

[54] **DIAL POINTER ASSEMBLY FOR A RADIO/TAPE PLAYER**

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[51] Int. Cl. **G11b 31/00**

[58] Field of Search **179/100.11, 100.12 R, 179/100.12 A; 274/2; 312/8**

[56] **References Cited**

UNITED STATES PATENTS

2,579,684	12/1951	Lorza	179/100.11
3,536,859	10/1970	Tolar	179/100.11
2,536,123	1/1951	Berry	179/100.11

FOREIGN PATENTS OR APPLICATIONS

45-27032	9/1970	Japan	179/100.11
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[57] **ABSTRACT**

A radio dial-door for a combination radio/tape player device has spaced front and rear walls to form a channel therebetween. The door is mounted at opposite ends on a rod extending therebetween. A dial pointer is mounted on the rod for pivotal and longitudinal movement thereon. A bracket also mounted on the rod for longitudinal movement therealong captures the pointer, the latter thereby being movable with the bracket along the rod. A cord attached to the bracket and a tuner control shaft of the radio portion of the device, moves the bracket and pointer with respect to indicia on the door in response to the rotation of the shaft, to indicate the radio frequency setting to which the radio is tuned.

3 Claims, 3 Drawing Figures

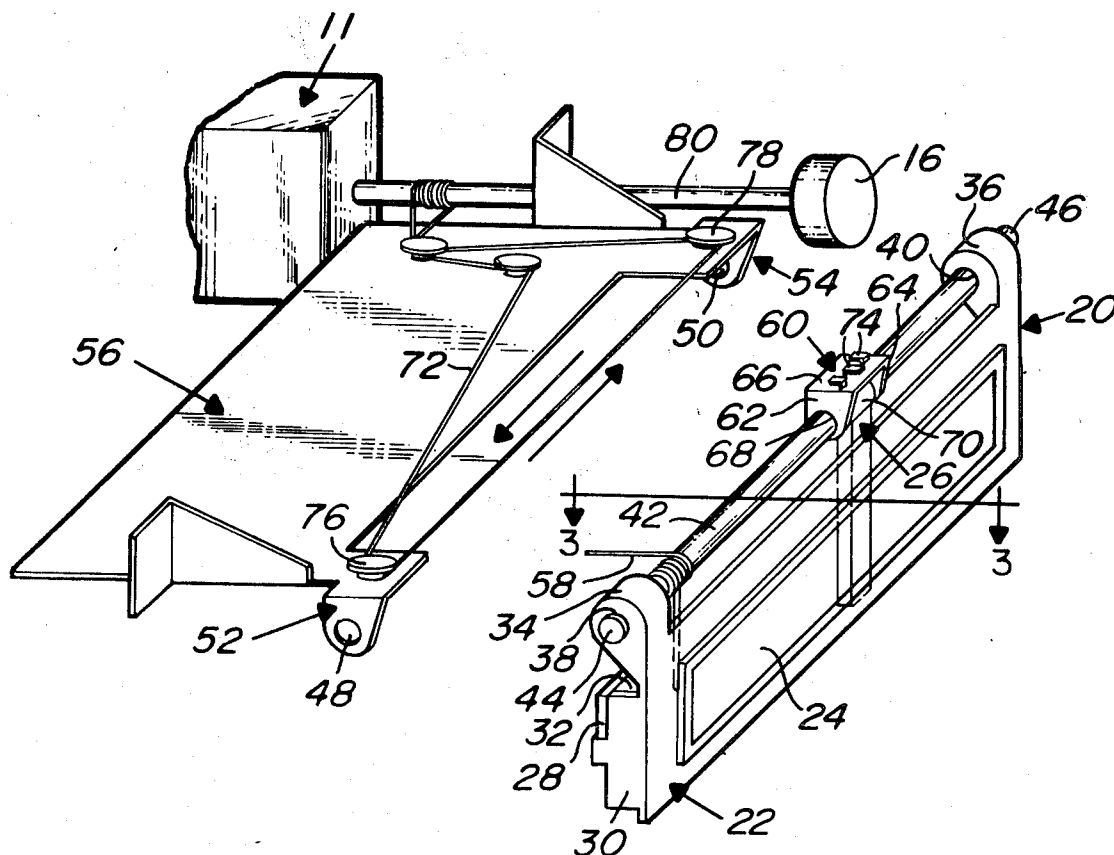


Fig. 1

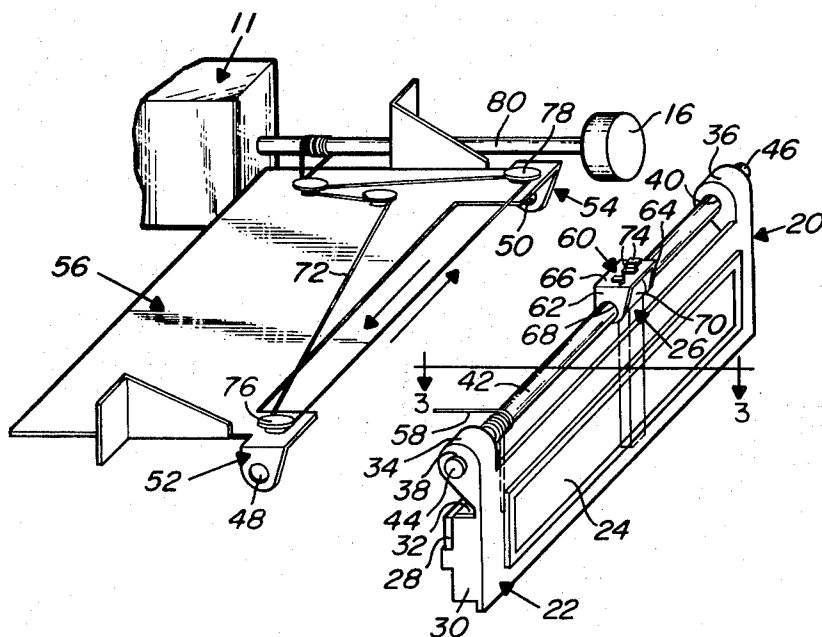
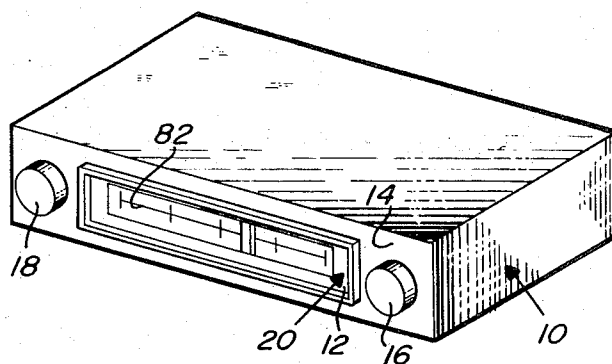


Fig. 2

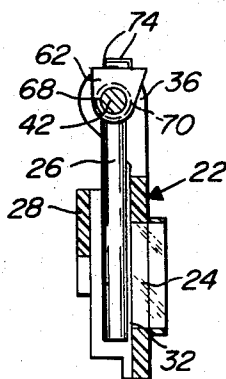


Fig. 3

DIAL POINTER ASSEMBLY FOR A RADIO/TAPE PLAYER

BACKGROUND

This invention relates generally to combination radio and tape player devices for use in automobile and the like vehicles, and more particularly to such devices including a swingably mounted door serving as a covering for the tape cartridge receiving opening and a dial assembly for the radio receiver.

Combination radio/tape player units having a swingable door member covering the cartridge receiving opening of the tape player portion thereof and serving as a dial for the radio receiver portion of the device are known in the art. These devices are used primarily in automobiles and the like vehicles where space must be conserved.

Conventionally, the radio dial pointer used in conjunction with the swingable door member in a device of the above mentioned type, is mounted on a movable string or wire member behind the door and pivots or swings about the string upon opening and closing the door upon insertion and removal of a tape cartridge therethrough. While this arrangement functions satisfactorily for the most part, the dial pointer has a tendency to "bounce" on the string and tap against the rear surface of the door when jarred, etc. This occurrence, while not causing damage to the device, can be annoying to occupants of the automobile in which the device is mounted. Furthermore it is possible that the pointer may be shifted along the string due to excessive jarring.

Other door and radio dial pointer arrangements are also known in the art. One such arrangement is shown in U.S. Pat. No. 3,536,859. This arrangement includes a door having a face plate and backing plate, the latter of which includes a longitudinal slot in which a rivet is received to attach the pointer to the backing plate, between the latter and the face plate. The positioning of the pointer is controlled by a linkage coupled to the pointer and the radio tuner. While the last-mentioned arrangement functions satisfactorily for the most part, the assembly thereof requires the time consuming and rather complex steps of riveting the pointer to the door so the pointer will slide thereon and the joining of the pointer to a mechanical linkage also coupled to the tuner mechanism.

SUMMARY

Accordingly, it is an object of the present invention to provide a combination radio/tape player device for use in an automobile or the like vehicle, including a swingable door member covering the cartridge receiving opening of the tape player portion thereof and serving as a dial for the radio portion of the unit including a movable pointer member, which overcomes the drawbacks of prior art arrangements.

It is another object of the present invention to provide a new and improved radio dial and tape cartridge door member for an automobile radio/tape player combination device in which the radio receiver dial pointer is mounted securely to prevent movement thereof due to jarring of the automobile, etc., is easily assembled without requiring special fasteners and which moves freely and accurately in response to the operation of tuning instrumentalities of the radio portion of the device.

Briefly, a preferred embodiment of a swingable, radio dial door member for a combination radio/tape player device according to the invention includes a door member having front and rear wall members mounted in spaced relation with respect to each other to provide a channel therebetween. The front wall member is transparent and the rear member includes indicia thereon, viewable through the front wall member for indicating a series of radio frequency settings. The door member is mounted over the cartridge receiving opening of the cartridge tape player portion of the device, at opposite ends thereof for pivotal movement about a rod, the latter of which is supported at the ends in suitable mounting members. A pointer mounted on the rod for sliding and pivotal movement extends freely into the channel between the front and rear wall members. A bracket also mounted on the rod for movement therealong, is coupled to the pointer. A wire, or cord coupled to the tuner control shaft of the radio portion of the device, is attached to the bracket to move the latter and thus the pointer to various positions with respect to the dial indicia.

DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a perspective view of a combination radio/tape player device incorporating a dial-door according to the invention;

FIG. 2 is a partially exploded perspective view of the dial-door and radio tuner control shaft mechanism of the radio/tape player device of FIG. 1; and

FIG. 3 is a sectional view of the dial-door of FIG. 2 taken along the line 3—3.

DETAILED DESCRIPTION

Referring now to the drawing in greater detail wherein like numerals have been employed to designate similar parts throughout the various views, there is shown in FIG. 1, a combination radio/tape player device 10 including the usual radio signal receiving means, a portion of which is illustrated by block 11 (FIG. 2) and tape driving and playing instrumentalities (not shown), and having a cartridge receiving tunnel therein and an entrance 12 thereto in a front wall 14. Radio/tape player control knobs 16, 18, are also located on wall 14 adjacent entrance 12.

Mounted in entrance 12 is a dial-door 20 according to the invention. The door covers the entrance 12 of the tape cartridge receiving tunnel when no cartridge is inserted thereinto, and also serves as a dial scale and indicator assembly for the radio portion of the device when the latter is in the radio mode.

As can be seen from FIGS. 2 and 3 of the drawing, the dial-door 20 includes a front wall 22 having a center window portion 24 of transparent material, such as, for example, plastic or the like, to permit one viewing the door from the front to see the dial pointer 26 mounted behind the front wall. A rear wall 28 is joined to the front wall 22 at outwardly extending end portions, such as 30, of the latter wall. The walls are separated to provide a channel 32 of a predetermined width therebetween in which dial pointer 26, dimensioned accordingly, is received.

A pair of upstanding ears or end pieces 34, 36, extend from front wall 22. The end pieces include aligned apertures 38, 40, respectively, therein. A mounting rod 42 having an outside diameter slightly smaller than the

diameter of the apertures 38, 40, is received therein. Ends 44, 46 of the rod member extend beyond the end pieces 34, 36, respectively of door 20 and are received in apertures 48, 50, respectively, of a pair of mounting tabs 52, 54 of the radio/tape player chassis 56 (FIG. 2).

The door 20 is mounted for swinging movement on rod member 42 in the entrance of the cartridge receiving tunnel. A spring member 58 mounted on rod member 42 provides a force against the rear surface of wall 22 of the door 20 to bias the door to a closed position (FIG. 1) in the entrance.

A pointer carrying bracket 60 formed of a single piece of sheet metal or other suitable material, folded over to provide a pair of separated tabs 62, 64 joined by a top piece 66, is mounted on rod member 42 for sliding movement therealong. The rod is received in aligned apertures, such as 68, in the tabs.

Pointer 26 includes an enlarged end portion 70, herein taking the form of a circular cylinder. End 70 includes an aperture therein through which rod member 42 is received. The end 70 is captured between tabs 62, 64 of bracket 60. Pointer 26 is pivotal about rod member 42 while bracket 60 is held from pivotal movement by a tuning cord 70 attached thereto. Cord 72 is received beneath finger-like projections 74 formed along wall 66 of bracket 60. The tabs are pressed downwardly onto cord 72 to press the cord against wall 66, thereby securing bracket 60 to the cord at a selected position thereon. The cord, which extends between mounting posts 76, 78, also is looped about the frequency or tuner control shaft 80 of the radio receiver portion of radio/tape player device 10. Thus, upon rotating knob 16, coupled to shaft 80, cord 72 is moved in either of the directions indicated by the arrows shown, to in turn move bracket 60 attached thereto along rod member 42. The pointer 26 being mounted on rod member 42 between tabs 62, 64 of bracket 60, is carried along the rod to different positions corresponding to radio frequency settings to which the radio receiver is tuned.

Indicia, specifically numbers 82 (FIG. 1), are printed along the inner surface of rear wall 28 of the door 20 and can be seen through the transparent window portion 24 of front wall 22. The series of numbers 82 cooperates with the movable pointer 26 to indicate the frequency to which the radio signal receiving means 11 of the radio/tape player device is tuned. While the numbers herein are printed on the rear wall of door 20, they may if desired, be printed on the front wall so that pointer 26 moves behind the numbers.

During operation of the radio receiver portion of the radio/tape player device 10, one may tune the radio signal receiving means 11 thereof by rotating knob 16. Rotation of the knob in turn rotates shaft 80 to move cord 72 along a path defined by the mounting posts including posts 76, 78. The pointer bracket 60 being attached to the cord, moves with the latter to drive pointer 26 along rod member 42 to different positions with respect to indicia 82 representing radio frequency settings.

Upon insertion of a cartridge into the tape player tunnel during operation of the radio/tape player device to the tape player mode, the door 20 is engaged and pivoted about rod member 42 inwardly into the tunnel against the force of spring 58. Dial pointer 26 extending into channel 32 of door 20, is pivoted also about rod member 42. Bracket 16, however, remains as

shown in FIG. 2. Removal of the cartridge returns the door and pointer to their original positions.

While a particular embodiment of the invention has been shown and described, it should be understood that the invention is not limited thereto since many modifications may be made. It is therefore contemplated to cover by the present application any and all such modifications as fall within the true spirit and scope of the appended claims.

I claim:

1. A combination radio and tape player device including in combination: tunable radio signal receiving means, tape driving and playing means, a cartridge receiving tunnel having an entrance through which a cartridge is insertable into said tunnel, a rod member mounted near said entrance and extending the width thereof, a door being mounted at opposite ends thereof on said rod member for swinging movement in said entrance between a closed position over said entrance and an open position whereby the door is swung into said tunnel, said door including means for indicating the frequency to which the radio signal receiving means are tuned, means for moving said door to a closed position over said entrance in the absence of a tape cartridge in said tunnel, said door having a front and rear wall joined together in spaced relation with respect to each other to form a longitudinal channel therebetween, said front wall including a transparent portion, one of said walls including a series of numbers provided thereon designating frequency settings to which said radio signal receiving means can be tuned, a pointer having an aperture in one end thereof through which said rod member extends for mounting said pointer pivotally thereon, said pointer extending between said front and rear walls for movement through said channel, a bracket member mounted independently of said pointer on said rod member for longitudinal movement therealong, said bracket member being U-shaped with the legs of the U having aligned apertures through which said rod member extends for mounting said bracket member thereon, the base of the U being spaced from and extending substantially parallel to said rod member, said pointer being mounted on said rod member between the legs of said U-shaped bracket member, said bracket member engaging said pointer for moving the latter therewith along said rod member, a first leg of said bracket member engaging said one end of said pointer to move the latter along said rod member in a first direction and the second leg of said bracket member engaging said one end of said pointer to move the latter along said rod member in the opposite direction, manually operable tuning means for changing the radio frequency received by said radio signal receiving means and means coupling said manual tuning means and said bracket member to move said pointer in said channel with respect to said series of numbers for indicating the frequency to which the radio signal receiving means are tuned, said door being swung about said rod member into said tunnel to an open position upon insertion of a cartridge into said tunnel, said pointer being pivoted about said rod member with said door and said bracket member remaining substantially stationary on said rod member during insertion of said cartridge thereby avoiding decoupling of said coupling means from said bracket member.

2. A combination radio and tape player device as claimed in claim 1 wherein said manual tuning means

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includes a cord coupled to said bracket, said cord being movable in opposite directions substantially parallel to said rod member to drive said pointer to various positions with respect to said series of numbers on said door wall in response to the operation of said manual tuning means.

3. A combination radio/tape player device as claimed

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in claim 2 wherein the base of the U of said bracket member includes finger-like projections for coupling said cord to said bracket member at a selected location thereon, said finger-like projections pinching said cord against said base wall portion of said U-shaped bracket member to secure the latter to said cord.

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