PATENT SPECIFICATION (11) 1 601 480

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(54) MEASURING TAPES

(71) I, SIMON MALEK, of Australian nationality, of: 44, Stafford Street, Huntingdale, Victoria 3166, Australia, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a tape measure.

According to the present invention there is provided a casing, a measuring tape normally coiled within the casing and extendable therefrom and retractable thereinto by a user, an opening in the casing through which the tape may be extended and retracted, an abutment member in the form of a portion of a wall of the casing movable into or out of engagement with a longitudinal edge of the tape, a movable cam member selectively operable to displace the abutment member to lock or unlock the position of the tape, and a marking instrument releasably attached to the casing, which instrument has a marking end locatable in a predetermined position with respect to the opening.

For a better understanding of the present invention, and to show how the same may be carried out, reference will now be made, by way of example to the accompanying drawings, in which:

Figure 1 is a perspective view of a tape measure constructed in accordance with the invention,

Figure 2 is a side view of the tape measure of Figure 1 showing a cam member in a neutral unlocked position (dotted lines) and in a partial locking position (solid lines),

Figure 3 is a sectional end view of the tape measure of Figure 1 showing the cam member in the neutral position,

Figure 4 is a sectional end view of the tape measure of Figure 1 showing the cam member in a fully locked position,

Figure 5 is a view taken along line 5—5 of Figure 2,

Figure 6 is a side view of the tape measure of Figure 1 opposite to that shown in Figure 2, and

Figure 7 is a sectional view showing an alternative construction of a tape measure according to the invention.

In the drawings, there is shown a tape measure according to the invention including a casing 1, and a measuring tape 11 normally coiled in casing 1 and extendable therefrom and retractable thereinto by a user, through an opening 22 in the casing 1.

The tape measure also includes an abutment member in the form of a portion of a detachable wall 3 of the casing 1 movable into or out of engagement with a longitudinal edge of the tape 11. The abutment member is displaceable by selective operation of a cam member or lever 4 to lock or unlock the position of the tape 11. A marking instrument 18 is attachable to the casing 1 and has a marking end locatable in a predetermined position with respect to the opening 22 in the casing 1.

The casing 1 preferably is square or recangular in side elevation and all corners are preferably at least substantially right angles. So forming the casing 1 allows it to be used as a square and for the end remote from the opening 22 to be used for inside measurements.

The tape measure of the invention may incorporate any suitable interior mechanism governing movement of the tape 11. A typical interior mechanism may be that involving the use of a centrally located drum housing a coiled spring.

The tape 11 is any suitable flexible tape 11 such as of metal or plastics material. Thus the tape 11 preferably is a concave-convex strip formed from any suitable material such as spring steel. Normally the upper surface of the tape 11 will have a scale depicted thereon. The tape 11 preferably has a pull tab 12 at its leading end which tab 12 extends at least substantially at right angles to the plane of the tape 11. The tab 12 may be hooked over a piece of stuff to be measured thereby retaining that end of the tape whilst the casing is moved away to extend the tape. This tab 12 is dimensioned to hold the marking instrument end of the casing clear of a substrate in a retracted position of the tape to prevent the instrument 18 damaging the substrate.

The casing 1 as shown is of cuboidal shape

having two oppositely located broad faces and two pairs of oppositely located narrow faces. In this cuboidal configuration the opening 22 is located in one of the narrow faces, provided by a saddle plate 2, adjacent a common edge thereof with the adjoining narrow base face. A surface of the casing adjacent the opening 22 is preferably reflective and preferably at least substantially perpendicular to the plane of the tape 11 to help sighting and accurate or at least consistent positioning of any particular mark on the tape relative to the opening 22.

The saddle plate 2 which saddles the narrow face of the casing 1 contains the opening 22. This saddle plate 2 is U-shaped in transverse cross-section with its base wall bearing against the narrow face containing the opening 22 and each side wall bearing against a portion of each of the broad faces of the casing 1 such as wall 3. The base edge of one side wall of the saddle plate 3 has a first arcuate recess 8 located adjacent to the opening 22. There is also a second arcuate recess 9 in the base edge of the side wall of the saddle plate 2 adjoining the first recess 8. Suitably the second recess 9 is of shallower configuration than the first recess 8. The saddle plate 2 is connected to the casing 1 in any appropriate manner.

The opening 22 has any appropriate configuration which allows for passage of the tape therethrough. Conveniently this opening 22 has the configuration of an elongated rectangle which has a shallow height.

The cam member may be mounted on the casing for sliding or pivotal movement relative to the casing. In the illustrated embodiments the cam member is mounted on the casing 1 for pivotal movement. This cam member is a cam lever 4 which has an operator portion 6 and a handle portion 5. The operator portion 6 is pivotally mounted on the casing 1 and its pivot point on screw 7 constitutes the cam lever fulcrum. The operator portion 6 of the cam lever 4 may have on its bottom surface one protrusion but preferably two protrusions 14 as shown wherein the pivot point is located intermediate each protrusion 14. Suitably in this embodiment the pivot point is located preferably midway each protrusion 14 and relatively slightly offset from a rectilinear relationship with each protrusion 14. It is also preferred that the bottom surface of the operator portion 6 be relatively slightly raised when compared to the bottom surface of the handle portion 5.

The operator portion 6 of the cam lever 4 is preferably of a shape which approximates the segment of a circle with the handle portion 5 having a more elongated configuration. Preferably the free end of the handle portion 5 is slightly offset in relation to the junction between the handle portion 5 and the operator portion 6 whereby one side edge of the handle portion 5 has a concave recess located therein.

A bearing surface of the casing 1 which engages with the cam member during operation is suitably located in the detachable wall 3 of the casing. The detachable wall 3 is a wall having one of the broad surfaces and the bearing surface is located on the corner region of the wall adjacent the opening 22.

The bearing surface may have one concavity 15 punched or otherwise formed therein which results in the interior surface of that part of the casing containing said bearing surface to have a corresponding protrusion. More preferably however, the bearing surface of the casing has two concavities 15 which are punched or otherwise formed therein resulting in the interior surface of the casing containing two corresponding protrusions. In this embodiment each cavity 15 contained in the bearing surface is of substantially complementary shape to an associated protrusion 14 located in the bottom surface of the cam member.

The detachable wall 3 containing the bearing surface also has the cam member mounted thereon so that portion of the exterior surface of the cam member can contact the bearing surface. The cam member is mounted on the detachable wall 3 so that part of said operator portion 6 is located in the first arcuate recess 8 of the saddle plate 2, said first arcuate recess 8 being substantially complementary in shape to that part of the operator portion 6. The second arcuate recess 9 constitutes an appropriate stop for pivotal movement of the handle portion 5 of the cam lever 4.

There also is provided on the bearing surface a bearing pad or bearing rib 10 which in use engages with a raised bottom surface 16 of the operator portion 6 of the cam lever 4 to assist in causing the casing portion wall 3 to move into abutting relationship with the longitudinal edge of the tape 11. This bearing rib 10 preferably has an arcuate or annular configuration and the exterior surface thereof is of a shallow convex nature. The second arcuate recess 9 of the saddle plate 2 may form an appropriate cut out for passage of the rib 10.

Cam member mounting means are provided which allows for movement of the cam member relative to the casing 1. The mounting means includes a pivot post formed by the screw 7 which extends through a centrally located mounting aperture in the cam member. This pivot post is suitably located intermediate the two protrusions 14 located in the bottom surface 6 of the operator portion 6 of the lever 4. The elongate screw 7 has a base portion which engages in screw threaded relationship with a mounting ring located within the casing adjacent the wall opposite to that wall containing the bearing surface. The screw 7 has a head portion retaining the cam lever 4 in use against the bearing surface by engaging with annular shoulder concentric to the mounting aperture.

In operation the cam lever 4 is in the neutral position shown in Figure 3 allowing the tape 11 to travel freely through the opening 22 when each protrusion 14 of the operator portion 6 of the cam lever 4 engages with its associated concavity 15 in the bearing portion of the detachable wall 3 of the casing and the raised bottom surface 16 of the operator portion 6 is in disengagement from the bearing rib 10 contained in the bearing surface. When the lever 4 is pivoted towards the saddle plate 2 from the neutral position into the partial lock position shown in Figure 5, each protrusion 14 of the operator portion 6 of the cam lever 4 may move partially out of engagement with its respective concavity 15 in the bearing surface and part of the raised bottom surface 16 of the operator portion 6 may engage with the bearing rib 10. This will cause part of the casing wall 3 to move into partial abutting relationship with the longitudinal edge of the tape 11 and thus provide a partial locking action on movement of the tape 11 through the opening 22.

When the lever 4 is pivoted in a direction away from the saddle plate 2 from the neutral position each protrusion 14 of the operator portion 7 may move fully out of engagement with its respective concavity 15 and the entire raised bottom surface 16 of the operator portion 6 engages the bearing rib 10. This will cause part of the casing wall 3 to move into firm engagement with the longitudinal edge of the tape and thus provide a firm locking action on movement of the tape through the opening 22, as shown in Figure 4.

A braking action in relation to retraction of the tape into the casing may thus be achieved by only a slight movement of the cam lever 4 either towards or away from the saddle plate 2 or alternatively by pressing the handle portion 5 of the cam lever 4 while in the neutral position against the bearing rib 10 with either finger or thumb.

It will be appreciated that in accordance with the invention the protrusions 14 on the operator portion 6 of the cam lever 4 may be dispensed with and the bearing rib 10 located on the bearing surface of the casing be provided with a greater height than discussed previously and still achieve a firm locking action preventing movement of the tape 11 through the opening 22. Alternatively both the bearing rib 10 and the protrusions 14 may be dispensed with and the bearing surface provided with a bearing ramp which contacts the bottom surface of the cam lever 4 in use. Yet again protrusions instead of concavities may be provided on the bearing surface which engage with associated concavities located in the bottom surface of the cam lever 4.

Figure 1 shows tape 11 having pull out tab 12 and a centrally located hole 13 in the common edge between the tape and tab 12. The hole 13 located in the common edge of the pull tab 12 and the tape 11 allows for the marking of parallel lines and also for the scribing of circles if desired by the user. Thus if parallel lines are required to be drawn the tape measure may be inverted and the tape 11 locked using a firm locking action at a predetermined position on the tape. A point of a pencil may be inserted through the hole 13 to draw a line as the casing 1 is moved along an edge of the surface being marked.

To draw a circle a small nail may be inserted through the hole 13 and either the point of the marking instrument 18 or a tungsten tip 17 may be used to scribe a circle.

In Figure 6 which illustrates the improved marking means of the invention there is shown the marking instrument 18, marking instrument groove 19 in the casing, marking instrument groove 20 in the saddle plate 2 and a screw 21 for urging the plate 2 towards the casing 1 to tightly hold the instrument 18 therebetween but which can be slacked off to allow retraction of the instrument into, and extension out of the casing.

An access opening 23 is provided adjacent opening 22 in saddle plate 2 for movement of the marking instrument 18 when it has been worn down after continued use. Figure 1 also shows the tungsten tip 17 mounted adjacent opening 22 in an opposite position to the point of marking instrument 18.

The tape measure also includes a knife sharpener 31, a groove 32 in the casing end remote from the opening 22, to receive a pencil and at least part of the casing 1 may be of a nature to accept pencil markings which can be rubbed off such as by a wet or dry finger when no longer required.

The alternative construction of Figure 7 has two marking instruments 18 secured to a plate 41. The plate 41 carries a button 42 and has a T-shaped slot 43 in which a headed peg 44 is located. The plate 41 is also secured to the saddle 2 by a screw 45 to have limited freedom of movement.

In use the plate 41 may be moved from an up position (relative to the view of Figure 7) to a down position as shown in Figure 7 and in that down position it may be moved sideways to couse the instruments 18 to mark.

WHAT I CLAIM IS:—

1. A tape measure including a casing, a measuring tape normally coiled within the casing and extendable therefrom and retractable thereinto by a user, an opening in the casing through which the tape may be extended and retracted, an abutment member in the form of a portion of a wall of the casing movable into or out of engagement with a longitudinal edge of the tape, a movable cam member selectively operable to displace the abutment member to lock or unlock the position of the tape, and a marking instrument releasably attached to the casing, which instrument has a marking end

locatable in a predetermined position with respect to the opening.

2. A tape measure according to claim 1, wherein the opening is located in an end of the casing and the marking end of the marking instrument is locatable at least substantially at said end of the casing.

3. A tape measure according to claim 1 or claim 2, wherein the casing has first and second at least substantially planar walls at least substantially at right angles to one another, said opening is located in said first wall closely adjacent to the intersection of said first wall and said second wall, said tape normally extends at least substantially parallel to the plane of said second wall and said marking end is located at least substantially in the plane of said first wall.

4. A tape measure according to any one of claims 1 to 3, wherein the cam member is pivotally mounted on the casing, there being co-operating means on the cam member and casing movable wall portion so that the cam member may be pivotally moved between a position in which the movable wall portion is locked against the tape, a position in which the movable wall portion is partially locked against the tape and a position in which the movable wall portion is unlocked from the tape.

5. A tape measure according to claim 4, wherein said co-operating means includes one or more protrusions on the cam member directed towards the movable wall portion and one or more concavities on the movable wall member, which concavities are directed towards the cam member, the protrusions and concavities fully engaging in the unlocked position, fully disengaging in the locked position in which the cam lever bears against a raised rib on the movable wall portion, and at least partially disengaging in the partially locked position.

6. A tape measure according to claim 3, wherein means is provided to adjust the position of the marking instrument so that the marking end may be located at least substantially in the plane of the first wall.

7. A tape measure according to claim 6, wherein said marking instrument adjusting means includes a saddle plate mounted for selective movement towards and away from the end wall of the casing provided with the opening, to trap the marking instrument more or less therebetween.

8. A tape measure according to any preceding claim, in which the marking instrument is at least one graphite pencil lead.

9. A tape measure according to any preceding claim in which the marking instrument includes scratching means made of tungsten carbide.

10. A tape measure according to any preceding claim, wherein the marking instrument is graphite pencil lead and means is provided to advance that lead to compensate for wear of the lead.

11. A tape measure substantially as hereinbefore described with reference to the accompanying drawings.

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1601480 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

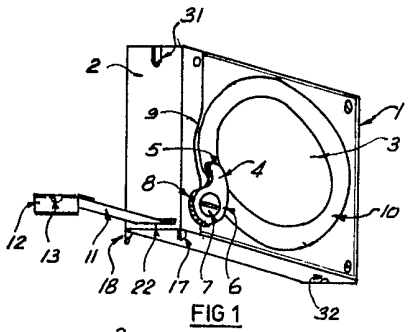

FIG 1

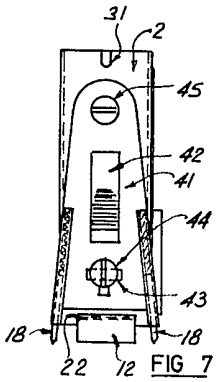

FIG 7

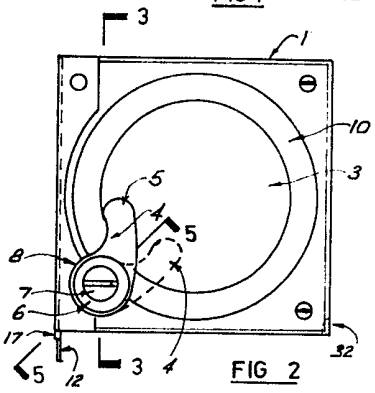

FIG 2

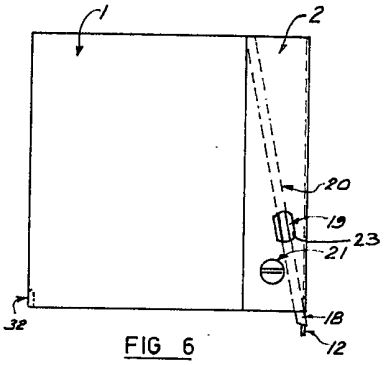

FIG 6

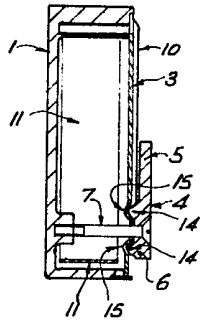

FIG 3

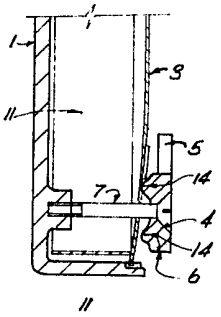

FIG 5

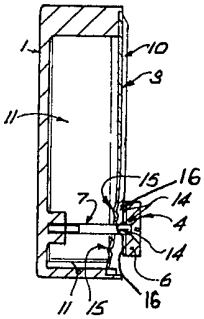

FIG 4