ABSTRACT
An attachment for a grand piano has a flexible strip secured on a shaft which is mountable rotatably underneath the strings of the piano. The strip and shaft can be turned by a linkage means terminating in a control knob at the front of the piano. In one position of the strip it is interposed between the hammers and strings to modify the tone of the piano and in a second position it is out of the way of the hammers. The tone can be modified to sound like a harpsichord or it can be muffled completely depending on the material of the strip.

3 Claims, 8 Drawing Figures
TONE MODIFIER AND MUFFLER FOR PIANO

This invention concerns an attachment or adapter for a piano, which produces a modified tone effect so that the piano sounds like a harpsichord. The attachment can be adapted to serve as a muffler so that the keys can be played silently for practice purposes.

Henceforth, the standard ways of modifying the tone of a grand piano subject to instant control of the player have involved operation of the pedals. The left or damper pedal serves to quiet the piano action so that the hammers strike only one string of two-string notes and only two strings of three-string notes. This results in a softer tone. Operation of the center pedal lifts a damper from a single string or group of two or three strings of a single note so that the tone of the one note is sustained. Operation of the right or loud pedal serves to lift the dampers from all strings for sustaining all tones. It has not been possible heretofore to modify the tones of all strings in other ways by any pedal action. Many proposals for modifying the tone of a piano to sound like a harpsichord for example have proven unsatisfactory due to their complexity or because they involve introduction of paper or other articles into the piano. Prior arrangements do not permit instant and controllable change between the resonant normal piano-forte sound and the sharp harpsichord sound.

The present invention provides a knob-controlled adapter which will interpose pads between the hammers and strings of a piano to produce a harpsichord effect by restricting or preventing prolonged string vibration. The adapter can be arranged to affect treble and base parts of the keyboard separately and independently. The adapter can also be constructed to serve as a complete silencer or muffler of the sound of the piano while the keys are played for practice purposes. Thus the piano can be played in the normal way by striking the keys with full force without producing any resultant sound.

The invention will be explained in further detail in connection with the drawings, wherein:

FIG. 1 is a perspective view of a grand piano embodying the invention, parts being broken away to show portions of the adapter.

FIG. 2 is an enlarged fragmentary sectional view taken on line 2—2 of FIG. 1.

FIG. 3 is a vertical elevational view, with parts omitted, taken on line 3—3 of FIG. 2.

FIG. 4 is a vertical sectional view taken on line 4—4 of FIG. 3, and illustrating the mode of operation of the adapter.

FIG. 5 is an exploded perspective view with parts omitted of the adapter shown in FIGS. 1—4.

FIG. 6 is a sectional view similar to a part of FIG. 2 showing an adapter which serves as a tone silencer.

FIG. 7 is a perspective view with parts broken away of the adapter of FIG. 7.

FIG. 8 is a perspective view of another adapter which serves as a silencer, parts being broken away.

Referring first to FIGS. 1 and 2, there is shown a grand piano 10. Dampers 12 overlay bass strings 14 and which extend from front board 16. Underneath the strings are hammer 18 which are driven upward when keys 19 at the keyboard forwardly of front board 16 are manually played or struck. Dampers 12 are lifted by rods 20 when the keys are played or when one of sustaining pedals 22 or 23 are operated. To the extent described, the piano structure is entirely conventional.

According to the invention, there is provided an adapter 25 having two sections 25a and 25b shown to best advantage in FIGS. 2 to 5 to which reference is now made. The sections are similar to each other in construction. The sections have respectively a shaft 26 or 26' extending through rolled edge 27 of a metal strip 28 or 28'. The strip is secured to the shaft to rotate with the shaft. The strip has a multiplicity of cutouts 30 defining flexible, tapered fingers 32 therebetween. On narrower ends 33 of the flexible, tapered fingers are secured narrow U-shaped clips 34. Secured to undersides of the clips are felt pads 36. Attached to one end of each shaft 26, 26' by a screw 37 is a lever 38 or 38'. A link 40 or 40' is pivotally secured to the lever. The link is engaged in a slot 42 and is held by pivot pin 44; see FIG. 5. A coil spring 46 or 46' has upper hooked end 47 engaged on a pin 50 extending laterally from lever 38 or 38'. The lower hooked end 49 of the spring is engaged by a bolt 52 or 52' located on left side wall 54 or right side wall 54' of the piano case; see FIG. 3. A knob 56 or 56' is mounted on the forward end of link 40 or 40'. The link extends forwardly through a hole in front board 16. Knob 56 or 56' is located at the front board 16 and can be pulled forwardly. Hinges 60 have eyes 62 through which shaft 26 or 26' rotatably extends. Collars 63 located in cutouts 64 of strips 28 or 28' hold the hinges in place. The hinges are secured by screws 65 to brackets 66 inserted and secured between stationary damper bar 68 and crossbar 69 in the piano; see FIG. 2.

Stop pins 72 and 74 are mounted forwardly and rearwardly of levers 38 and 38' on walls 54, 54'. Rear pins 74 stop rearward movement of the levers so that the fingers 32 interposed between the strings 14 and hammer 18 in the solid-line position of the adapter sections shown in FIGS. 2 and 4. Front pins 72 stop forward movement of the levers as shown in the dotted-line position shown in FIGS. 4. Each adapter section is turned counterclockwise as shown in FIG. 4 by pulling out its knob 56 or 56'. The the fingers 32 will extend downward clear of the hammers 18. Springs 46 and 46' exert downward tension in both solid-line and dotted-line positions shown in FIG. 4. The upper ends of the springs are carried over the axes of shafts 26 or 26' when the knobs are pulled forwardly from front wall 16. By the arrangement described either one or both adapter sections 25a, 25b can be activated by interposing the fingers between the strings and hammers or can be deactivated by turning strips 28, 28' so that fingers 32 turn down out of the way of hammers 18.

Adapter section 25a is disposed at the left or bass end of the piano action to the left of partition 75. Adapter section 25b is disposed to the right of partition 75 to include the middle and treble parts of the piano action. Adapter section 25a is on a slightly lower position than section 25b because the bass strings 14 are slightly higher than treble strings 14'. When the adapter sections 25a or 25b or both are turned up or clockwise as viewed in FIG. 4, a harpsichord effect will be produced since the metal or plastic fingers 32 of strip 28 or 28' will strike the undersides of the strings when the hammers strike felt pads 36. When either or both adapter sections are turned forwardly or counterclockwise as indicated by arrows A, B in FIG. 4, the harpsichord effect will be stopped and the piano will have its normal tone.

FIGS. 6 and 7 show another adapter section 25' which can be employed in place of adapter section 25b of FIG. 5. Corresponding parts are identically numbered. This section has a felt strip 28' replacing the metal or plastic strip 26' of adapter section 25b and secured by rolled edge 27' on shaft 26'. A similar felt strip can be employed to replace metal or plastic strip 26 on shaft 26 of adapter section 25a. It will be apparent that when the adapter section 25' is turned to operating position as shown in FIG. 6, the felt strip will be interposed between hammers 18 and treble strings 14'. This will prevent vibrations of the strings so that no tone will be produced when the keys 19 of the piano are played. Another similar adapter section may be provided to muffle tones of bass strings 14.

When the felt strip is turned down by pulling out knob 56 or 56' shown in FIGS. 1 and 4, then the felt strip will be turned down away from the hammers 18. When the felt strip is turned up, the piano can be used for silent practice, since playing keys 19 will produce no sound.

FIG. 7 shows another adapter 25' which can be used to replace both adapter sections 25a and 25b. This adapter has a shaft 26a made with two steps 80, 81 so that a left-end portion of the shaft is offset higher than the right-end portion. Since, in conventional grand pianos, the long strings to the left of partition 75 are on a slightly higher horizontal plane than the
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shorter middle and treble strings to the right of partition 75, the arrangement of FIG. 7 permits felt strips 28a' and 28b' replace both metal or plastic strips 28 and 28' respectively. Thus only a single shaft 26a is required for turning both strips. Thus only a single lever 38, a single link 40 and a single knob 56 is required to operate the entire silencer.

It will be apparent that the flexible metal or plastic strips 28, 28' of adapter sections 24a and 25b can be mounted on shaft 26a, so that the entire adapter assembly can be operated by the single link 40 and knob 56 shown in FIG. 4. By employing independent adapter sections 25a, 25b, the player has the option of modifying the tones of only the bass notes or only treble notes or both. By employing an adapter in which the felt strips or metal strips are mounted on a common shaft, the tones of the entire range of notes are modified.

The adapters or attachments described can be installed in any conventional grand piano without material alteration. They will satisfy long standing needs for devices which will controllably modify the tones of a piano to reduce or muffle them completely or to change them to sound like a harpsichord. In both instances, the desired effect is produced by interposing a flexible member between the hammers and strings of the piano.

What is claimed is:

1. An attachment for modifying the tones of a grand piano, comprising: a shaft, bracket means for rotatably mounted said shaft in a horizontal position under the strings of a piano; a flexible strip secured on said shaft to rotate with the shaft; linkage means operatively connected to said shaft to rotate said strip between an upper position and a lower position, said strip being disposed between the hammers and strings of the piano in said upper position for modifying the tone of the piano, and being disposed out of the path of movement of the hammers in said lower position so that the piano has its normal resonant tone; said linkage means comprising a link extending forwardly through a front wall of the piano and terminating above the keys of the piano, and a handle on the end of the link at its forward end such that a player of the piano can move said link forwardly and rearwardly axially for selectively disposing said strip in either one of the lower and upper positions respectively; said strip being formed of a flexible material having cutouts defining individual flexible fingers which are disposed adjacent to the strings respectively when said strip is in the upper position such that the tone produced by the striking of any one hammer against any one string is modified due to the interposition of one of said fingers therebetween; each finger having a free end and carrying on said free end a rigid clip having a felt member on its underside disposed to be struck by a hammer while the clip is striking the string as a result of said hammer striking action, such that the modified tone sounds like that of a harpsichord; and in which said linkage means includes additionally a lever fixedly attached to said shaft and pivotably attached to said link at about the lever's distal end; said attachment further including a spring attached at one end of the spring to an attaching means at a point about adjacent the pivoting end of said lever, and attached at an opposite spring end of a fixed structure of said piano at a spring anchor point located along an imaginary axis extending transversely through said shaft from a position of said distal end when intermediate between lever positions for said upper position and said lower position, said anchor point being beyond said shaft, and including stop means for preventing said spring from advancing said lever beyond said upper position and said lower position respectively.

2. An attachment according to claim 1, in which said spring is a coil spring.

3. An attachment according to claim 2, in which the bass and treble strings of the piano are on two different levels, and in which said shaft has two laterally spaced sections, said strip being secured to one of said sections of the shaft, and another flexible strip secured to the other section of the shaft to rotate with the shaft.

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