

March 2 1943.

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2,312,943

ENGINEER'S TAPE BOX

Filed Sept. 8, 1941

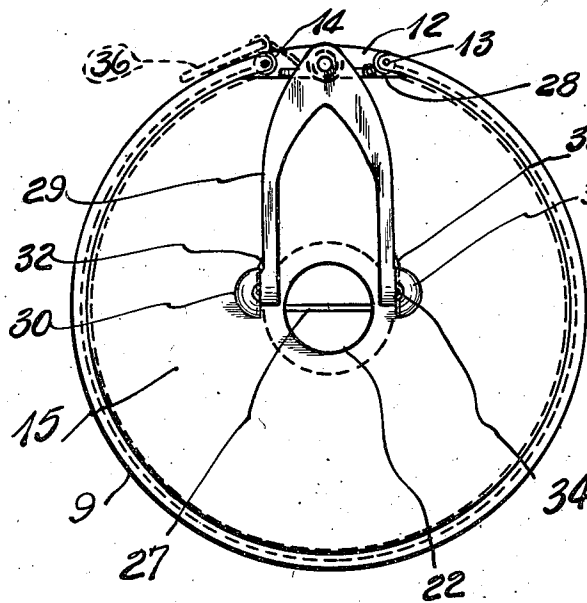


Fig. 1

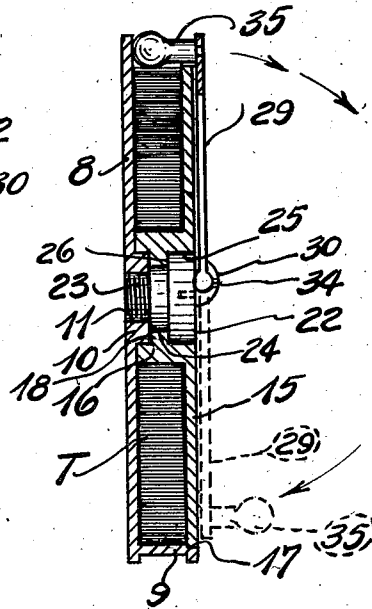


Fig. 2

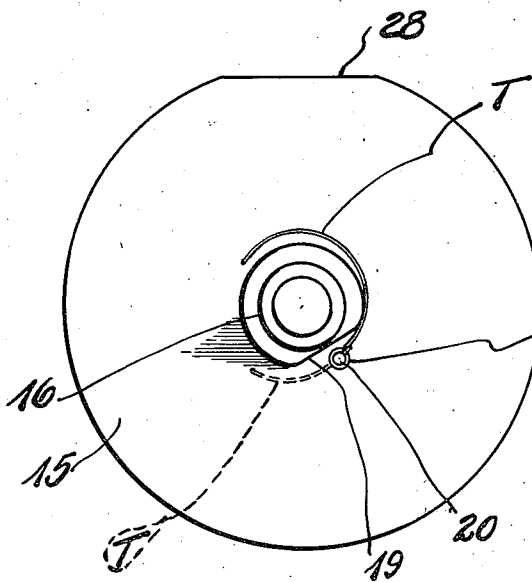


Fig. 3

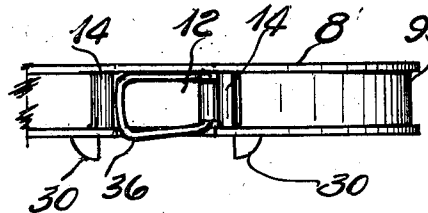


Fig. 4

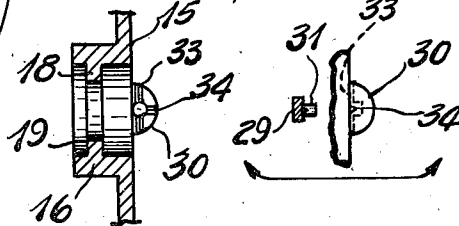


Fig. 5

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UNITED STATES PATENT OFFICE

2,312,943

ENGINEER'S TAPE BOX

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Application September 8, 1941, Serial No. 409,998

9 Claims. (Cl. 242—84.8)

This invention relates to tape boxes and the like, and more particularly to tape boxes for housing measuring tape such as used by engineers, surveyors, mechanics, and the public in general for measuring distances, machines, and objects in general.

One of the prime objects of the invention is to design a tape box provided with means for locking the tape in any desired wound or unwound position.

Another object is to provide a tape box from which the unwound tape may be quickly and easily removed for use as a drag chain with zero end ahead; for cleaning, oiling, repair, or any other purpose, and which requires merely a screw driver, a coin, a car key, or other disk-shaped member as a tool.

A further object is to provide a tape box from which the tape can be readily removed and quickly replaced in the reverse direction, so as to make possible normal use by a left-handed person.

A further object still is to provide a tape box which may be readily opened or disassembled for cleaning and drying by the direct application of heat, the tape remaining in coiled position on the rotatable cover plate when the box is disassembled.

A further object still is to design a smooth, symmetrical tape box which readily fits in the pocket, and provide a recess in the box for protecting the end ring of the tape from breakage, bending, etc., when the tape is not in use.

Still a further object is to provide a strong and substantial tape box which combines the ruggedness and convenience of a tape reel with the compactness and neatness of a tape box but without the fragility thereof.

A further object is to provide a tape box having a winding handle of greater leverage than is usual, with means for automatically locking the handle in the winding position, in the right angle or unwinding position, or in the closed position, in which position it locks the tape from unwinding and keeps the end ring in its protective recess.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions and minor details of construction, without departing from

the spirit, or sacrificing any of the advantages of the invention.

In the drawing:

Fig. 1 is a side elevational view of my improved tape box showing the handle in locked position, the broken lines showing the end ring of the tape;

Fig. 2 is a vertical sectional view through the box; the broken lines showing the handle swung to position for winding or unwinding the tape, the arrows indicating the direction of swing;

Fig. 3 is a view showing the inner face of the rotatable plate on which the tape is wound, the broken lines showing the tape reversed for left-hand operation;

Fig. 4 is a fragmentary top edge view of the box;

Fig. 5 is a fragmentary sectional view through the hub of the cover plate; and

Fig. 6 is a fragmentary part sectional view showing one of the handle forks and the lug in which it is journaled.

Referring now more particularly to the drawing in which I have shown the preferred embodiment of my invention, the numeral 8 indicates the main body or shell of the tape box which is preferably formed with a rim 9, channel-shaped in cross section, and this shell can be either cast or pressed as desired, being formed with a hub 10 having a centrally disposed threaded opening 11 extending therethrough, and an elongated opening 12 is provided in the outer rim 9 to accommodate the tape T as it is wound on or unwound from the cover plate of the box.

Transversely disposed pins 13 are provided in the rim 9 at the ends of the opening 12, and rollers 14 are revolvably journaled on said pins to eliminate wear and friction as the tape T is drawn thereover during a winding or unwinding operation.

A flat disk-shaped cover plate 15 forms a closure for the open side of the shell and is formed with a centrally disposed bearing 16 which is journaled on the hub 10, the edge of the shell rim 9 being shouldered as at 17 to accommodate the outer edge of the cover plate and form a running fit thereat.

A rib section 18 is formed integral with the hub 10, the inner side of the rib being disposed in facial contact with the face of the hub 10 and serving to space the cover plate with relation to the shell.

A tape anchor is provided on the inner face of the cover plate 15, the hub 16 being cut away

as at 19 to accommodate a stud 20 to which the inner end 21 of the tape T is attached, said tape being wound (in either direction) on the member 16 with the free end leading outwardly through the opening 12 provided in the rim, the tape riding on the rollers 14 and eliminating wear and friction.

A plug member 22 serves to lock the parts in assembled relation, the reduced section 23 being threaded for engagement with the threaded opening 11 provided in the shell, the shouldered sections 24 and 25, respectively, forming the bearing on which the hub 16 is rotatably journaled, the inner edge of the shoulder 25 engaging the face 26 of the rib 18 to prevent end play. The threaded section 23 is machined to provide a tight fit in the hub 10 and is sufficiently tight to resist any tendency to unscrew as the tape is manipulated.

A slot 27 is provided in the face of the center plug 22 to accommodate a coin, disk, or screw driver (not shown) so that the plug may be readily inserted or removed when assembling or disassembling the box.

A flattened section 28 is provided on the outer periphery of the cover plate 15, this flattened section being disposed adjacent the rollers 14 and for a purpose to be presently described.

A forked winding handle 29 is hingedly connected to bosses 30 provided on the face of the cover plate 15, each fork being formed with a laterally projecting lug 31 which is journaled in the bosses 30. Fins 32 are provided on the handle 29 as shown, and V grooves 33 and 34, respectively, are formed in the face of the bosses 30 for engagement by the fins 32 to lock the handle in various positions of adjustment, the handle being formed of resilient material to permit the forks to be sprung for attachment. The upper end of the handle is provided with a knob section 35 mounted thereon, and when the handle is swung to position as shown in solid lines in Figs. 1 and 2 of the drawing, the knob serves to lock the rotatable cover plate and tape in position and prevent further winding or unwinding thereof, it being understood that this flattened section must be in alignment with the opening 12 in the rim to accommodate the handle and permit the knob to swing over the cut-away section of the rim and lock the tape and handle against rotation.

A tape ring 36 is provided on the outer end of the tape T as usual, and the rollers 14 are spaced sufficiently far apart to accommodate this ring so that it will not be bent or broken when the tape is not in use, and further providing for smooth, symmetrical appearance.

When the plug 22 is removed, the rotatable cover, with the tape coiled thereon, can be removed as a unit; and when it is desired to change to suit a left-handed person, it is merely necessary to reverse the tape so that it winds in the opposite direction and as indicated in broken lines in Fig. 3 of the drawing. No further adjustment is required.

From the foregoing description it will be obvious that I have perfected a very simple, practical, and substantial engineer's tape box composed of few parts, which can be easily assembled and disassembled, and in which the tape can be locked in any desired wound or unwound position.

What I claim is:

1. A tape box comprising an outer shell including a rim, a rotatable cover plate revolvably

mounted on said shell, a metallic tape wound thereon, a tape opening in the rim of said shell and a winding handle provided with a knob hingedly mounted on said cover plate and adapted to be swung into said rim opening and into engagement with the coiled tape to lock said tape against unwinding and said cover plate against rotation.

2. A tape box comprising an outer shell including a rim, a cover plate forming a closure for said shell and rotatably mounted thereon, an opening in the rim of the shell, rollers disposed at the ends of said opening, and a winding handle hingedly mounted on the cover plate and having a knob member thereon, said handle being movable to position the knob into the opening in the rim for locking the cover plate against rotative movement with relation to said shell.

3. An engineer's tape box comprising an outer shell including a rim, an elongated opening in said rim, a cover plate forming a closure for the shell and rotatably journaled thereon, a flattened section on the outer periphery of the cover plate, a handle hingedly mounted on the plate and provided with a knob, said handle being foldable to swing the knob into the opening in the rim and lock the cover plate against rotative movement with relation to the shell.

4. An engineer's tape box comprising an outer shell including a rim, an opening in said rim, anti-friction rollers provided at the ends thereof, a cover plate rotatably journaled on said shell, a flattened section provided on the outer periphery of the plate, and a hinged handle on said plate and provided with a knob adapted to be swung over said flattened section and opening in the rim for preventing rotative movement of the plate with relation to the shell when the flattened section is in alignment with said opening.

5. An engineer's tape box comprising a shell including a rim, an elongated opening provided in said rim, anti-friction rollers at the ends of said opening, a center plug mounted on said shell, a cover plate journaled on the plug and forming a closure for the shell and having a tape releasably anchored to said cover plate and leading through said opening, a flattened section on the outer periphery of the cover plate, and a handle hingedly mounted thereon and provided with a knob foldable over said flattened section and tape opening to lock the cover plate and tape against rotative movement with relation to said shell.

6. An engineer's tape box of the class described comprising an outer shell including a rim, a tape opening in said rim, a cover plate forming a closure for the shell and rotatably journaled thereon, a tape carried by the cover plate, a handle hingedly mounted on said plate and provided with a laterally extending knob adapted when the plate is in predetermined position to be swung into the tape opening in the rim and frictionally engaging the wound tape to hold the tape against unwinding and the cover plate against rotation, and a centrally disposed locking member having threaded engagement with the shell for securing the parts in assembled relation.

7. An engineer's tape box comprising a shell including a rim, an elongated opening in said rim, a cover plate forming a closure for the shell and rotatably journaled thereon, a flattened section on the outer periphery of the plate, a winding handle hingedly mounted on the plate and provided with a knob, said handle being foldable to swing the knob over the flattened portion of the plate and into the opening in the rim when

the cover plate is in predetermined position with relation to the shell, and to lock the wound tape against unwinding, and the shell, and cover plate against rotative movement with relation to each other.

8. An engineer's tape box comprising a shell including a rim, an elongated opening in said rim, anti-friction rollers mounted in the rim at the ends of the opening, a cover plate journaled on said shell and on which a measuring tape is releasably wound, a flattened section on the outer periphery of the plate, a handle hingedly mounted on the face of the cover plate and provided with a laterally projecting knob, said handle being adapted to be swung to inoperative position with the knob over the flattened plate section and opening in the shell to lock the parts against rotation with relation to each other, and quickly

releasable means for securing the cover plate on the shell.

9. An engineer's tape box comprising an outer shell open on its one side, an elongated opening 5 in the rim of the shell, a cover plate forming a closure for the shell and on which a measuring tape is wound, a flattened section on the outer periphery of the cover plate, bosses on the cover plate, grooves in the face of each boss and a 10 winding handle provided with a knob journaled therein, and having fins for engagement with the said grooves to lock the handle in set position, said handle being foldable to swing the knob over the flattened section of the cover plate and 15 over the opening in the rim to lock the cover plate against rotative movement with relation to the shell.

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