Nov. 13, 1962 P. VAZZANO 3,063,664

HOLD-DOWN DEVICE FOR PHONOGRAPHS AND THE LIKE

Filed April 22, 1960

Fig. 1.

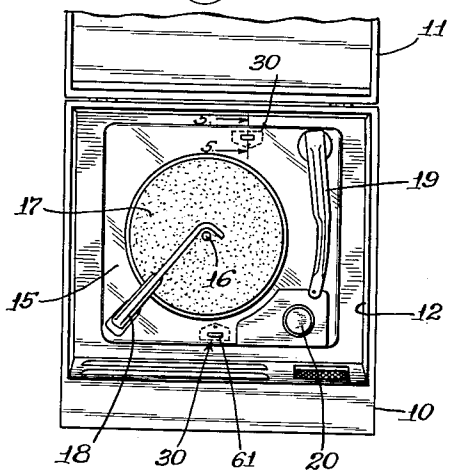


Fig. 2.

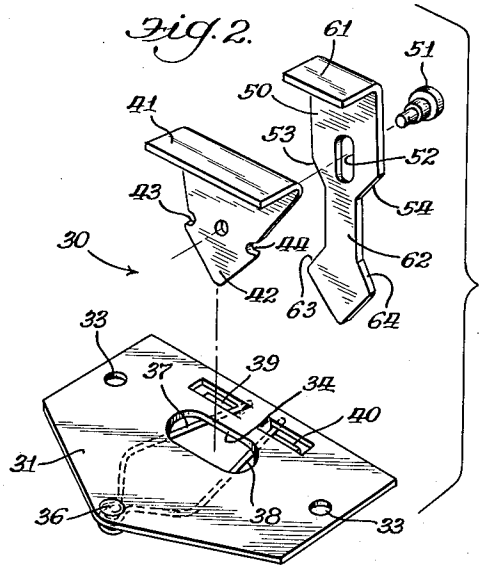


Fig. 3.

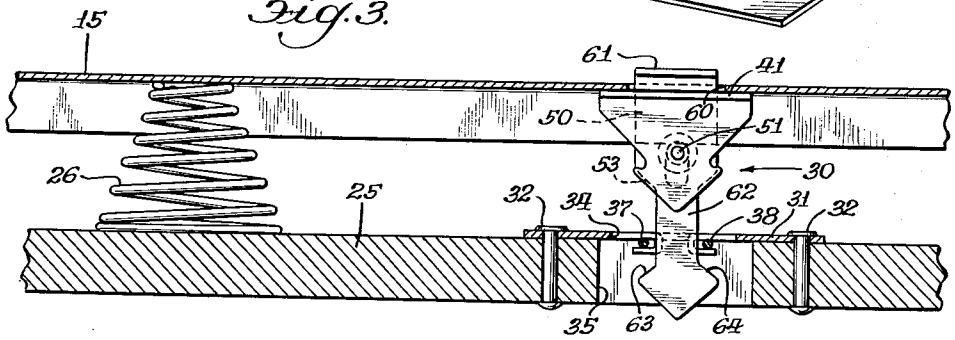


Fig. 4.

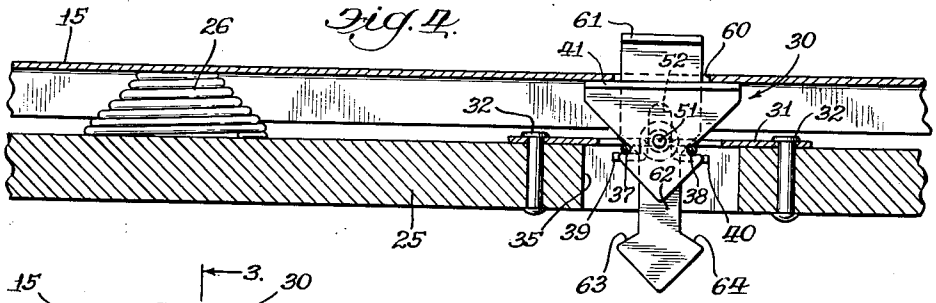
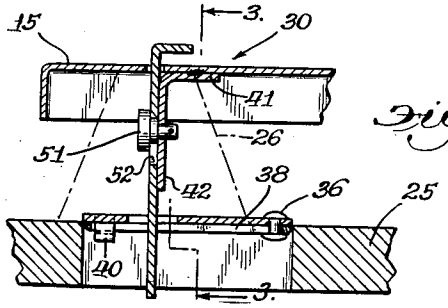


Fig. 5.



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HOLD-DOWN DEVICE FOR PHONOGRAPHS AND THE LIKE

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9 Claims. (Cl. 248—20)

This invention relates to a hold-down device for units such as a phonograph and, more particularly, to such a device which is engaged merely by movement of a motorboard and is quickly released.

In the past, phonographs have had structure for securing a motorboard to a support during shipment of the unit and such mechanism has either required operation of screw fastening devices or removal of the turntable for access thereto. In either case, this is a time-consuming operation. Such mechanism also has utility in a portable phonograph in which the motorboard should be secured to its support whereby carrying of the portable phonograph does not result in damage to the mechanism. With prior structures, the difficulty in securing the motorboard to its support has resulted in such steps not being taken, with a resulting increase in likelihood of damage to the mechanism.

An object of this invention is to provide a new and improved hold-down device for a unit such as a phonograph.

Another object of this invention is to provide a hold-down mechanism for securing a motorboard to its support in which it is not necessary to remove the turntable from the motorboard to either lock or unlock the hold-down mechanism, with the locking of the hold-down mechanism being automatically accomplished upon predetermined movement of the motorboard relative to its support.

A further object of the invention is to provide a phonograph having a motorboard for rotatability supporting a turntable and a tone arm, a support including a mounting member for the motorboard, resilient means disposed between the mounting member and motorboard whereby the motorboard is supported for operation relatively free of vibration, and means for rigidly locking said motorboard and support together including a resilient catch on the mounting member and a latch member on the motorboard extending toward the catch whereby movement of said member and support toward each other engages the latch member with the catch.

Still another object of the invention is to provide a phonograph as defined in the preceding paragraph in which manually operable means engageable without removal of the turntable are provided for release of the latch member from the catch.

Further objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a plan view of a phonograph with a fragmentary part of the cover shown in open position;

FIG. 2 is an exploded perspective view on an enlarged scale of the hold-down mechanism;

FIG. 3 is a fragmentary vertical section through the motorboard and its mounting member taken generally along the line 3—3 in FIG. 5;

FIG. 4 is a view similar to FIG. 3 showing the turntable in locked position; and

FIG. 5 is a vertical section taken generally along the line 5—5 in FIG. 1, and on an enlarged scale.

While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail an embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

A phonograph of the portable type is shown in FIG. 1 in which a cabinet 10 has a hinged cover 11 for enclosing the operating mechanism located within a well 12 in the cabinet. The operating mechanism embodies a motorboard 15 having a record spindle 16 extending upwardly centrally of a turntable 17 with a record hold-down arm 18. The motorboard 15 additionally supports a tone arm 19 and suitable operating controls 20 for the phonograph.

The motorboard 15 is normally supported for operation in spaced relation from a mounting member 25 of the cabinet by resilient means in the form of a plurality of coil springs, one of which is indicated at 26. These springs mount the motorboard for operation relatively free of vibration as shown in FIG. 3.

Means are provided for rigidly locking the motorboard 15 to the mounting member 25 comprising a pair of similar hold-down mechanisms indicated generally at 30, with one being located near the front edge of the motorboard and the other adjacent the rear edge. One of these hold-down mechanisms 30 is shown in detail in FIGS. 2 to 5 and embodies a catch plate 31 secured to the upper surface of the mounting member 25 by a pair of rivits 32 passing through openings 33 in the catch plate. The catch plate 31 has a central opening 34 which overlies an opening 35 formed in the mounting member 25 to provide for positioning of parts of the hold-down mechanism within said openings. A hairpin spring is carried on the catch plate 31 by engagement with a pin 36 intermediate its ends and has a pair of legs 37 and 38 which are maintained in spaced relation and restrained against movement toward each other by a pair of down-turned lugs struck out from the catch plate 31. These lugs are indicated at 39 and 40 and also function to confine the spring legs against up and down movement.

The locking means further includes a pair of latch members 41 associated one with each of the catch plates 31. The latch member 41 is secured to the underside of the motorboard 15 by a suitable means such as welding, in a position to overlie the central opening 34 in the catch plate 31. The latch member has a tapered lower end 42 with a pair of notches 43 and 44 behind the tapered end, whereby downward movement of the motorboard 15 as viewed in FIG. 3 to the position of FIG. 4 results in insertion of the tapered end 42 of the latch member between the spring legs 37 and 38. The spring legs are caused to spread apart until the notches 43 and 44 descend to the level of the spring legs and the spring legs then move toward each other to engage in the notches and lock the motorboard in the position shown in FIG. 4. This engagement is securely maintained by the slight upward slope of the notches 43 and 44 as seen in FIG. 3.

Means are associated with each of the hold-down units for maintaining the motorboard against complete withdrawal from the cabinet 10 and also effective to release the hold-down mechanism for restoration of the motorboard to its operative position shown in FIG. 3. This means embodies a release member 50 movable with and relative to the latch member 41 by mounting of the release member to a pin 51 carried on the latch member with the pin extending through a slot 52 elongated in the direction of operative movement of the release member. The release member 50 has a pair of cam surfaces 53 and 54 intermediate its ends normally above the spring legs 37 and 38 when the turntable is locked as shown in FIG. 4. These cam surfaces effectively define a distance therebetween greater than the distance between the

bases of the notches 43 and 44 in the latch member 41, whereby downward movement of the release member 50 causes movement of the spring legs 37 and 38 away from each other a distance sufficient to clear the notches 43 and 44, whereby the springs 26 become effective to raise the motorboard to the position shown in FIG. 3. This downward movement of the release member 50, from the position shown in FIG. 4, is manually effected by having extension of the release member upwardly through an opening 60 in the motorboard and a turned over flange 61 provided for easy engagement by a person.

With the motorboard 15 in its normal elevated position shown in FIG. 3, the release member 50 merely hangs on the pin 51 and has a central part 62 of a reduced width which is free of engagement with the spring legs 37 and 38 to avoid any contact during use of the phonograph. The release member 50 has a second pair of cam surfaces 63 and 64 which, as shown in FIG. 3, define a distance therebetween greater than the distance between the spring legs 37 and 38, whereby the motorboard is maintained against complete withdrawal from the cabinet 10, but it will be seen that upward movement of the motorboard with sufficient force causes the cam surfaces 63 and 64 to spread the spring legs apart and permit withdrawal of the motorboard from the support member 25 which may be necessary when servicing the unit.

In operation of the invention disclosed herein with the motorboard 15 in normal position as shown in FIG. 3, a downward push on the motorboard causes the latch members 41 to descend down between the spring legs 37 and 38 and cause engagement of these legs with the notches 43 and 44 in the latch member. When it is desired to free the motorboard, the flanges 61 of the release member 50 are depressed to spread the spring legs 37 and 38, whereby the springs 26 elevate the motorboard to the position shown in FIG. 3. If complete withdrawal of the motorboard 15 is desired, an upward pull on the motorboard with the board positioned as shown in FIG. 3 will withdraw the lower end of the release member from beneath the spring legs 37 and 38 as accomplished by spreading of the spring legs by the cam surfaces 63 and 64. The tapered lower end of the release member facilitates reinsertion of the release member in operative association with the spring legs.

I claim:

1. In a phonograph, a motorboard for rotatably supporting a record, a support including a mounting member for the motorboard, means mounting the motorboard on the support for operation relatively free of vibration, and a device for rigidly and releasably locking said motorboard and support together including a catch plate with a central opening on said mounting member, a spring carried by said plate with a pair of legs one at each side of said opening and restrained against movement toward each other, a latch member on said motorboard and extending therefrom toward said catch plate opening and having a tapered end with a pair of notches behind said end whereby movement of the motorboard toward the support member causes the tapered end to spread the spring legs and the spring legs engage in said notches, and a release member mounted for movement with and relative to the latch member having a pair of cam surfaces engageable with said spring legs for spreading thereof to release the latch member upon movement of the release member relative thereto, said release member having an engageable end positioned above the motorboard for manual operation thereof.

2. In a device having a unit mounted for operation relatively free of vibration, a support for said unit, resilient means mounting said unit on the support, means including members one on said unit and one on said support insertable one in the other in response to predetermined movement of said unit toward said support for locking said unit to said support, and exposed means operable for releasing said locking means.

3. In a phonograph, in combination, a motorboard adapted to rotatably support a record, a support for said motorboard including means resiliently supporting said motorboard in spaced relation relative to said support, and means for rigidly locking said motorboard and support together including a first member on the motorboard and a second member on the support interlocking one within the other in response to predetermined movement of the motorboard relative to the support.

4. In a phonograph, a motorboard for rotatably supporting a turntable and a tone arm, a support including a mounting member for the motorboard, spring means disposed between the mounting member and motorboard whereby the motorboard is supported for operation relatively free of vibration, and a pair of devices for rigidly and releasably locking said motorboard and support together, each of said devices including a catch plate with a central opening on said mounting member, a hairpin spring carried by said plate with a pair of legs one at each side of said opening and restrained against movement toward each other, a latch member on said motorboard and extending therefrom toward said catch plate opening and having a tapered end with a pair of notches behind said end whereby movement of the motorboard toward the support member causes the tapered end to spread the spring legs and the spring legs engage in said notches, and a release member mounted for movement with and relative to the latch member having a pair of cam surfaces engageable with said spring legs for spreading thereof to release the latch member upon movement of the release member relative thereto, said release member having a second pair of cam surfaces normally lying to a side of the catch plate remote from the motorboard for maintaining the motorboard against complete withdrawal from the support but shiftable to spread the spring legs and permit said complete withdrawal.

5. In a phonograph, a motorboard for rotatably supporting a turntable and a tone arm, a support including a mounting member for the motorboard, spring means disposed between the mounting member and motorboard whereby the motorboard is supported for operation relatively free of vibration, and a pair of devices for rigidly and releasably locking said motorboard and support together, each of said devices including a resilient catch on said support, a latch member on said motorboard and extending therefrom toward said catch whereby movement of the motorboard toward the support member causes locking between the latch member and catch, and a release member mounted for movement with and relative to the latch member to release the latch member upon movement of the release member relative thereto, said release member having an engageable end positioned above the motorboard for manual operation thereof, said release member having a cam surface normally lying to a side of the catch remote from the motorboard for maintaining the motorboard against complete withdrawal from the support.

6. In combination, a unit mounted for operation relatively free of vibration, a support for said unit, spring means disposed between the support and unit whereby the unit is supported for operation relatively free of vibration, and means including a resilient catch and a latch member extending toward said catch, one on said unit and the other on said support for rigidly locking said unit and support together in response to movement of said unit and support toward each other to engage the latch member with the catch.

7. In combination, a unit requiring lack of vibration in operation, a support including a mounting member for the unit, spring means disposed between the mounting member and unit whereby the unit is supported for operation relatively free of vibration, and a pair of devices for rigidly and releasably locking said unit and support together, each of said devices including a resilient catch, a latch member on said unit and extending therefrom toward said catch whereby movement of the unit

toward the support member causes locking between the latch member and catch, and a release member mounted for movement with and relative to the latch member to release the latch member upon movement of the release member relative thereto, said release member having an engageable end positioned above the unit for manual operation thereof, said release member having a cam surface normally lying to a side of the catch remote from the unit for maintaining the unit against complete withdrawal from the support.

8. In a phonograph, a motorboard for rotatably supporting a record, a support including a mounting member for the motorboard, means mounting the motorboard on the support for operation relatively free of vibration, and a device for rigidly and releasably locking said motorboard and support together including a catch plate with a central opening, a spring carried by said plate with a pair of legs one at each side of said opening and restrained against movement toward each other, a latch member extending toward said catch plate opening and having a tapered end with a pair of notches behind said end, said catch plate and latch member being one on the motorboard and the other on the support member whereby movement of the motorboard toward the support member causes the tapered end to spread the spring legs and the spring legs engage in said notches, and a release member mounted for movement

with and relative to the latch member having a pair of cam surfaces engageable with said spring legs for spreading thereof to release the latch member upon movement of the release member relative thereto, said release member having an engageable end positioned for manual operation thereof.

9. In a phonograph a mounting member, a motorboard for rotatably supporting a turntable and a tone arm, spring means disposed between the mounting member and motorboard for supporting the motorboard relatively free of vibration, means for releasably rigidly locking the motorboard and mounting member together in response to movement of said motorboard toward said mounting member and including a resilient catch on said mounting member and a latch member on said motorboard extending toward said catch, and means including a release member movably attached to said motorboard for releasing said latch member from said catch in response to movement of the release member away from said motorboard.

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