

Oct. 12, 1965

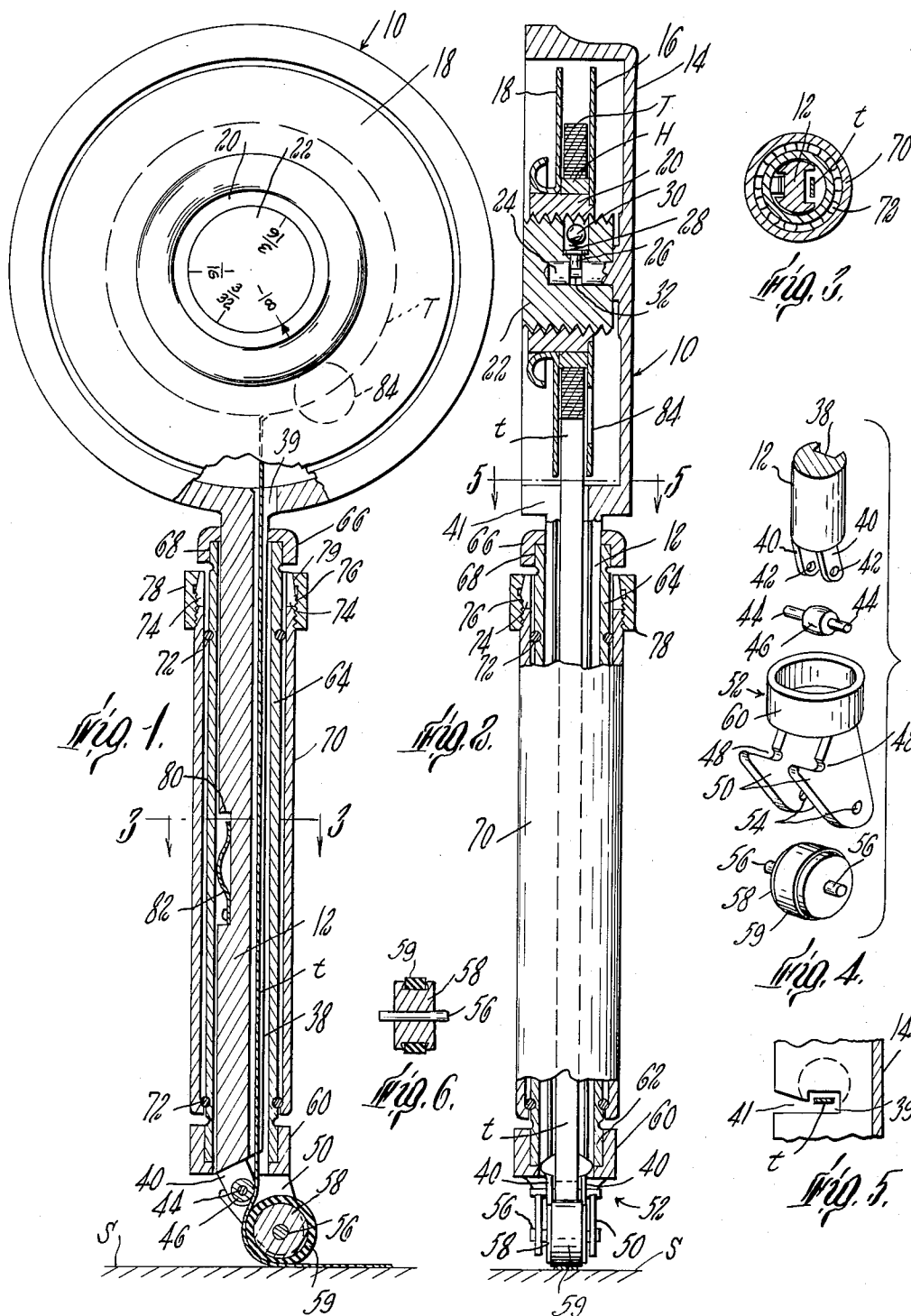
W. W. RYMER

3,211,604

TAPE DISPENSER

Filed May 1, 1961

3 Sheets-Sheet 1



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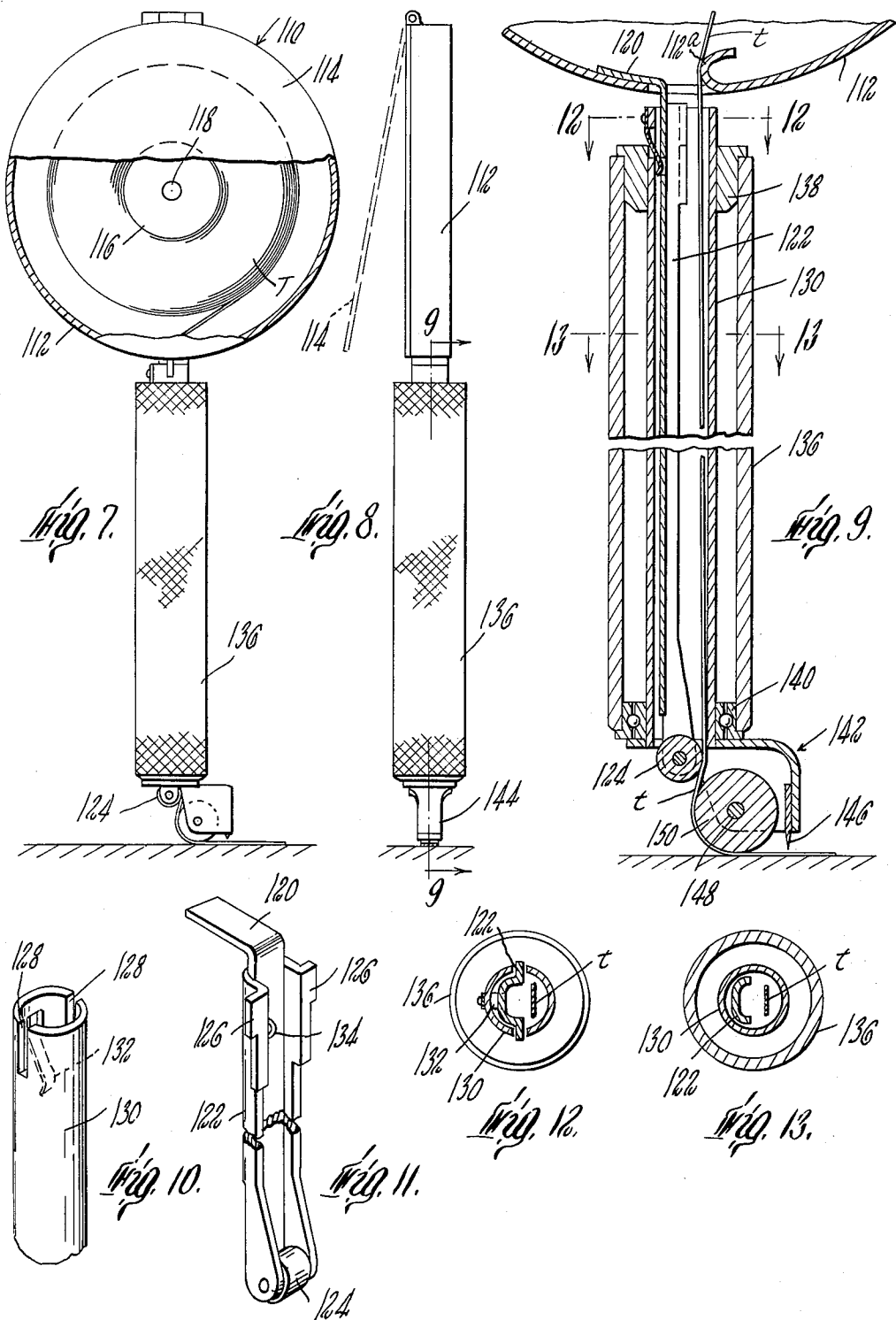
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TAPE DISPENSER

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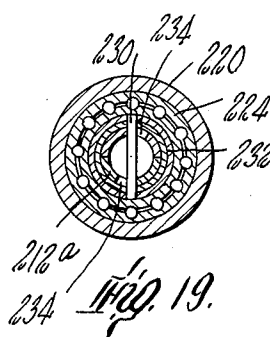
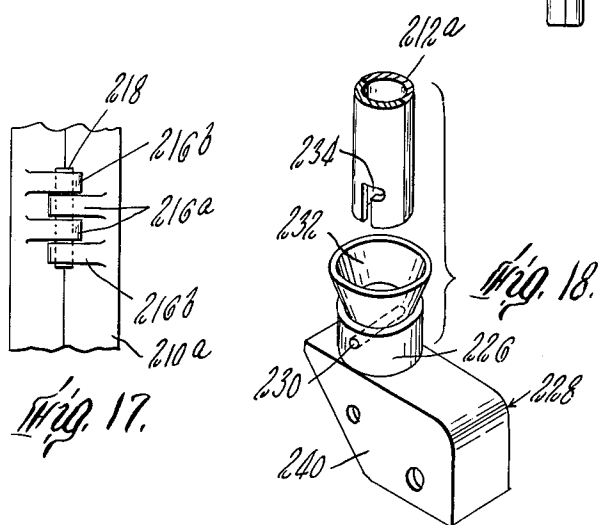
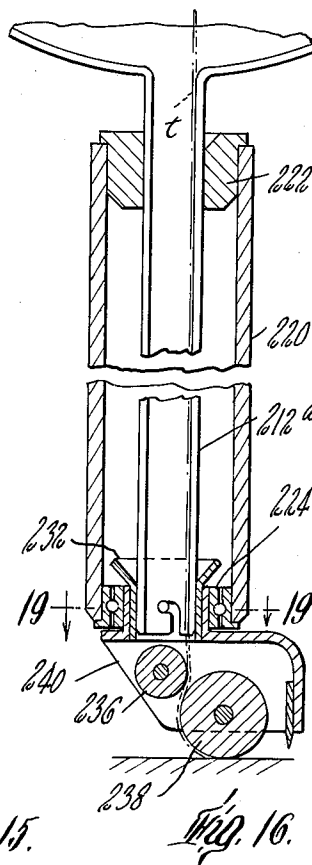
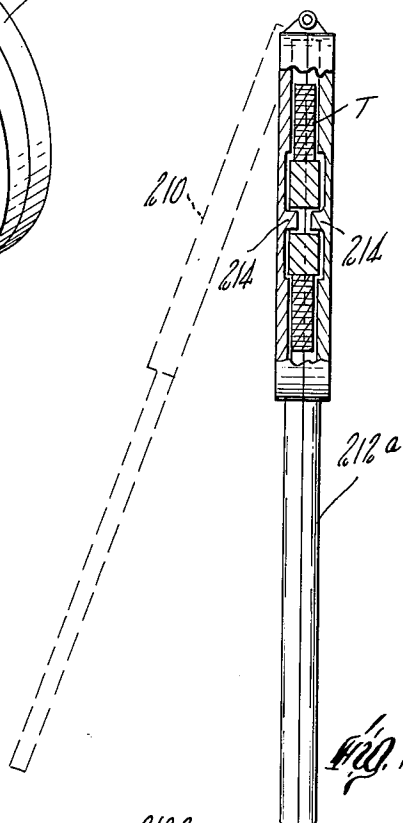
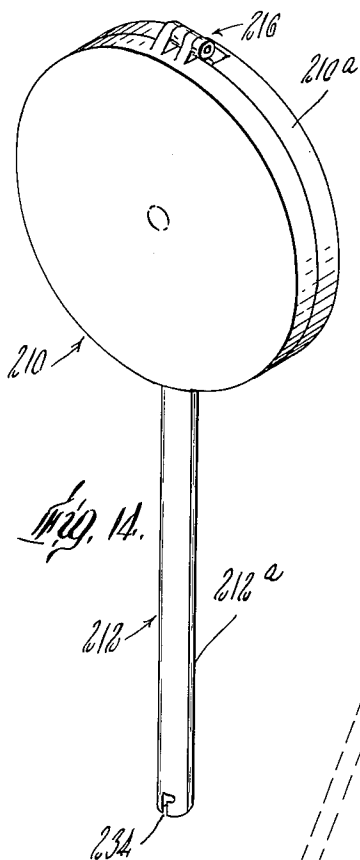
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TAPE DISPENSER

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3,211,604

TAPE DISPENSER

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Filed May 1, 1961, Ser. No. 106,693
5 Claims. (Cl. 156-577)

This invention relates to a dispenser for tape.

It is a main object of the present invention to provide such a dispenser which will not only easily lay down tape along either straight or curving lines, but such a dispenser which may be refilled with tape with unusual ease and which provides simplified construction and operation. It is especially useful to draftsmen using pressure-sensitive tape instead of ink or pencil to lay down lines on tracing paper.

Generally speaking, the present invention provides for a bayonet-like extension associated with a tape storage unit, removable therewith from the handle of the tape dispenser, for ease of reloading, extending longitudinally through the dispenser handle to carry the tape there-through in loading and during use, and selectively engageable and disengageable with a tape-applying unit below the handle.

Other objects, features, and advantages will appear from the following description of three preferred embodiments, taken together with the attached drawings, in which:

FIG. 1 is a side elevation, partially broken away, of the presently preferred embodiment of the invention;

FIG. 2 is an end elevation, extensively broken away, of said presently preferred embodiment;

FIG. 3 is a cross-sectional view taken at 3-3 of FIG. 1;

FIG. 4 is an exploded perspective view of the lower portion of the embodiment;

FIG. 5 is a cross-sectional view taken at 5-5 of FIG. 2;

FIG. 6 is a detail, mainly in cross-section, of the tape applying roller of said embodiment;

FIG. 7 is a side elevation, partially broken away, of another embodiment of the invention;

FIG. 8 is an end elevation of said embodiment, showing in dotted lines the tape storage unit cover in partially open position;

FIG. 9 is an enlarged partial view in section of said embodiment taken at 9-9 of FIG. 8;

FIG. 10 is a partial isometric view showing the upper end of the cylindrical shaft which carries the bayonet-extension of the tape housing in this embodiment;

FIG. 11 is an isometric view, broken away in the center, of the bayonet-extension itself, separated from the tape housing or storage unit;

FIG. 12 is a sectional view taken at 12-12 of FIG. 9;

FIG. 13 is a sectional view taken at 13-13 of FIG. 9;

FIG. 14 is an isometric view of the tape storage unit and bayonet-extension of a further modified embodiment;

FIG. 15 is a side elevation of the subject matter of FIG. 14, showing in dotted lines the tape storage unit in partially open position;

FIG. 16 is an enlarged vertical sectional view through the lower portion of the tape dispenser including the tape applying sub-assembly of the modified embodiment of FIG. 14;

FIG. 17 is a partial plan view showing the hinge on the storage unit of said modified embodiment;

FIG. 18 is an exploded isometric view of the lower end of the bayonet-extension of said modified embodiment and of the tape-applying sub-assembly into which it fits; and

FIG. 19 is a sectional view at 19-19 of FIG. 16.

Referring in more detail to the drawings, there is shown in FIGS. 1 through 6 the presently preferred embodiment of the invention.

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A tape-handling unit is provided comprising a tape storage portion generally indicated at 10 and a bayonet-extension 12.

The tape storage portion 10 has a housing 14 surrounding the periphery and one side of roll of tape T, which is confined against lateral movement by rear support 16 and front support 18. The rear support 16 is firmly secured to the internally threaded traveler 20, which cooperates with the threaded hub 22, which is rotatably mounted on circumferentially grooved stub shaft 24 molded integrally with housing 14. A flanged pin 26 is held in a counterbore extending radially of the threaded hub 22 by spring 28, which also presses against ball 30. The larger diameter of the pin 26 rests in the bottom of the portion of larger diameter of said afore-mentioned counterbore, the small diameter portion of said pin extending through a hole in said threaded hub 22 constituting the smaller diameter of said counterbore and engaging circumferential groove 32 of stub shaft 24 to hold said threaded hub against lateral movement. The front support 18 is slidably movable relative to the outer surface of the traveler 20.

Extending down the length of bayonet-extension 12 is a channel 38 emerging from hole 39 for passage of tape T therethrough. The bayonet-extension 12 terminates in a pair of ears 40 with horizontally aligned holes 42 through which extend for rotation relative thereto pins 44 of holding roller 46, which has a convex or barrel-shaped working surface for centering the tape. The pins 44 are of length greater than the thickness of ears 40, and extend outwardly therefrom to selectively engage notches 48 of dependent ears 50 of tape-applying sub-assembly indicated generally at 52. Rotatably mounted in horizontally aligned holes 54 in the ears 50 are pins 56 of tape applying roller 58, in a groove of which rests flat rubber tire 59, which is $\frac{3}{4}$ the width of the metal roller 58, and extends .005 inch above its cylindrical surface. If desired, the full width may be of elastomer. The ears 50 depend from mounting portion 60 which is firmly force fitted on vertically knurled (knurling not shown) bottom portion 62 of bearing support 64. A cap 66 is force fitted on top portion 68 of the bearing support 64. The hole through cap 66 is shaped (not shown) to cooperate with the cross-sectional shape of the bayonet-extension 12, so as to fix the position of the upper portion of the bayonet-extension against transverse or lateral movement relative to the handle 70 and related parts. Handle 70 is mounted for rotatable movement only relative to said bearing support 64 on ball bearings 72 which run in axially spaced grooves in the bearing support 64. Slots 74 extend a short distance longitudinally of the handle 70 from its upper end, the outer portion of which bears threads 76 which cooperate with the threaded nut 78, whereby the tapered unthreaded surfaces 79 thereof engage mating surfaces on the handle 70 to compress the latter against the bearing support, in the vicinity of the slots 74, when the nut 78 is turned to move it downwardly. The bayonet-extension 12 has therein, opposed to the channel 38, recess 80 in which is secured flat spring 82 which exerts a force against the inner surface of bearing support 64.

In operation, tape is moved from the roll T down through channel 38, around holding roller 46 (to which the sticky side of the tape has adherent action), and then around tape-applying roller 58, which presses it onto working surface S. The tape storage portion, bayonet-extension portion, and tape-applying sub-assembly all move in unison on ball bearings 72 relative to the handle 70, and facilitate easy dispensing of tape along curving lines in particular. If it is desired, in using the dispenser, to lay down straight lines, the nut 78 may be turned to clamp the upper portion of the handle 70, between the slots 74, against the bearing support 64 to prevent rela-

tive rotation between the handle and bearing support. When the tape *t* has been completely exhausted from the roll T, the dispenser may be easily reloaded in accordance with the present invention by pushing the housing 14 in a transverse direction to generally overcome the action of the spring 82 and withdrawing the bayonet portion 12. The front support 18 may be slipped off also with ease. A new roll of tape T, on its hub H, is slipped over traveler 20; front support 18 is replaced; and the tape *t* is pulled out and passed through slot 41 and along channel 38, and adhered near its end to holding roller 46. The bayonet-extension 12 is then inserted in the bearing support 64 until the pins 44 snap into position in the notches 48, and the tape *t* may then be brought down around the applying roller 58, which because it is in use effectively flat, the rubber tire compressing to be collinear with the metal alongside at the line of contact, provides pressure on the tape across its entire width. Tapes of different width may be used without shifting the vertical tape roll hypothetical bisector plane away from the vertical centerline of the channel 38 by inserting a finger in hole 84 of rear support 16 (after removing front support 18, pressing a thumb against threaded hub 22, and rotating rear support 16 to move the follower 20 axially of threaded hub 22. Indicia may be suitably provided on the front surfaces of the follower 20 and hub 22 for alignment to show readily the proper settings for tapes of various widths, as, $\frac{1}{16}$ ", $\frac{3}{32}$ ", $\frac{1}{8}$ ", and $\frac{3}{16}$ ". The ball 30 urged by spring 26 exerts friction against the follower 20 to prevent its rotation relative to the hub 22 in normal tape dispensing operation, but permits such relative movement when the hub is held against rotation as above described.

In FIGS. 7 through 13 is shown a modified tape dispenser embodying the invention.

The storage unit indicated generally at 110 includes a generally dish-shaped member 112 with a cover 114 hingedly mounted thereon to permit opening to load into said unit a roll of tape T on the nylon hub 116 removably and rotatably resting around pin 118 secured in the back wall of member 112. The metal stamped from the bottom wall of the member 112 is curvingly bent back at 112a to provide a guide for tape *t* being unwound from the roll T.

The member 112 is of metal in this embodiment, and soldered thereto is the upper offset extremity 120 of metal bayonet-extension 122. The bayonet-extension 122 is generally channel-shaped in cross-section, and rotatably mounted near the lower end thereof is holding roller 124. The open cross-section means the bayonet-extension does not surround the tape passing therealong. Ears 126 seated in slots 128 extending diametrically of the shaft 130 for a short distance longitudinally from the upper end thereof hold said bayonet-extension and shaft against relative rotation, while the ears 126 slide within said slots 128 to permit relative longitudinal movement to insert or withdraw the bayonet. Spring 132 mounted on shaft 130 cooperates with hole 134 in bayonet-extension 122 to provide security against undesired movement of the bayonet-extension out of the shaft.

The shaft 130 is rotatably mounted in handle 136 on upper Teflon bearing 138 and lower ball bearing 140. The bearings are held by force fits between the handle and the shaft.

Secured to the lower end of the shaft 130 for rotation relative to the handle therewith is a tape-applying sub-assembly indicated generally at 142 and including a housing with planar outer side surfaces 144, a knife 146 mounted to cut off tape as desired, and carrying a pin 148 on which is rotatably mounted pressing roller 150.

In operation, when all the tape *t* in a particular roll T has been used up, the storage unit 110 is given an upward tug away from the handle 136, and the bayonet-extension 122 is pulled from within the handle, the spring 132 yielding to permit its tip to pull free of the hole 134. The cover 114 may then be opened, a new roll of tape placed

on the hub 116, pulled down over surface 112a and alongside the bayonet-extension 122, and adhered to the surface of the holding roll 124. The bayonet-extension may then be re-inserted, and the dispenser has thus been reloaded with ease and expedition. The tip adhered to the holding roll may then be advanced between the pressing roll 150 and the working surface S.

In the further modified embodiment shown in FIGS. 14 through 19, the tape storage unit 210 and bayonet-extension 212 are each made of two identical pieces of molded plastic, half of each storage unit being integral with half of each bayonet-extension. Each molded plastic unit includes a storage unit portion 210a and a bayonet-extension portion 212a. Molded in each storage unit portion 210a is a stub shaft 214 and a pair of hinge-pin receiving ears indicated generally at 216. Imagining a vertical plane to be passed through the axes of both said storage unit portion and said bayonet-extension portion, one of said ears 216a has its inner surface substantially abutting and parallel with said plane, and its outer surface parallel thereto and spaced a distance *x* away therefrom. The second ear 216b then has its inner surface spaced a distance *x* away from said plane, and its outer surface spaced a distance of 2*x* therefrom, both surfaces again being parallel to said plane. In this manner, one mold may be used, and when two elements are arranged in mirror-image relation and joined by a hinge pin 218 through the ears 216, a storage unit 210 and bayonet-extension 212, closed in cross-section in this embodiment, result. Force fitted within handle 220 is Teflon upper bearing 222 and lower ball bearing 224. Secured to the inner surface of ball bearing 224 is upstanding tubular portion 226 of a tape-applying sub-assembly indicated generally at 228. Mounted in said tubular portion 226 and extending diametrically thereacross is pin 230. Force fitted inside said tubular portion is funnel-shaped Teflon member 232. The lower end of the bayonet-extension 212 is provided with a bayonet joint 234. A holding roller 236 and press roller 238 are rotatably mounted in the housing 240 of tape-applying sub-assembly 228.

In operation, when one roll of tape is exhausted, the integral storage unit and bayonet-extension can be rotated relative to the tape-applying sub-assembly to release the bayonet joint 234 from the pin 230. The storage unit 210 and bayonet-extension 212 may then be removed from the handle 220, and opened to permit placing a new roll T of tape on a new hub H on the stub shaft 214 of one storage unit portion, pulling the tape *t* down along and over the inner surface of one bayonet-extension portion 212a, adhering the end of said tape to the lower extremity thereof, closing the two storage unit portions and bayonet portions to define a storage unit and bayonet-extension, moving the same slidably through the Teflon bearing 222 and Teflon funnel member 232, locking the bayonet joint, and finally carrying the end of the tape *t* over the holding roller 236 and press roller 238.

All three embodiments above described embody the invention of Howard A. Powers, disclosed and claimed in his patent application Serial No. 2,466, "Tape Dispenser," dated January 14, 1960, now Patent No. 3,098,782, and assigned to the same assignee as is the present invention, with respect to a tape storage unit and pressure roller or abutment applying the tape to a working surface rotatable together relative to a handle to facilitate laying down tape along curving as well as straight lines with ease and expedition.

The subcombination of elements in the tape-holding portion of the embodiment of FIGS. 1 through 6 so as to provide for dialing to center varying widths to tape (in particular, threaded hub 22, traveler 20, groove 32, pin 26, spring 28, ball 30, and hole 84) is the joint invention of Thomas F. Hendrick and Walter S. Aldrich, and applicant herein makes no claim thereto. Also the joint invention of Mr. Hendrick and Mr. Aldrich is the

specific subcombination for aligning the bayonet-extension and locking it in position in the embodiment of FIGS. 1 through 6: namely, provision in cap 66 of a hole shaped to correspond for slidable fit with the external configuration of the bayonet-extension, notches 48 cooperating with pins 44, and spring 82 cooperating to hold the pins 44 in the notches 48 in ordinary use. Provision of a convex holder 46 in conjunction with a cylindrical rubber surface extending just beyond a cylindrical metal surface, and compressible to have the rubber surface and the metal surface collinear at the line of contact, is the sole invention of Mr. Hendrick.

Other embodiments within the spirit of my invention and the scope of the appended claims will occur to those skilled in the art.

I claim:

1. A tape dispenser comprising

a longitudinally extending bearing support member, a bearing around said bearing support member, a longitudinally extending handle mounted around said bearing support member on said bearing for rotation relative to said bearing support member about a longitudinal axis, said handle being held against longitudinal movement relative to said bearing support member,

a tape applicator member secured at one end of said bearing support member and including an applying roller rotatable about a transverse axis fixed relative to said bearing support member, and

a tape supply with a tape storage portion adjoining the other end of said bearing support member and a tape delivery bayonet-extension extending longitudinally from said storage portion and through said bearing support member, said tape delivery bayonet-extension carrying a portion detachably engaging one of said members and securing the bayonet-extension against rotation relative to said members in applying tape,

whereby tape can be introduced to said applicator member by sticking the same to said tape delivery bayonet-

extension at a distance from said storage portion and inserting said tape delivery bayonet-extension through said bearing support member so that the tape can be engaged with said tape applicator member, and said handle is freely rotatable without interference about said bearing support member, said tape supply, and tape applicator member, to permit easy application of said tape to a surface in curved patterns.

2. The tape dispenser of claim 1 in which said tape delivery bayonet-extension carries a fastener detachably engaging said tape applicator member and securing said bayonet-extension against movement relative to said members.

3. The tape dispenser of claim 2 in which said fastener yieldably secures said bayonet-extension against longitudinal movement relative to said members.

4. The tape dispenser of claim 1 in which said bayonet-extension carries a holding roller mounted for rotation adjacent said applying roller.

5. The tape dispenser of claim 1 in which said bayonet-extension includes a longitudinal channel for movement of tape therealong.

References Cited by the Examiner

UNITED STATES PATENTS

2,493,737	1/50	Burns	156—577
2,511,857	6/50	Fritzinger	156—576
2,763,393	9/56	Gill et al.	156—577
2,868,402	1/59	Perry	156—378
3,098,782	7/63	Powers	156—577

OTHER REFERENCES

Kuper: German application 1,090,842, printed October 13, 1960 (KL. 38c 1/05) (1 sht. dwg.; 2 pp. spec.).

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