering the coated side 31 of the said tape thereto.

There is another roll 32 mounted on arm 18 in the same manner as roll 28 for the purpose of contacting the coated side 31, of the tape, and effect adhesion thereto by reason of the pressure therebetween effected by the dispensing of the tape from the roll. The purpose of roll 32 is to retain the tape properly to cause the free end of same to extend upwardly, substantially as

shown, to contact the article "A" as the same is progressed on surface 15, of housing 10. The outer surface of roll 32 is generally hard and glassy smooth to eliminate removing any of the coating from the tape which, if removed thereby, would quickly foul the roll and spoil the adhesive property of the tape. We conceive to construct roll 32 of a rigid plastic material, such as, cellulose acetate, or the like, which will afford a smooth glassy surface that will not remove any of the pressure-sensitive coating from the tape. Glass or porcelain, or the like, would be other suitable materials for the surface of roll 32. As the tape is pulled over roll 28 in the dispensing thereof from the roll by the forward movement of article "A," a backward curl is created therein which tends to stiffen the same causing the free end thereof to stand up in a favorable position to contact article "A," as shown in Figure 2.

It will be noted that rolls 28 and 32 are supported on studs which are fastened into arm 18 and therefore the other end thereof is open to facilitate threading the tape therebetween when the cover 12, of housing 10, is removed.

As article "A" is advanced the tape immediately adheres to same at the point of contact with the roll 28 by reason of the yieldable pressure afforded by arm 18 and as the article progresses farther the arm 18 resiliently yields and is pivoted by the article and roll 28 travels down the article and slightly around the edge thereof adhering the tape in its path thereto. Arm 18 is extended above roll 28 for the purpose of effecting sufficient pivot of same by the article traveling over the top of same to cause roll 28 to be carried below surface 15, of housing 10. The maximum pivoted position of arm 18 is effected when the article has advanced to "B" and is shown by broken lines 33. A substantial length of tape is afforded between the top of roll 28 and the bottom of the article at "B" by reason that said roll is carried below surface 15. Thus a substantial portion of tape is afforded to be adhered to the bottom of the article after the tape has been severed by a severing blade 34 that is attached to a boss 35 integral with section 11, of housing 10. Severing blade 34 is generally positioned to just clear roll 28 as the same is pivoted to its lowest position in order to sever the tape as close to said roll as possible to minimize the pivoting of arm 18 and the necessary movement of the article over surface 15. The severing of the tape is effected by the tape being drawn taut against blade 34 as the article is progressing on surface 15. Severing blade 34 is generally serrated as shown to facilitate severing the tape and, to further facilitate severing the same, the severing edge could be inclined to the travel of the tape, in two directions as shown or in one direction if desired.

As the article is progressed from "B" to "C" the tape is pressure-adhered to the bottom of same by the article traveling over a yieldable spring loaded roll 36 which is rotatively mounted on a stud 37 secured in a lever arm 38. Arm 38 is pivotly mounted to section 11, of housing 10, by means of a stud 39 which extends through said arm and is threaded into a boss 40 provided on said section 11. Arm 38 is actuated by means of a spring 41 which abuts said arm and a boss 42 provided on section 11, of housing 10. The upward travel of arm 38 is limited by a stud 43 extending through a slot 44 provided in boss 42, thence through spring 41, and having threaded engagement in said arm. Obviously, a non-rotatable yieldable member could be utilized for the article to slide over to adhere the tape thereto in lieu of roll 36 if desired.

There is an upright member 45 integral with section 11, of housing 10, for the purpose of contacting the end of the article when it has advanced to "C" to complete the adhesion of the free end of the tape thereto. Member 45 is generally faced with a resilient bumping plate 46, generally constructed of rubber, or the like, to absorb the shock of abutment of the objects and to assure even adherence of the tape to the article.

A severing blade 47 is attached to section 11, of housing 10, usually just ahead of arm 18 and immediately below surface 15 so as to eliminate interference with the said arm and the article as it is advanced over surface 15. The purpose of blade 47 is to provide a means of conveniently severing strips of tape from the roll for other uses after the same is first dispensed from the roll by pulling the free end out over roll 32. If desired arm 18 could be pivoted downward with one hand and a portion of tape dispensed and severed from the roll on severing blade 34 with the other hand, and in such instance, severing blade 47 would not be required and could be eliminated without sacrifice of this feature afforded by our device.

The complete operation of the device is accomplished by sliding the article to be taped over surface 15, of the housing. When the article reaches the position "A" a portion of the tape a slight distance from the extreme free end is adhered to the front end of the article due to the yieldable pressure contact of roll 28. As the article progresses from "A" to "B," the arm is pivoted thereby to the position shown by broken lines 33 and, simultaneously, the roll 28 travels down the front end and slightly around the edge of the article adhering the tape thereto along its path. As the article progresses beyond "B," the tape is drawn taut onto the severing blade 34 which severs the adhering portion from the roll. The extreme upper free end of the tape is adhered to the article when the article finally abuts the upright resilient bumper 46. The article is then lifted from the table or surface 15 which frees arm 18, permitting the same to return to its normal upright position carrying with it the further dispensed portion of tape, by reason that the tape is adhered to roll 32, and positions the same for subsequent application to an article.

Inasmuch as the tape carrying rolls pivot coaxially with the roll of tape, by reason of being mounted on arm 18, and the roll of tape is free to rotate so that the tape is always dispensed on a radial line therefrom, the dispensed portion of tape intermediate the roll and the tape carrying rolls will remain taut and unchanged as the arm 18 is returned to its normal upright position. Therefore, the forward end of the further dispensed portion of tape will be carried back to proper position in favorable condition for subsequent application to an article.

We do not wish to be confined to the exact details set forth as the same are susceptible of modification without departing from the spirit or scope of the invention.

For example, we conceive other arrangement of equipment that could be employed to adhere the tape to the article without departing from our basic conception of dispensing the tape directly from the roll by the movement of the article in a linear path relative thereto, and the severing of the tape directly from the roll as the article is

moving, and the mounting of the tape positioning means to pivot coaxial with the roll of tape so that the free portion of the tape remains at rest thereon as the means swings into normal position. For example, Figure 4 shows another arrangement of tape adhering means that could be employed which comprises a third roll 48 rotatively mounted on a yieldable spring loaded arm 49 pivoted on an extension of stud 29 in position to swing back of arm 18 and to be carried thereby. In this instance, the resilient loading of arm 49 is accomplished by a suitably formed flat leaf spring 50 which abuts arms 18 and 49, and the backward travel of arm 49 is limited by means of its abutment with a pin 51 which is secured in arm 18. Arm 49 is arranged to normally position roll 48 above and substantially in advance of roll 28 to contact the article "A" in advance of the same as the article is moved across surface 15, of housing 10. The roll 48 contacts the article just above the extreme end portion of the tape and travels down the front and around the corner and in under the same as the article is progressed, thereby adhering the both extreme ends of the tape to the article. Obviously, arm 49 yields to the movement of the article and effects pressure contact of roll 48 to adhere the tape to the article. Arm 49 abuts pin 51 while roll 48 is substantially above roll 28 so that roll 28 will be carried below surface 15 in the same manner and with the same results being accomplished as afforded by arm 18 being extended above roll 28 in the arrangement shown in Figure 2. In this arrangement of tape adhering means, roll 36 and upright bumper member 45, shown and used in the previous arrangement, could be eliminated and the article could be moved over surface 15 in one straight path without interruption of being stopped against bumper member 45 and being required to be lifted thereafter.

We claim:

1. An adhesive tape dispenser and applier comprising a structure to axially support a roll of pressure-sensitive adhesive tape, a pivoted member on said structure to carry a tape carrying roll to contact the coated side of said tape, said pivoted member being substantially concentric with the said roll of tape, another roll carried by said pivoted member to contact the back of said tape to pressure-adhere a free end of the tape to an article upon movement of the article in one direction thereagainst, the combined structure being arranged to effect dispensing of a portion of tape from its roll upon continued movement of the article, and a cutter disposed to sever the dispensed portion of tape from the roll as the article is moving in the said direction, and further means to contact the back of the tape to complete the adherence of the tape to the article by pressing the tape thereon as the article is progressed.

2. A tape dispenser and applier as defined in claim 1 characterized by spring means for restoring the parts actuated by the movement of the article to position for cooperation with a subsequent article.

3. An adhesive tape dispenser and applier comprising a structure supporting a roll of pressure-sensitive tape with one end portion free, means of applying the said free end portion of the tape to an article upon movement of the article thereagainst, said means including an arm mounted on said structure substantially concentric with said roll to carry the tape and to be pivoted by the movement of the article, said arm supporting tape abutting means to press the end portion of the tape onto the article upon said movement thereof, tape adhering means carried by said arm whereover the tape may be dispensed but whereby the same will be retained substantially at rest on said arm to swing therewith when the said arm is returning to its normal position, means to sever the dispensing portion of tape for application to the article at a predetermined point during its dispensement comprising a cutter supported by said structure to sever the tape upon the drawing of the same thereagainst by the movement of the article, the pivotal mounting of said arm being disposed so that dispensing of tape thereover may be effected by the movement of the article and the tape will remain substantially at rest thereon during the return movement thereof, and means to effect final adhesion of the tape to the article.

4. A tape dispenser and applier as defined in claim 3 having spring means to restore the parts actuated by the movement of the article to their normal position.

5. A tape applying device comprising a structure axially supporting a supply roll of pressure-sensitive coated adhesive tape having an end portion extended in a predetermined position to be applied to an article upon movement of the article thereagainst, an arm mounted on said structure substantially concentric with said roll and having means to support substantially the entire said end portion of the tape from the supply roll to the position of application to the article so that substantially no dispensing of tape from the supply roll nor substantial movement of any portion of the tape relative to the arm will occur upon movement of the arm except when tape is being applied to an article and is resultantly thereby being operatingly dispensed over the arm, said means comprising a roll mounted on said arm to contact the coated side of the tape and thereby positively carry substantially the entire said portion of tape with the arm upon movement thereof, roller means mounted on said arm to effect adherence of the near end portion of the tape to an article upon movement of the article thereagainst whereupon the said movement of the article causes a further portion of tape to be dispensed along the arm directly from the supply roll for subsequent application to another article, a severing blade mounted on the said structure to contact and sever the applying portion of tape from the supply roll as the tape is pulled thereagainst by the movement of the arm effected by the movement of the article.

6. A tape applying device as described in claim 5 having resilient means to restore the said arm to its normal position for subsequent application of tape to another article after tape has been applied to an article.

BURTON H. LOCKE.
HOWARD A. JOHNSON.

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