Dec. 21, 1948. J. F. CULLIN 2,456,625

TAPE DISPENSING MECHANISM

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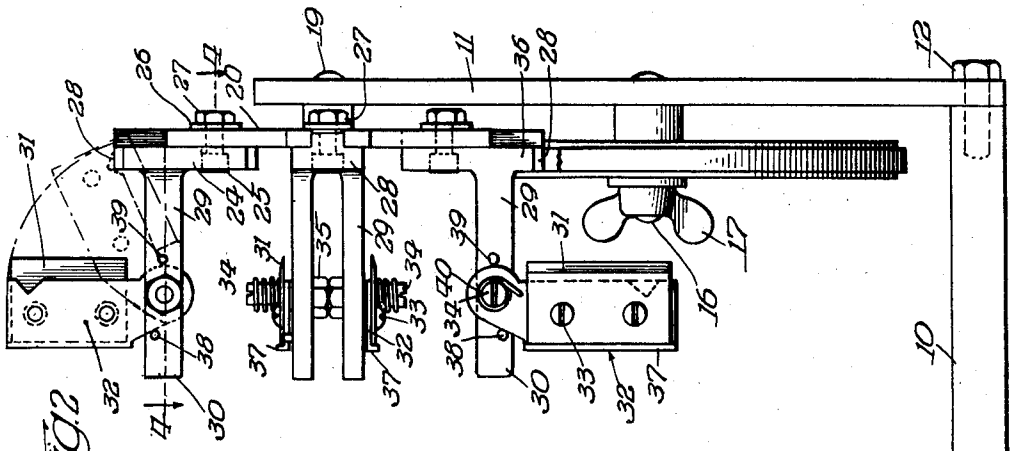


FIG. 2

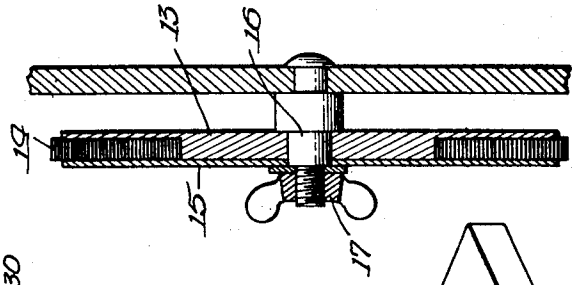


FIG. 3

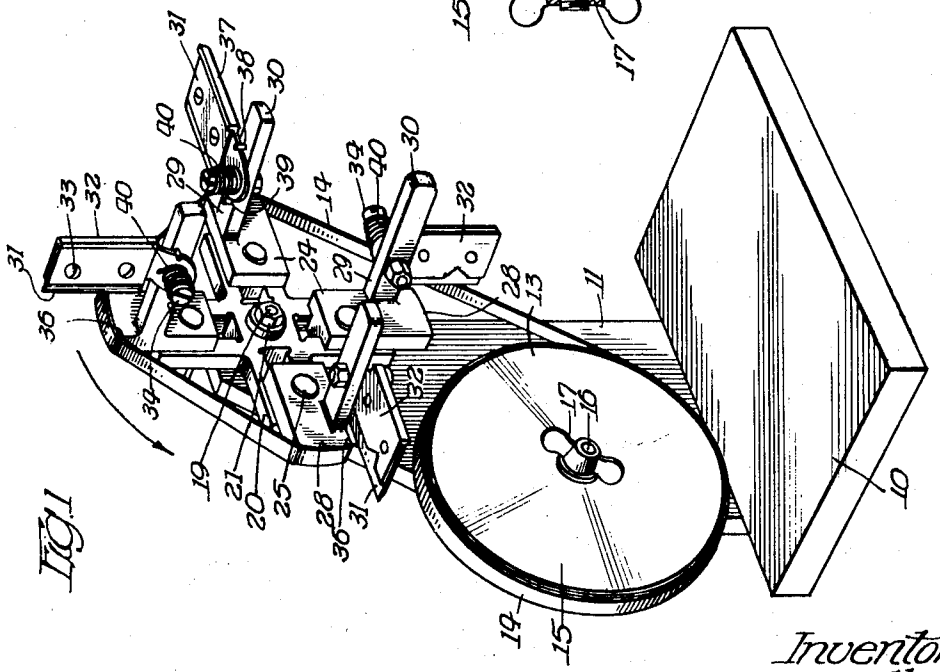


FIG. 1

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TAPE DISPENSING MECHANISM

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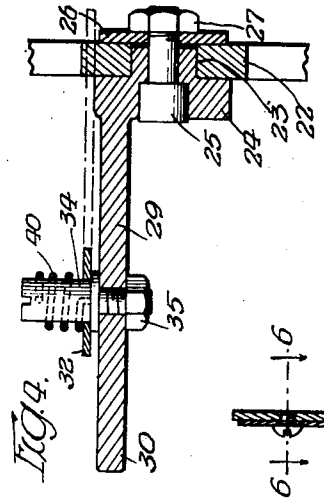


FIG. 4.

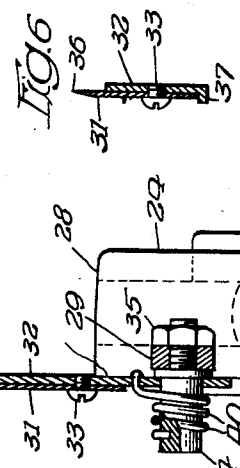


FIG. 6

FIG. 5

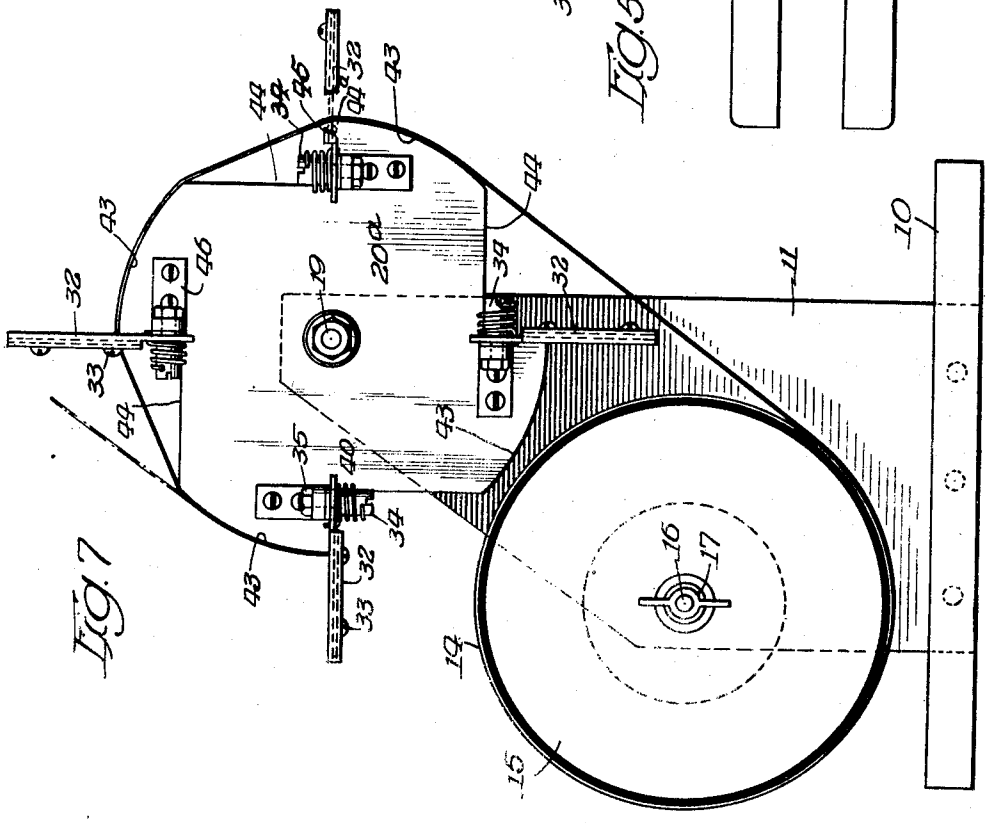


FIG. 7

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UNITED STATES PATENT OFFICE

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TAPE DISPENSING MECHANISM

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Application September 21, 1942, Serial No. 459,129

9 Claims. (Cl. 164—42)

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The invention relates to machines for dispensing adhesive tape.

In industrial use of adhesive tape of the pressure sensitive type for insulating or binding together parts in manufacture, it is desirable to dispense from a roll, strips of predetermined length and to quickly measure and cut them from the roll.

One object of the invention is to provide a machine or device for dispensing adhesive tape by which strips of predetermined lengths can be quickly measured and cut from a roll for use in industrial operations.

Another object of the invention is to provide an improved machine for dispensing adhesive tape by which strips of varying predetermined lengths may be quickly measured and cut from the roll of tape.

Another object of the invention is to provide an improved machine for dispensing measured strips of predetermined lengths and severing them from a roll of tape, which is simple in construction, selectively operable for strips of different lengths, and whereby the measuring and cutting operations and the removal of the strips can be performed by one hand of the operator.

Other objects of the invention will appear from the detailed description.

The invention consists in the several novel features set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a perspective of a machine embodying the invention.

Fig. 2 is an end elevation.

Fig. 3 is a section through the retaining spool for the roll of tape and its mounting on the supporting standard.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a view illustrating the blade holder in section and its mounting on the rotatable spider.

Fig. 6 is a section taken on line 6—6 of Fig. 5.

Fig. 7 is a front elevation of a modified form of the invention.

The invention is exemplified in a machine which comprises a rectangular base 10 which is adapted to rest or to be secured on a table or other suitable support; a standard 11 at the back of the base, and preferably formed of a plate of metal secured by screws 12 to the rear edge of the base 10; a spool 13 on which is wound a roll of adhesive tape 14, the spool comprising a core, a side, and a separable plate 15 for permitting the roll to be placed on the spool; a stud 16 fixedly secured in the standard 11 and on which the spool is rotatably supported on said standard; and a thumb nut 17 screw-threaded to the stud 16 and adapted to hold the spool on the stud and the plate 15 on the outer side of the spool. This provides means for supporting a roll of adhesive tape so the tape can be drawn therefrom as it is desired for use. The tape 14 is of the pressure sensitive type, such as insulating tape.

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A wheel or carrier 20 for rotatably supporting a series of devices for cutting strips of predetermined lengths from the roll of tape is mounted on the front and at the upper end of standard 11. This wheel or carrier is rotatably mounted on a stud 19 which is fixedly secured in the upper end of standard 11, and comprises a series of radial arms 22 on each of which one of the cutting devices is mounted. A nut 21 is adapted to hold the wheel 20 on stud 19 and may frictionally hold the rotatable supporting member against rotation. This wheel or carrier 20 is mounted to rotate in a plane parallel to the plane of rotation of spool 13.

Each cutting device is supported in one of the arms 22 of the wheel 20 by a bracket 24 which is slidably and radially adjustable in a radial slot 23 in the arm. Each bracket 24 has a forwardly projecting arm or member 29, the front end of which serves as a finger-piece or handle 30 whereby the wheel and the cutting devices can be rotated. A stud 25, washer 26 and nut 27 are adapted to clamp each bracket 24 in its assigned position on the front of one of the arms 22.

Each bracket 24 has an outer end or peripheral face 28 which is coplaner with the tape 14 on the roll 13. The tape, which is of the pressure sensitive adhesive type, has adhesive on its inner face which will, when placed on one of the end faces 28 of a bracket 24, adhere to said end face, so that the tape will be drawn from the roll 14 upon the rotation of wheel 20 on stud 19. These end-faces 28 are rotatable with the wheel 20, and constitute a circumferential series of surfaces to which the tape will adhere and which are spaced apart to permit the tape to be cut between them.

Each cutting device comprises a knife blade 31 which may be similar to a thin razor blade, and a holder 32 to which the knife blade is removably secured by screws 33. Each holder 32 is pivotally mounted on a stud 34 which is provided with a screw-threaded stem and is secured to an arm 29 by a nut 35. Each holder 32 is pivoted to swing transversely across the tape between the brackets 24. Each bracket 24 has a side-face 36 which coacts with the cutting edge of the blade 31 to make a cut across and through the tape to sever a strip from the leading portion of the tape which

has been stuck to one or more of the end-faces 28. The holder 32 is provided with a back-flange 37 which is adapted to be engaged by the thumb of the operator for swinging the holder 32 so the blade 31 will cut the tape. The pivotal movement of each holder 32 and blade 31 is limited by stops 38 and 39. A torsion spring 40 has one of its ends secured to stud 34 and its other end applied to the holder 32 for retracting the holder and blade when the holder is manually released after each cutting operation and for normally holding the holder and blade away from and forwardly of the tape.

Each knife blade and the corner between the coacting side-face 36 and the end-face 28 form a cutting station for the tape. The knife blades and coacting surfaces provides a series of cutting stations on the wheel which are spaced apart circumferentially. The end-faces 28 form peripheral surfaces to which the adhesive face of the tape will stick and which are rotatable with the wheel and are spaced apart circumferentially. The knife-blade coacts with the leading edge of the end-face 28 in severing the tape. The end of the tape behind the cut adheres to the end face 28, so the wheel 20 will continue to unwind the tape from the roll for succeeding cuts. The knife-blades at any of the cutting stations are individually and selectively operated. The strips of the tape between the cutting stations will be of measured length. The spacing between the cutting stations serves to measure the tape drawn from the roll.

The distance between the cutting stations and the length of the portions of the tape between them can be varied by radial adjustment of bracket 24 in slots 23 of the wheel 20. When the brackets 24 are adjusted away from the axis of wheel 20 the circumferential distance between the cutting stations will be increased, and when the brackets are adjusted toward the axis of the wheel said distance will be decreased. The knife-blades, being mounted on the brackets 24, are simultaneously adjusted with the brackets 24 and their end-faces 28 and side-surfaces 36. By varying the circumferential spacing between the cutting stations in this manner, the cutting stations may be adjusted for cutting strips of different lengths.

The operation will be as follows: Assuming a roll of tape has been placed on the spool 13, the free end thereof will be pressed against and stuck to one end-face 28 of one of the brackets 24 so that rotation of the wheel 20 will draw the tape from the spool. Before a cut is made, the wheel will be rotated sufficiently to cause the tape to adhere to at least one end-face 28 in addition to the face to which the leading end of the tape is stuck. If the length of the strip desired corresponds to the circumferential distance between the leading corners of end-faces 28 of successive brackets 24, the operator will hook one of his fingers around the front end 30 of arm 29 of the bracket 24 at the station which follows the leading end of the tape and press his thumb against the associated knife-holder 32 to swing the knife 31 on its pivot 34 across the tape and sever the tape at the coacting face 36 of the same station. After the cut, the operator will release his thumb and the knife holder and knife will be retracted to their normal position by spring 40. The thumb and finger will then be conveniently positioned for grasping the trailing end of the severed strip and removing it from the end-face 28 to which the leading end of the severed strip is stuck. The portion of the tape immediately following the cut will remain stuck to the end-face 28 behind the cut so that further rotation of the wheel will draw the tape from the roll. The strip will be of measured length corresponding to the distance between the cutting stations. This measuring and cutting can be expeditiously carried on by one hand of the operator. For a succeeding cut the operator will grasp the front end 30 of the arm 29 of the bracket 24 following that to which the leading end of the tape has been stuck and initially rotate the wheel 20 sufficiently to cause the tape to adhere to one or more of the circumferentially succeeding end-faces 28 and then operate a knife as before described.

If it is desired to cut off strips of double the length last described, the wheel will be rotated so that the tape will adhere to at least three of the end-faces 28. This is preferably done by grasping the arm 29 at the second station following the leading end of the tape on the wheel 20. The knife at the same station will then be operated as before described to sever the strip which will be of a length corresponding to the distance between diametrically opposite cutting stations. If a strip of greater length is desired the wheel 20 will be rotated sufficiently to cause the tape to adhere the end-faces 28 of all four of the brackets 24 and the knife at the cutting station immediately in advance of that at which the leading end of the tape is secured will be operated to sever the tape. By radial adjustment of the brackets 24 the circumferential distance between the cutting stations can be varied for cutting off strips of the desired length.

In the modification illustrated in Fig. 7 a wheel 20^a is rotatably mounted on the stud 19 which is supported on the standard 11. This wheel is provided with a series of four arcuate peripheral surfaces 43 to which the tape will adhere and intermediate angular cut away portions 44 between surfaces 43. The corners 45 between the leading ends of surfaces 43 and side-faces 44^a coact with the knife-blades to sever the tape. Each knife holder 32 is pivotally supported by a bracket 46 which is fixedly secured to the front face of wheel 20^a. The knives 31 and retracting springs are of the construction before described. The operation of this form of the invention is the same as that previously described. This also exemplifies a form of the invention in which strips thereof can be speedily and conveniently cut from the tape on the roll and selectively in lengths corresponding to the circumferential distance between two or more cutting stations.

The invention exemplifies mechanism for cutting pressure sensitive adhesive tape into strips of the desired or predetermined lengths by which the measuring and cutting are facilitated for industrial work where strips of predetermined lengths are used and by which strips of different predetermined lengths may be conveniently cut by adjustment of the cutters on the rotatable member.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

What I regard as new and desire to claim by Letters Patent is:

1. Mechanism for dispensing adhesive tape from a roll comprising a rotatable wheel, means rotatable with the wheel and to which the ad-

hesive face of the tape will adhere, for unwinding the tape from the roll, and a plurality of cutting devices rotatable with the wheel and manually and selectively shiftable for severing a strip from the tape adhering to the wheel, and means whereby the devices may be radially adjusted on the wheel, for varying the length of the tape between them.

2. Mechanism for dispensing adhesive tape from a roll comprising a rotatable wheel, surfaces rotatable with the wheel and to which the adhesive face of the tape will adhere, for unwinding the tape from the roll, and a plurality of cutting devices rotatable with the wheel and manually and selectively shiftable for severing a strip from the tape adhering to the wheel, and slidable means whereby the devices and said surfaces may be radially and conjointly adjusted on the wheel for varying the length of the tape between the devices and the strips severed from the tape on the wheel.

3. Mechanism for dispensing adhesive tape from a roll comprising a rotatable wheel, a plurality of cutting devices, each cutting device comprising a knife-blade, and a blade holder, brackets radially adjustable in the wheel, by which the holders are supported for manual shift of the blades to sever strips from the tape on the wheel, and peripheral surfaces on the brackets and to which the adhesive face of the tape will adhere for unwinding the tape from the roll.

4. Mechanism for dispensing adhesive tape from a roll comprising a rotatable wheel, a plurality of cutting devices, each cutting device comprising a knife-blade, and a blade holder, brackets radially adjustable in the wheel by which the holders are pivotally supported to swing transversely of the wheel for manual shift of the blades to sever strips from the tape on the wheel, and peripheral surfaces, rotatable with the wheel, to which the adhesive face of the tape will adhere, the cutting devices being adapted to sever the tape at the leading edges of said surfaces.

5. Mechanism for dispensing adhesive tape from a roll comprising a wheel mounted for manual rotation, surfaces rotatable with the wheel and to which the adhesive face of the tape will adhere for unwinding the tape from the roll, a plurality of cutting devices mounted on and rotatable with the wheel, and a grip on the wheel associated with each cutter whereby the wheel may be rotated, each cutting device comprising a holder, a blade on the holder, movable through the tape on the wheel to sever a strip from the tape on the wheel, and finger engageable means on the holder whereby the cutter may be shifted to make the cut.

6. Mechanism for dispensing adhesive tape from a roll comprising a wheel mounted for manual rotation, surfaces rotatable with the wheel and to which the adhesive face of the tape will adhere for unwinding the tape from the roll, and a plurality of cutting devices mounted on and rotatable with the wheel, and a grip on the wheel associated with each cutter whereby the wheel may be rotated, each cutting device comprising a holder pivotally supported on the wheel, a blade on the holder, movable through the tape on the wheel to sever a strip from the tape on the wheel, finger engageable means on the holder whereby the cutter may be shifted to make the cut, and a spring for retracting the holder and blade and holding them in retracted position.

7. Mechanism for dispensing pressure sensitive adhesive tape from a roll, comprising a rotatable wheel, a plurality of members adjustably mounted on the wheel, each of said members having an adhesion surface thereon and being adjustable so as to adjust the radial position of its adhesion surface towards or from the axis of rotation of the wheel so as to thereby vary the distance between successive adhesion surfaces, and means for severing the leading end of the tape in rear of the surface to which the leading end is adhered, whereby the severed length will be retained by adhesion to such surface for delivery to the operator.

8. Mechanism for dispensing pressure sensitive adhesive tape from a roll, comprising a rotatable wheel, surfaces rotatable with the wheel and to which the adhesive face of the tape will adhere, for unwinding the tape from the roll, and a plurality of cutting devices rotatable with the wheel for severing a strip from the tape adhering to the wheel, and slidable means whereby the devices and said surfaces may be radially and conjointly adjusted on the wheel for varying the length of the tape between the devices and the strips severed from the tape on the wheel.

9. Means for dispensing pressure sensitive adhesive tape from a roll, comprising a rotatable wheel and a plurality of supports mounted on said wheel for rotation therewith, said supports being adjustable towards or from the axis of rotation of the wheel, each of said supports having an adhesion surface thereon to which the adhesive surface of the tape will adhere as the wheel is rotated to bring successive adhesion surfaces in contact with the tape so as to unwind the tape from the supply roll, and means for severing successive portions of the tape, the distance between successive adhesion surfaces being determined by adjustment of said supports.

JASPER F. CULLIN.

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