United States Patent

[11] **3,554,463**

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[32] Priority **Sept. 18, 1967**
[33] **Netherlands**
[31] **6712753**

[54] **HOLDER FOR STORING A RECORDER-TAPE MAGAZINE**
7 Claims, 1 Drawing Fig.

[52] **U.S. Cl.** **242/199,** 274/11
[51] **Int. Cl.** **G03b 1/04,** G11b 15/32, G11b 23/04
[50] **Field of Search** ..... 242/197-—204; 274/4, 11

[56] **References Cited**
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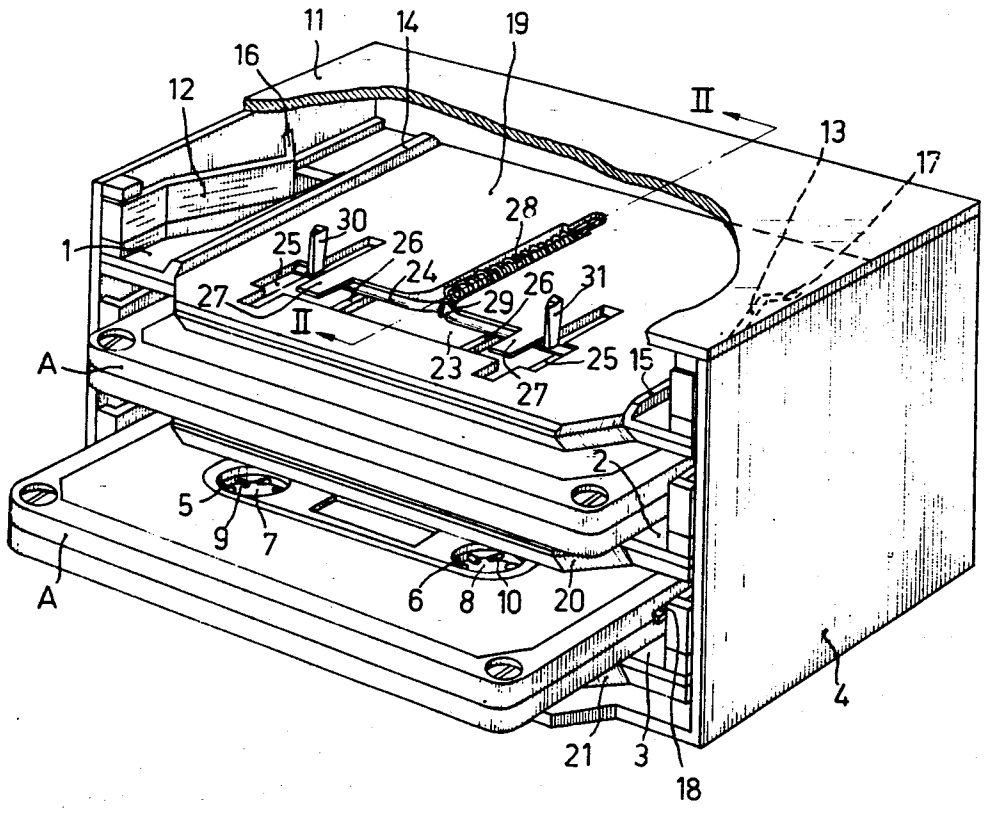
ABSTRACT: A holder for a tape-recorder magazine with a freely rotatable tape-winding hub has a support with guides for sliding the magazine over a transport path into and out of a storage position. A hub-locking member is movable under the control of the magazine between nonlocking positions and a locking position in which the member extends into the transport path to lock the hub against undesired rotation when the magazine is in the storage position.



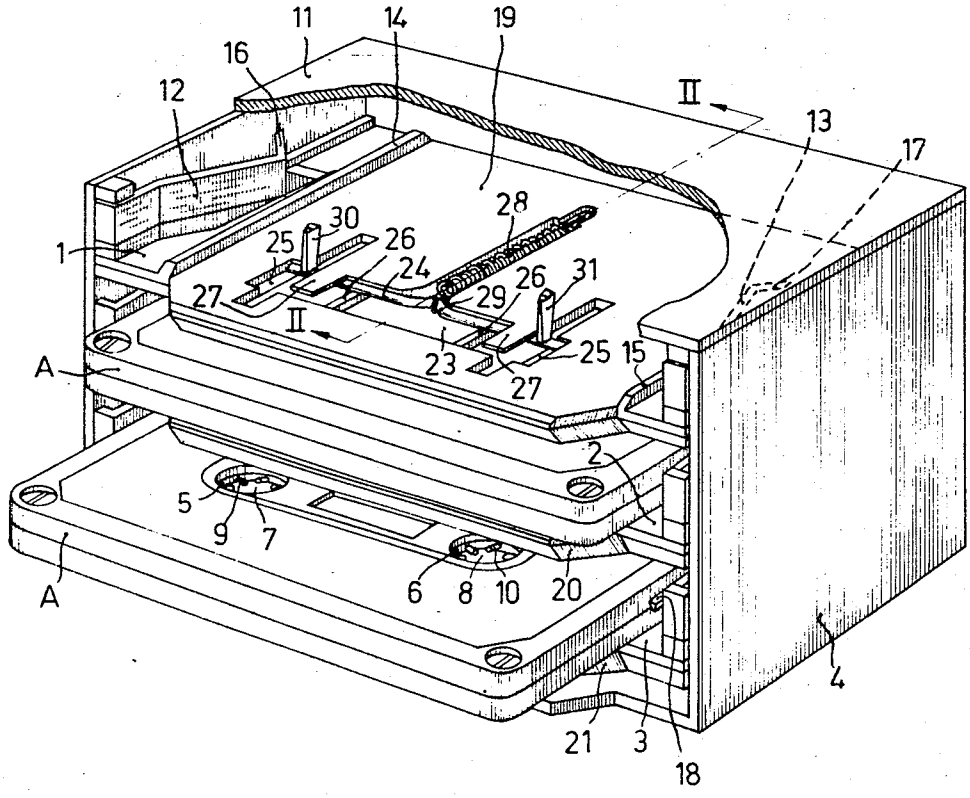


FIG.1

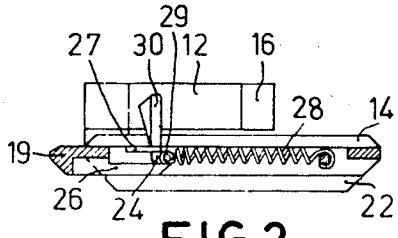


FIG.2

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HOLDER FOR STORING A RECORDER-TAPE MAGAZINE

The invention relates to a holder for the storage of a recorder-tape magazine having at least one winding core or hub for a recorder tape, which holder is provided with guide members forming a transport path over which the magazine may be moved into and out of a storage position.

Known holders of this kind are not particularly suitable for the storage of magazines in which the recorder tape is wound on winding cores which are not fixed against undesired rotation because the tape will unwind itself when the holder is vibrated or shaken. As a result this may cause the tape to form loops in the magazine which may give rise to difficulties and even to deterioration of the tape in recording and/or playing back recordings on the tape.

An object of the invention is to provide a holder in which these difficulties cannot occur. In accordance with the invention I overcome the above difficulties by providing a holder of the above type with locking means including a locking member controlled by movement of the magazine and having a portion extending into the transport path to lock at least one one winding hub against undesired rotation while the magazine is in the storage position.

As a result of these steps any vibrations of the holder will not influence the location of the recorder tape. A holder according to the invention is therefore very suitable to be carried in vehicles in which a tape playback apparatus is used. In one embodiment of my invention, which is particularly suitable for storing magazines with a winding hub having a bore having inwardly extending teeth, the locking means are tiltable in both directions against spring action from a center position substantially at right angles to the direction of sliding in and out and in a plane parallel to this direction of sliding, said means occupying the center position with the magazine in the storage position and gripping between the teeth of the winding core or cores.

In this embodiment, upon introducing the magazine, the locking means will be tilted by the magazine from their vertical center position until the bore in the winding core or cores faces the locking means, which, due to the pring action, return to their center position, thus gripping between the teeth of the winding core or cores and locking this core or these cores. When the magazine is withdrawn, the locking means are tilted in the opposite direction, that is to say in the direction of the sliding movement, until they are released by the magazine and again return to their center position due to the spring action.

According to another embodiment which is suitable for storing a magazine having two winding hubs, the locking means comprise two pins extending into the transport path and coupled by means of a spindle which is supported to be tiltable outside the transport path and at right angles to the direction of sliding, a helical spring being secured at one end to a fixed point of the holder and at its other end to an eccentric portion of the spindle. Consequently, upon tilting the locking pins form their center position substantially at right angles to the direction of sliding in and out, a counteracting couple caused by the spring force will be exerted on the spindle coupling the pins, which couple causes the pins when released to return to their center position. The ends of the locking pins are preferably flattened through part of their length, resulting in a knife edge which grips between the teeth of the winding cores with the magazine introduced. By this step it is utterly impossible that, upon locking the winding cores, the locking pins impact against the front faces of the teeth within the bore of the core.

In a suitable embodiment of a holder according to the invention this holder is provided with at least one wall in which the locking means operable by the magazine are supported.

The invention also relates to an assembly holders suitable for the storage of a plurality of magazines, which assembly is characterized by a cabinet open at least at one side, which is divided by partitions into spaces for the storage of the magazines, the locking means operable by the magazine being housed in the said partitions.

In order that the invention may be readily carried into effect on embodiment thereof will now be described in detail, by way of example, with reference to the accompanying diagrammatic drawing, in which:

FIG. 1 is a perspective view of three holders according to the invention and shows two magazines being stored therein; and

FIG. 2 is a cross-sectional view of a wall of one holder, taken on the line II–II of FIG. 1.

The cabinet 4 shown in FIG. 1 contains three holders 1, 2 and 3 each adapted to store one of three magazines A, only two of which are shown for the sake of clarity in conditions introduced wholly and in part.

The magazines A are of a kind known per se and each includes tape-winding hubs or cores 5 and 6 supported to be freely rotatable in the magazine and a recorder tape which is not shown. The winding cores 5, 6 are provided with bores 7 and 8, respectively, into which teeth 9 and 10 of the cores extend in substantially radial direction.

A wall 11 of the cabinet 4 is partly broken away so that the interior of the holder 1 can be seen. Of the holders 1, 2 and 3, which are of identical construction, the holder 1 will now be described in detail.

Holder 1 comprises a base member 19 carrying guiding means, including guide members 12—13 and 14—15, for moving a magazine A over a transport path into and out of a storage position. The guide members 12 and 13 are in the form of leaf springs the free ends of which have bent portions 16 and 17 which can snap behind lateral projections 18 of the magazine when introduced. Thus, members 12 and 13 not only assist in guiding the magazine along the transport path, but also arrest any undesirable movement in the direction of the path and provide some centering action transversely thereto.

The guide members 14 and 15 are formed as guide ribs which extend in the direction of sliding of the magazine and form parts of base member 19 of holder 1. Member 19, as well as members 20 and 21 of holders 2 and 3 respectively also serve as partitions which subdivide the cabinet 4 into storage spaces for holders 1, 2, and 3. The holder may comprise in addition to the guide ribs 14 and 15, which, as may be seen more clearly in FIG. 2, guide the lower side of a magazine, similar upper ribs (not shown) for guiding the upper side of the magazine. Such upper guide ribs may be arranged for the holder 1 against the lower surface of the cabinet wall 11, but these ribs are not of essential importance for the present invention. The upper guide ribs for the holders 2 and 3 are present on the lower side of the basic wall 19 of the holder 1 and on the basic wall 20 of the holder 2, respectively, and are indicated by 22 (see FIG. 2). The holder according to the invention includes locking or braking means controlled by movement of a magazine into and out of a storage position to hold the hub or hubs of the magazine against undesirable rotation while the magazine occupies the storage position. As shown in the drawings such means include a spindle 24 pivotally mounted in a cavity of base member 19.

A spindle 24 is journaled in an aperture 23 of the wall 19 at right angles to the direction of sliding of the magazine, said spindle bearing at its ends on a supporting surface 25 recessed in the wall and being supported, at a small distance therefrom, by ribs 26 provided in the wall. Furthermore the spindle 24 engages the lower sides of tongues 27 provided in the upper surface of the member 19. The aperture 23 has a shape such that the spindle can be fitted through the said aperture between the supporting surfaces 25, 26, 27 or removed therefrom. A helical spring 28, formed as a tension spring in the present example, is secured at one end to an eccentric portion 29 of spindle 24 and at its other end to member 19. The spindle 24 is provided with two pins 30 and 31 extending into the sliding transport path of the magazine, which pins are tiltable against the action of spring 28 from the central or locking position shown into two side or nonlocking positions. As will appear from the drawings the movement of pins takes place in planes which are substantially parallel to the axis of the transport path i.e. the

direction in which the magazine is moved into and out of the storage position, and which are substantially perpendicular to upper surface of plate-shaped member **19** of spring **28** from a center position (as shown) substantially at right angles to the direction of sliding in and out and in a plane parallel. When a magazine is slid in an out, these tilting movements are caused by the magazine, the spring **28** providing a couple action on the spindle **24** and counteracting the tilting movements of the pins from their central position. When a magazine is slid in, it will cause the pins **30** and **31** to tilt down until the bores **7** and **8** of the cores of the magazine pass along the pins **30** and **31**. As a result of the counteracting couple, the pins at this instant jump back to their central position, thus gripping between two of the teeth **9** and **10** present in the bores and locking the winding cores **5** and **6** of the magazine undesired rotation. When the magazine is slid out the pins are again turned away, but now in the reverse direction, whereupon they return to their central position shown when the magazine is removed completely.

In the embodiment described, the pins **30** and **31** are flattened through part of their length and formed as knife edges for advantageous locking of the winding cores **5** and **6**.

It should be noted that the invention is not limited to the embodiment described hereinbefore and shown in the F Figure. The range of the invention comprises a single holder for the storage of one magazine as well as assemblies of arbitrary numbers of holders for the storage of a plurality of magazines. The invention is also applicable to the storage of magazines which have only one freely rotatable winding core which is subject to undesired rotation during storage.

I claim:

1. A holder for a recorder-tape magazine having a tape-winding hub subject to undesired rotation during storage, comprising a support, guiding means carried by said support for guiding the magazine over a transport path into and out of a storage position and locking means carried by said support and including a locking member controlled by movement of the magazine over the transport path for engaging the hub and holding the same against undesired rotation while the magazine is in the storage position.

2. The device of claim **1** in which the locking means include a pivot carried by the support, a locking member rotatably mounted on said pivot and having a central-locking position in which the member extends into the transport path to engage the hub and inoperative side positions outside the path, and resilient means urging said locking member into the central position.

3. The device of claim **1** in which the guiding means include resilient members arraigned at the sides of the u support to center the magazine and to resist movement thereof along the transport path.

4. The device of claim **1** in which the locking member has a sharp edge portion.

5. A holder for storing a recorder-tape magazine having a tape-winding hub, comprising a plate-shaped support, elongated guide members spaced-apart on said support for sliding the magazine along a transport path into and out of a storage position, and means controlled by movement of the magazine along the transport path to lock the hub thereof against undesired rotation when the magazine is in the storage position, said last means including a pivot mounted on said support and extending transversely the guide members, a spindle mounted on said pivot, locking pins secured to said spindle and rotatable in a plane perpendicular to the plate-shaped support between two side positions and a central-locking position extending into the transport path and spring means urging the pins from the side positions into the central position.

6. The holder of claim **5** in which the support has a cavity and the spindle and the spring means are located within the cavity.

7. The holder of claim **5** in which the plate-shaped support has a cavity and is provided with an aperture for passage of the spindle, pins and spring means into the cavity.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,554,463 Dated Jan. 12, 1971

Inventor(s) JAN HENDRIK JACOB THEUWISSEN

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 2, line 2, before "embodiment" "on" should be --one--

line 57, and 58, after "19" delete "."

"A spindle 24 is journaled in an aperture 2:

of the wall 19"

Col 3, line 24, delete "F"

Col.4, line 12, before "support" delete "u"

Signed and sealed this 5th day of October 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patent