United States Patent

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[54] **TAPE APPLICATOR AND REMOVAL APPARATUS**
9 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **156/577,** 156/584, 156/543, 156/344
[51] **Int. Cl.** **B32b 31/10,** B32b 31/20
[50] **Field of Search** 16/110, 115, 116; 156/523–527, 543, 344, 574–577, 584

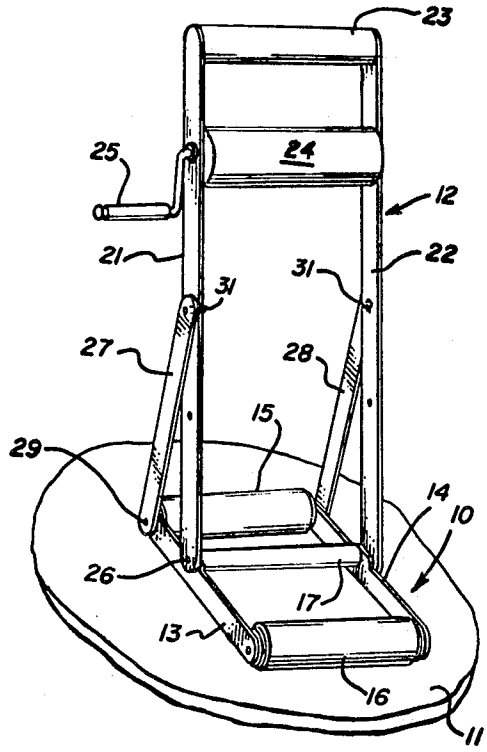
[56] **References Cited**

UNITED STATES PATENTS

286,669	10/1883	Wright	156/577
1,278,272	9/1918	Wilson	156/577
1,745,802	2/1930	McBurney	156/526
3,144,258	8/1964	Ottosen et al.	16/110 X
3,393,114	7/1968	Jorgensen	156/523

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ABSTRACT: A tape apparatus has two operating positions, one for applying and one for removing a heavy-duty, relatively wide pressure-sensitive adhesive tape. This apparatus has a base section having rollers for rolling movement over a surface and an upright tape support section hinged at its lower end on the base section and held at one of two inclined positions to automatically unwind a tape roll and apply it to the surface when moved in one direction and to remove and roll the tape on a tape mandrel for reapplication when required when moved in the opposite direction.



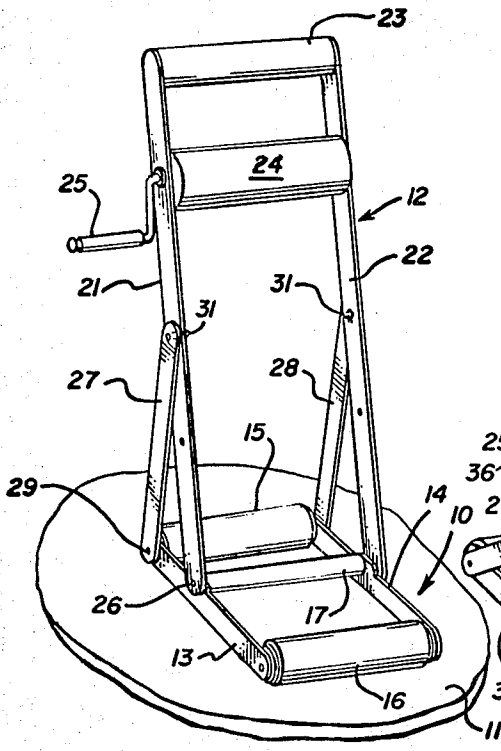


FIG. 1

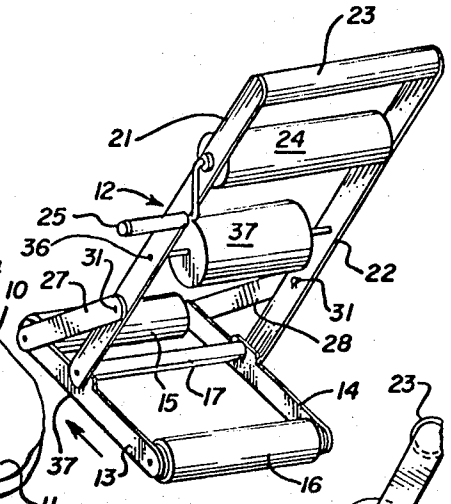


FIG. 2

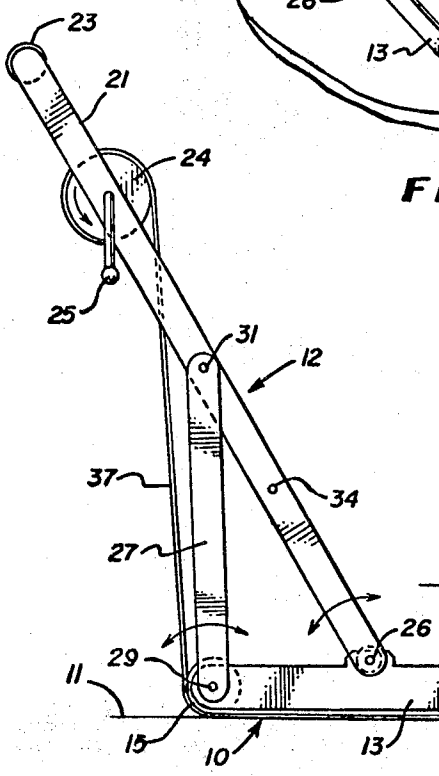


FIG. 3

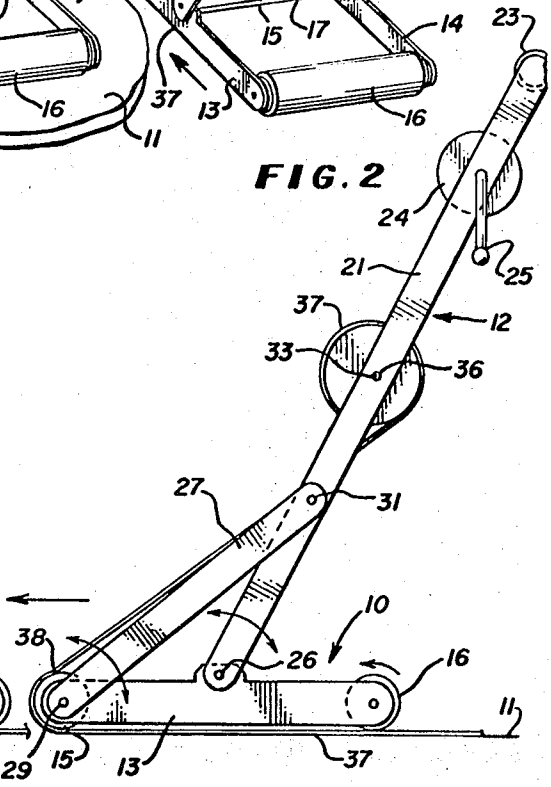


FIG. 4

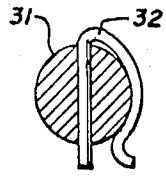


FIG. 5

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TAPE APPLICATOR AND REMOVAL APPARATUS

This invention relates to tape-handling apparatus and more particularly to a novel and improved apparatus for applying and removing an adhesive tape. Pressure-sensitive adhesive tapes have heretofore been applied by a variety of types of dispensing apparatus. Removal of the tape has heretofore usually been carried out manually with some device other than that which applies the tape. Generally, prior art tape-dispensing apparatus has been particularly suitable for the lighter and narrower tapes but are not entirely satisfactory for dispensing heavy-duty, wider tapes. In this connection, heavy-duty wide adhesive tapes are commonly used to secure athletic mats together in side-by-side relation to provide a large mat surface area. However when the mats are not in use the tape must be removed and the mats separated and rolled up and placed out of the way. Such an application requires that the tapes be quickly applied and removed prior to the rolling of each individual mat along with the capability of reusing the tapes many times.

Accordingly it is an object of this invention to provide a novel and improved apparatus for applying and removing heavy-duty adhesive tapes such as those used to secure athletic mats together and the like.

Another object of this invention is to provide a novel and improved apparatus for applying and removing adhesive tapes which may be easily adjusted for either the tape applying or tape removing operation.

It is still a further object of this invention to provide an apparatus which will apply and remove relatively wide, heavy-duty tape sizes for reuse of the same tapes many times.

In accordance with the present invention there is provided tape apparatus including a base section having rollers for rolling movement over a surface and an upright tape support section hinged at its lower end on the base section and held at one of two inclined positions to automatically unwind a tape roll and apply it to the surface when moved in one direction and to remove and roll the tape on a tape mandrel for reapplication when required when moved in the opposite direction.

Other objects, advantages and capabilities of the present invention will become more apparent as the description proceeds taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a tape applying and removal apparatus embodying features of the present invention which is set in the tape removing position;

FIG. 2 is a perspective view of the apparatus shown in FIG. 1 set in the tape applying position with a second tape spindle in place on the tape support;

FIG. 3 is a side elevational view of the apparatus shown in FIG. 1, the tape shown as being taken up and wound onto one spindle;

FIG. 4 is a side elevation view of the apparatus as shown in FIG. 2, the tape being shown as unwinding from the spindle and adhering to the support surface; and

FIG. 5 is a cross-sectional view of the pin member and holding clip used to lock side braces to upright side members.

Referring now to the drawings the tape-handling apparatus generally comprises a base section 10 shown in FIG. 1 as disposed on a planar support surface 11 and having an upright tape support section 12 hingedly mounted on the base section. This base section 10 comprises elongated spaced parallel frame members 13 and 14 interconnected at the ends by transverse rollers 15 and 16 generally parallel to one another which are journaled for rotation between the ends of the frame members and together form a low-profile open rectangular framework. The peripheral surfaces of the rollers extend beyond the frame members so that the base section 10 will roll in the direction of its length over the support surface 11 to which the tape is to be applied and from which the tape is removed in a manner described hereafter. An intermediate transverse roller 17 is shown between the end roller, but this roller is optional.

The tape support section 12 comprises a pair of spaced, parallel side members 21 and 22 mounted on a pivot 26 at their lower ends on frame members 13 and 14, respectively, together with a hand grip 23 connected between their upper ends. A tape spindle or roller 24 is rotatably mounted between the side members with its axes generally parallel with the axes of rollers 15 and 16 and below the grip and has a crank 25 at one end for manual turning of the spindle. Tape support section 12 is held or secured at one of two operative positions inclined from the center by a pair of side braces 27 and 28, each being connected between one end of the base section and an upright side member. Each brace is mounted on a pivot 29 on the frame at its lower end and the upper end is releasably locked to the upright side member preferably by a pin member 31 which slides through aligned apertures in each associated brace and side member and the pin may be held in place by a clip 32 or the like which fits in an aperture in the pin as illustrated in FIG. 5.

In the tape removal position shown in FIGS. 1 and 2, there is an upper aperture 33 located centrally of and between the ends of the side member and the braces are secured to the side members to locate the support section 12 at a rearward tilt from the center and away from the direction of travel. For setting the side members in the tape applying position shown in FIGS. 2 and 4, there is a lower aperture 34 located substantially below the upper aperture 33 which aligns with the aperture in the associated brace member. In both operative positions the operator stands behind the machine as the support section is tilted rearwardly toward him and away from the direction of travel.

To apply a new roll of tape with the above described apparatus, a tape spindle 36 may be supported between the upright side members typically in the upper apertures 33 which will permit a full roll of tape 37 to rotate freely. The leading or free end 38 of the tape is passed over roller 15 and under both rollers 15 and 16 so that the tape is thereby pressed against the surface 11 during movement of the base section over the tape. Movement of the base section 10 and specifically the leading roller against the nontacky side of the tape will cause the tape to automatically unwind from the spindle 36 and be applied to the surface with the rollers applying a downward force to press it firmly thereagainst. The rollers 15, 16 and 24 are of generally the same width. The spaced apertures 33 and the rollers 15, 16 and 24 have axes which are generally parallel to one another so that the tape will wind and unwind in an aligned manner.

To remove an applied strip of tape the support section is pivoted by first removing the pins 31 from the upper aperture 33 and replacing them in the lower apertures 34. A loosened or free end of the applied tape is wrapped around the upper spindle 24 and the handle 25 is turned in the counterclockwise direction as viewed in FIG. 3 to roll the tape 37 thereon as the loose section is moved in an opposite direction. The tape 37 will wind on the spindle in an even or aligned manner to roll evenly on the spindle. Once the taking-up is completed the wound tape is ready for reapplying as required by merely changing the position of the support member to that of FIGS. 2 and 4 and repeating the above-described tape applying procedure.

Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that changes in details of structure and system components may be made without departing from the spirit thereof.

What is claimed is:

1. Apparatus for applying and removing adhesive tape comprising a base having a pair of horizontally disposed spaced rollers arranged for rolling movement over a surface, tape support means extending upwardly from said base including a tape spindle rotatably supported thereon, above and parallel to said pair of rollers, said tape support means being releasably held in one upright position to automatically unroll a tape from said tape spindle on said support means as said base advances over a leading end of the tape when moved in one direction and being releasably held in another upright position

to roll tape on said spindle as the base is moved in an opposite direction.

2. Apparatus as set forth in claim 1 wherein said support means is hingedly mounted on the base to pivot about a generally horizontal axis.

3. Apparatus set forth in claim 1 wherein said upright tape support means tilts rearwardly away from the direction of travel in the tape applying and tape removing operations.

4. Apparatus as set forth in claim 1 wherein said tape support means has a hand grip at its upper end, and a second tape spindle rotatably supported on said support means and alternatively usable in place of the first-mentioned tape spindle for unrolling tape therefrom when said support means is held in the one position.

5. Apparatus for applying and removing adhesive tape comprising a base section having a pair of spaced, transverse horizontally disposed rollers with one roller at each end arranged for rolling movement over a surface, and tape support section upwardly from said base section hingedly mounted on said base section including a tape spindle rotatably supported thereon above and parallel to said pair of rollers on the base section, said support section having a hand grip along its upper end, brace means releasably locking said support section on one upright position inclined rearwardly from the center of the base section to automatically unroll a tape from said tape spindle and beneath said rollers to press the tape against the surface as said base section is moved over the leading end of the tape in one direction and to releasably lock said support section in another upright position inclined rearwardly from the center of the base section to roll a tape on said tape spindle on the support section as the base is moved in an opposite direction.

6. Apparatus as set forth in claim 5 wherein said brace means includes a pair of side braces hingedly mounted on the base at the lower ends and upper end detachably connected to the sides of the support sections at one of two angular positions.

7, Apparatus as set forth in claim 5 wherein said tape spindle is mounted above the connection between the braces and the tape support section.

8. Apparatus as set forth in claim 5 wherein said tape spindle has a crank to manually roll the tape on said spindle during movement in said opposite direction.

9. Apparatus as set forth in claim 5 wherein the axes of said tape spindle and said transverse rollers are generally parallel with one another.

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