

[54] **TAPE CONTAINER**

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[52] **U.S. Cl.**..... **206/405, 220/25, 220/55 C, 292/207, 292/218**

[51] **Int. Cl.**..... **A47j 27/08, A47j 36/10**

[58] **Field of Search** **206/406, 403, 405, 404; 220/55 C, 25; 292/302, 307, 213, 218**

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[57] **ABSTRACT**

A container for a tape and the like comprising:

a body portion having a flat bottom plate, a circumferential wall fixed to the bottom plate integrally therewith, and a socket fixed to the inside surface of the bottom plate at the center thereof,

the socket having a cylindrical portion and an upper end plate, the end plate having an elongated shaped opening,

a cover portion having a flat top plate, a circumferential wall fixed to the top plate thereof integrally therewith, and a recess formed at the center of the top plate, and

latch means provided in the recess of the top plate,

the latch means comprising a latch plate rotatable in the recess, a finger plate associated with the latch plate so as to be rotated with the latch plate, the shape of the finger plate being so formed that the finger plate may pass through said elongated opening of the socket when the finger plate is in alignment with the elongated opening and may not pass through the elongated opening when the finger plate is rotated from the position of alignment, and latch holes provided on the internal surface of the recess for holding the latch plate in predetermined positions.

11 Claims, 4 Drawing Figures

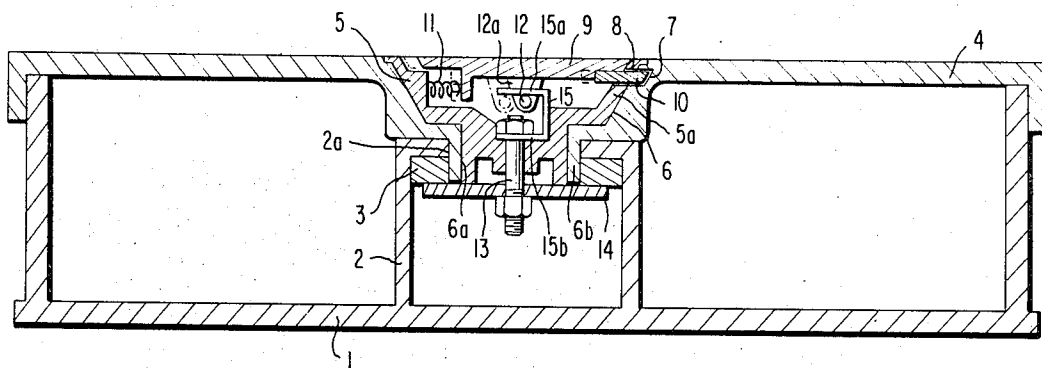


FIG. 1

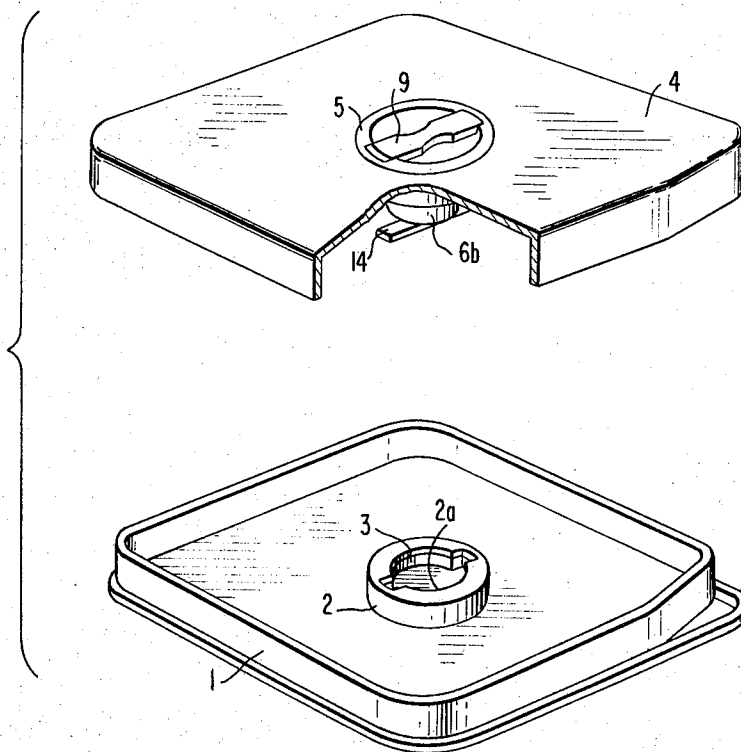


FIG. 2

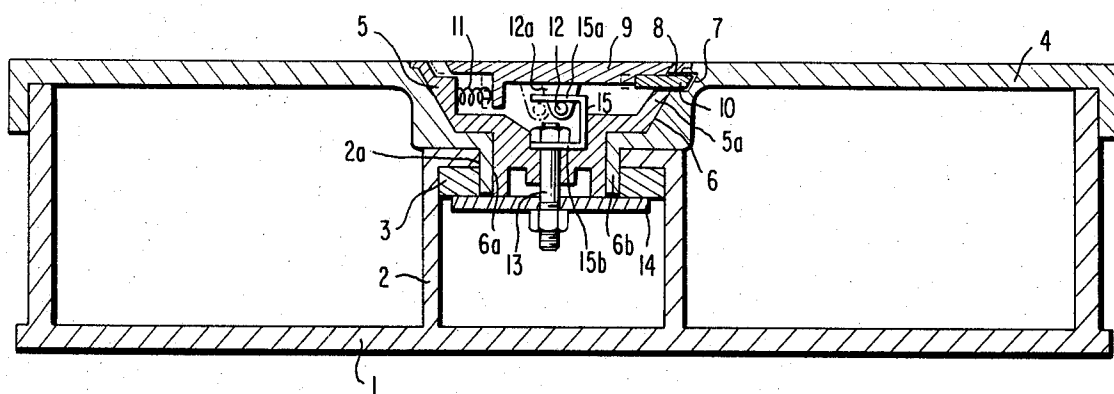


FIG 3

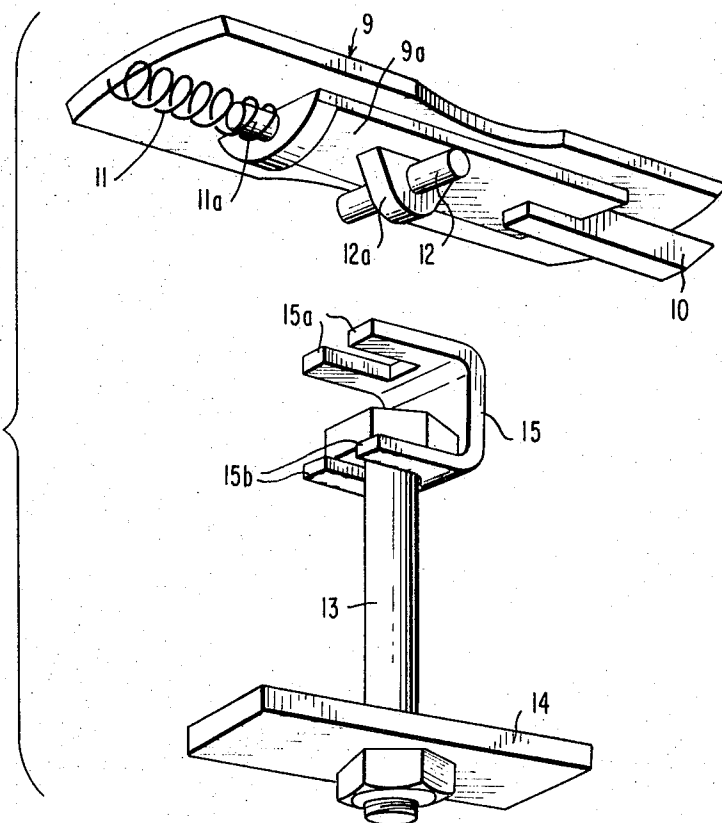
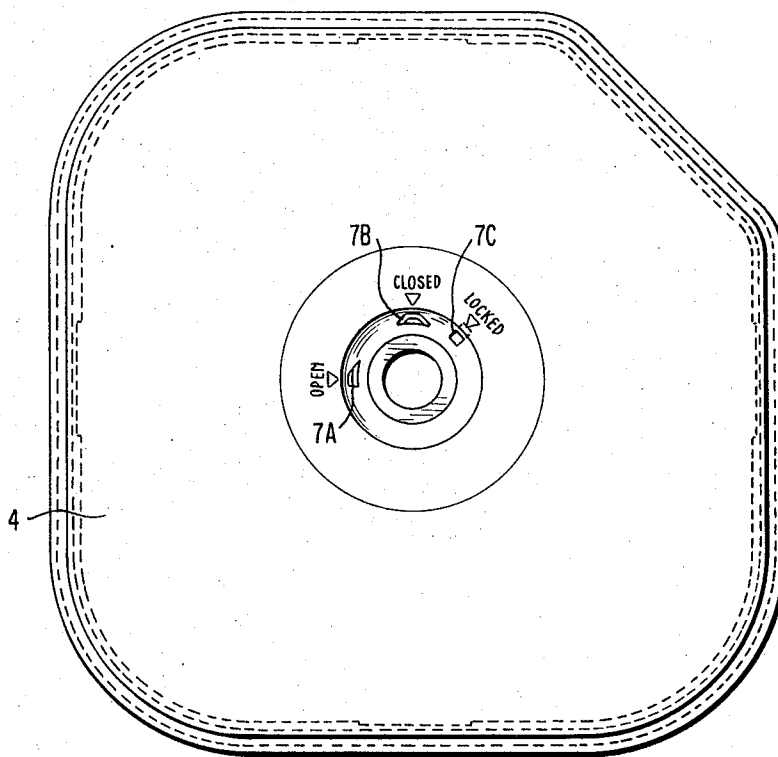


FIG 4



TAPE CONTAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a tape container, and more particularly to a container for a tape wound in convolution such as a magnetic recording tape, e.g., a videotape such as a motion picture film wound on a reel.

2. Description of the Prior Art

A film or tape container for retaining and carrying a long tape or film wound on a reel must have the following functional characteristics. First, the container should be easy to open for access to the tape or film therein. Second, the container should be firmly locked so as to not open by shocks during its transportation. Further, it is desired that the cover be easily unlocked when the cover is to be opened.

A primary object of the present invention is to provide a tape container which can be easily opened.

Another object of the present invention is to provide a tape container having a locking means which firmly locks the cover of the tape container during the transportation of the tape container.

A further object of the present invention is to provide a tape container provided with a locking means which can easily be unlocked.

Other objects, features and advantages of the invention will become apparent from the following detailed description of a preferred embodiment of the invention taken in conjunction with the accompanying drawings.

SUMMARY OF THE INVENTION

A container for a tape and the like comprising:

A body portion having a flat bottom plate, a circumferential wall fixed to the bottom plate integrally therewith, and a socket fixed to the inside surface of the bottom plate at the center thereof,

the socket having a cylindrical portion and an upper end plate, the end plate having an elongated shaped opening,

a cover portion having a flat top plate, a circumferential wall fixed to the top plate thereof integrally therewith, and a recess formed at the center of the top plate, and

latch means provided in the recess of the top plate, the latch means comprising a latch plate rotatable in the recess, a finger plate associated with the latch plate so as to be rotated with the latch plate, the shape of the finger plate being so formed that the finger plate may pass through said elongated opening of the socket when the finger plate is in alignment with the elongated opening and may not pass through the elongated opening when the finger plate is rotated from the position of alignment, and latch holes provided on the internal surface of the recess for holding the latch plate in predetermined positions.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

FIG. 1 is an exploded perspective view of a container embodying the present invention with the cover partly broken to show the latch means.

FIG. 2 is a vertical sectional side view showing the internal construction of the tape container shown in FIG. 1.

FIG. 3 is an enlarged perspective view showing the main parts of the latch means employed in the tape container shown in FIG. 1.

FIG. 4 is a top planar view of the container shown in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, the reference numeral 1 indicates a body portion of a tape container embodying the present invention. It is provided at the center thereof with a cylindrically protruding socket 2 having an opening 2a on the top thereof. The socket 2 is shaped to receive the central hole of the core of the tape reel put in a container. On the inner periphery of the opening 2a of the socket 2 is provided a stopper ring 3 as shown in FIG. 2.

The reference numeral 4 indicates a cover portion to be mated with the body portion 1. The cover portion 4 is provided with a rotary locker 5 at the center thereof in a recess 6 formed thereon as shown in FIG. 2. Referring to FIG. 2, the recess 6 has a through hole 6a at the center thereof defined by a downwardly extending cylindrical portion 6b of the recess 6. The lower portion of the cylindrical portion 6b is inserted into the opening 2a of the socket 2 of the body portion as shown in FIG. 2. The rotary locker 5 is engaged in the lower portion 6b of the recess and inserted into the opening 2a together with the lower cylindrical portion 6b. The rotary locker 5 has a conical hollow upper portion 5a fitted on the inside of the recess 6 and is provided with a hole 8 at a position facing a latch hole 7 formed on the inside surface of the recess 6 of the cover portion 4.

The reference numeral 9 indicates a latch plate slidably mounted on the rotary locker 5. As shown in FIG. 3, a mounting member 9a is mounted on the bottom surface of the latch plate 9, and a pawl 10 is mounted on one end of the mounting member 9a. The pawl 10 is normally urged radially outward to be put into the latch hole 7 through the hole 8 of the rotary locker 5 by means of a spring 11. The mechanics of this operation will be explained in detail later in connection with FIG. 3. Returning to FIG. 2, on the bottom surface of the mounting member 9a at the center thereof is provided an arm support 12a extending longitudinally and an arm 12 extending laterally through the arm support 12a. The arm 12 is spaced from the bottom surface of the latch plate 9 and is engaged with a U-shaped two-fork coupling member 15 which in turn is engaged with a guide rod 13 extending vertically in the container at the center thereof. The U-shaped two-fork coupling member 15 has an upper fork portion 15a and a lower fork portion 15b. The upper fork portion 15a is engaged with said arm 12 of the mounting member 9a with said arm support 12a fitted therewith. The lower fork portion 15b is engaged with the upper end of the guide rod 13 so as to be rotated together with the guide rod 13. The guide rod 13 is provided at the lower end thereof with a finger plate 14 which is pressed on the stopper ring 3 at the time of locking. By the coupling member 15 and the mounting member 9a, the latch plate 9 is connected with the finger plate 14 so that the finger plate 14 is rotated together with the latch plate 9.

As shown in FIG. 3, in detail, the pawl 10 and the arm support 12a are fixed to a mounting member 9a which

in turn is mounted on the bottom surface of the latch plate 9. An end of the mounting member 9a opposite to the end at which said pawl 10 is mounted is provided with a spring holder 11a. The spring 11 is mounted to the spring holder and urges the mounting member 9a, and accordingly the latch plate 9, in the direction to put the pawl 10 into the latch hole 7 of the cover portion 4. By sliding the latch plate 9 in the longitudinal direction, the arm 12 slides in the fork portion 15a of the coupling member 15.

As shown in FIG. 4, the cover portion 4 is provided with three latch holes, an OPEN latch hole 7A, a CLOSED latch hole 7B, and a LOCKED latch hole 7C. The OPEN latch hole 7A has a ramp on one side to slip out the pawl 10, the CLOSED latch hole 7B has ramps on both sides thereof and is located on the ramp side of the OPEN latch hole 7A, and the LOCKED latch hole 7C, located on the opposite side of the CLOSED latch hole 7B from the OPEN latch hole 7A, has no ramp.

As shown in FIG. 2, the finger plate 14 abuts on the cylindrical portion 6b of the recess 6 and the stopper ring 3 when the latch plate 9 is in the LOCK position. When the latch plate 9 is in the OPEN position, the finger plate 14 is aligned with the opening 2a of the socket 2 and is therefore removable from the body portion 1. When the latch plate 9 is not in the OPEN position, the finger plate 14 is not removable from the socket 2.

Now, in operation of the above described tape container, a reel on which a video tape or the like is wound is put into the body portion 1 with the cover portion 4 removed as shown in FIG. 1. The core hole of the reel is engaged with the socket 2 of the body portion 1 to prevent vibration of the tape reel in the container during transportation. Then, the latch plate 9 is rotated to the OPEN position 7A to bring the finger plate 14 to the position to be inserted into the opening 2a of the socket 2 so that the cover portion 4 may be brought into engagement with the body portion 1, and the cover portion 4 is placed over the body portion 1.

Then, in order to retain the cover portion 4 on the body portion 1, the latch plate 9 is rotated to the position where the pawl 10 comes to the CLOSED position 7B. As the latch plate 9 is manually rotated, the finger plate 14 rotates in the socket 2 and rises on the stopper ring 3 in order to prevent the removal of the cover portion 4 from the body portion 1.

Although the cover portion 4 may not be removed from the body portion 1 with the latch plate 9 turned to the CLOSED position 7B, there is a ramp in the latch hole 7B and accordingly there is a possibility of removal of the pawl 10 from the latch hole 7B. The latch plate 9 is required to be locked more firmly in case of transportation or the like.

In order to lock the latch plate 9 more firmly, the latch plate 9 is rotated further to the LOCKED position 7C. The latch plate 9 can be easily rotated from the CLOSED position 7B rising on the ramp. At the LOCKED position, the pawl 10 fixed to the end of the latch plate 9 enters into the latch hole 7C by the spring force of the compression spring 11, and the latch plate 9 is firmly locked in the LOCKED position. The finger plate 14 also rotates together with the latch plate 9 and comes to the position where the plate 14 rides on the socket 2 and the stopper ring 3. The finger plate 14 is pressed on the stopper ring 3 at this position and firmly locked in place. Further, since the pawl 10 is engaged

with the latch hole 7C without a ramp, the latch plate 9 never slips out of the hole, and the cover portion 4 does not separate from the body portion 1.

In order to open the cover by removing the cover portion 4 from the body portion 1 of the container, the latch plate 9 is slid against the spring force to pull the pawl 10 out of the latch hole 7C. Thus, the pawl 10 is removed from the hole 7C and the rotary locker 5 is made rotatable in the recess 6. By rotating the latch plate 9 up to the position where the pawl 10 comes to the OPEN position 7A, the finger plate 14 is made removable from the body portion 1 of the container. After the finger plate 14 is brought to the position where it is removable, the cover portion 4 is pulled upward to separate the cover portion 4 from the body portion 1. Thus, the cover is opened.

While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof.

What is claimed is:

1. A container for a tape or the like comprising:

a body portion having a flat bottom plate, a circumferential wall fixed to said bottom plate integrally therewith, and a socket fixed to the inside surface of said bottom plate at the center thereof,

said socket having a cylindrical portion and an upper end plate, said end plate having an elongated shaped opening,

a cover portion having a flat top plate, a circumferential wall fixed to said top plate thereof integrally therewith, and a recess formed at the center of said top plate, and

latch means provided in the recess of said top plate, said latch means comprising a latch plate rotatable in said recess, a finger plate associated with said latch plate so as to be rotated with said latch plate, the shape of said finger plate being so formed that said finger plate may pass through said elongated opening of said socket when said finger plate is in alignment with said elongated opening and may not pass through said elongated opening when said finger plate is rotated from the position of alignment, and latch holes provided on the internal surface of said recess for holding said latch plate in predetermined positions.

2. A container for a tape or the like according to claim 1, wherein said latch plate is urged radially by means of a spring so as to be engaged with said latch hole.

3. A container for a tape or the like according to claim 2, wherein said latch plate is provided at an end thereof with a pawl and spring which urges said pawl into said hole.

4. A container for a tape or the like according to claim 3, wherein said spring is a compression spring provided on the opposite end of said latch plate from said pawl.

5. A container for a tape or the like according to claim 1, wherein said finger plate is connected with said latch plate by means of (1) a vertical rod fixed to said finger plate at the lower end of said rod and (2) a slide coupling member fixed to the upper end of said vertical rod at the lower end of said slide coupling member and slidably engaged with said latch plate at the upper end of said slide coupling member.

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6. A container for a tape or the like according to claim 5, wherein an arm extending laterally is provided on the lower surface of said latch plate for slidable engagement with the upper end of said slide coupling member.

7. A container for a tape or the like according to claim 6, wherein said slide coupling member is a member having a U-shaped cross section, with both ends of said member being fork-shaped.

8. A container for a tape or the like according to claim 1, wherein said recess is cone-shaped and has a downwardly extending cylindrical portion at the lower end of said recess, and a rotary locker supporting said latch means is rotatably mounted in said recess, said rotary locker having a downwardly extending cylindrical portion which is in rotatable engagement with said cylindrical portion of said recess.

9. A container for a tape or the like according to claim 8, wherein a through hole is provided in the wall of said rotary locker for engagement with the end of said latch plate.

10. A container for a tape or the like according to claim 9, wherein said latch plate is provided with a pawl at an end thereof and said pawl extends through said hole provided in said wall of said rotary locker.

11. A container for objects having a mounting hole, said container comprising:

1. a body portion having a hollow socket fixed to the inside surface thereof, a first portion of the exterior surface of said hollow socket being adapted to engage a mounting hole in an object to be contained by the container and a second portion of the exterior surface of said hollow socket, said second portion being remote from the inside surface of said

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body portion, having a non-circular opening therein;

2. a cover portion having a recess formed therein which is adapted to rotatably mount a latch means in a position to engage said hollow socket and having a plurality of latch holes therein located in a manner to be recited and adapted to receive a projection mounted on said latch means; and

3. a latch means rotatably mounted in the recess in said cover portion, said latch means comprising:
 - a. a latch plate accessible from the exterior of the container;

- b. a finger plate located on the inside of said cover portion and operatively connected to said latch plate so as to be rotated with said latch plate, the shape of said finger plate being such that it will pass through the non-circular opening in said hollow socket when aligned therewith but will not do so when not aligned therewith;

- c. a radially movable projection operatively connected to said latch plate so as to be rotated with said latch plate and located within said cover portion in a position to engage the latch holes in said cover portion, the shape of said projection being such that it will engage said latch holes; and

- d. means normally urging said projection into one of said latch holes,

said latch holes being located so that said latch plate is held in predetermined positions when said projection is received therein, one of said predetermined positions being such that said finger plate is in alignment with said non-circular opening in said hollow socket.

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