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Van der Wyk

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[54] **DRUM PITCH ADJUSTMENT DEVICE**

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[51] **Int. Cl.** **G10d 13/02**

[58] **Field of Search** 84/411, 413, 414

[56] **References Cited**

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[57] **ABSTRACT**

A device for adjusting the tone and pitch of a bass, or other type of drum, utilizes a pressure plate or roller adapted to movably engage the sound producing membrane of a drum and is urged thereagainst by a lever arm operated by the leg of the musician playing the drum to provide a method of continuously varying the tone and pitch during play.

6 Claims, 6 Drawing Figures

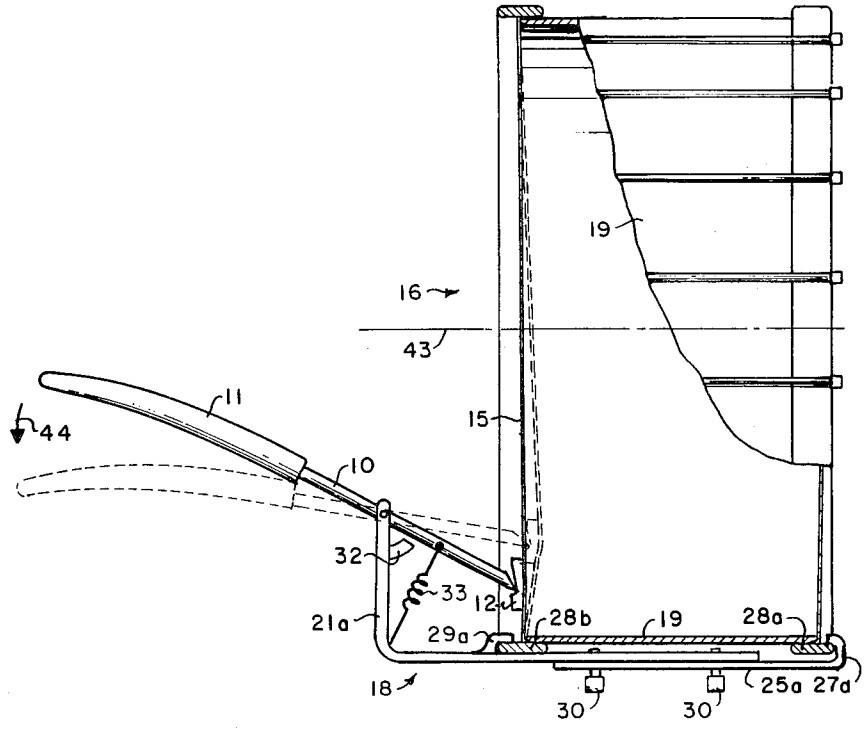


FIG. 4

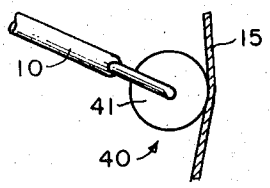


FIG. 3

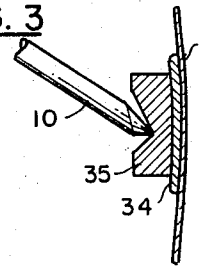


FIG. 2

FIG. 5

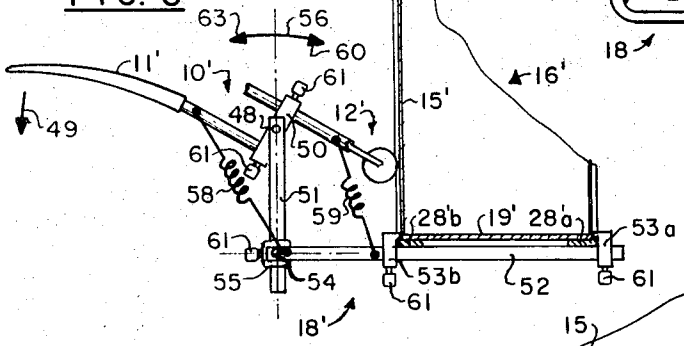


FIG. 1

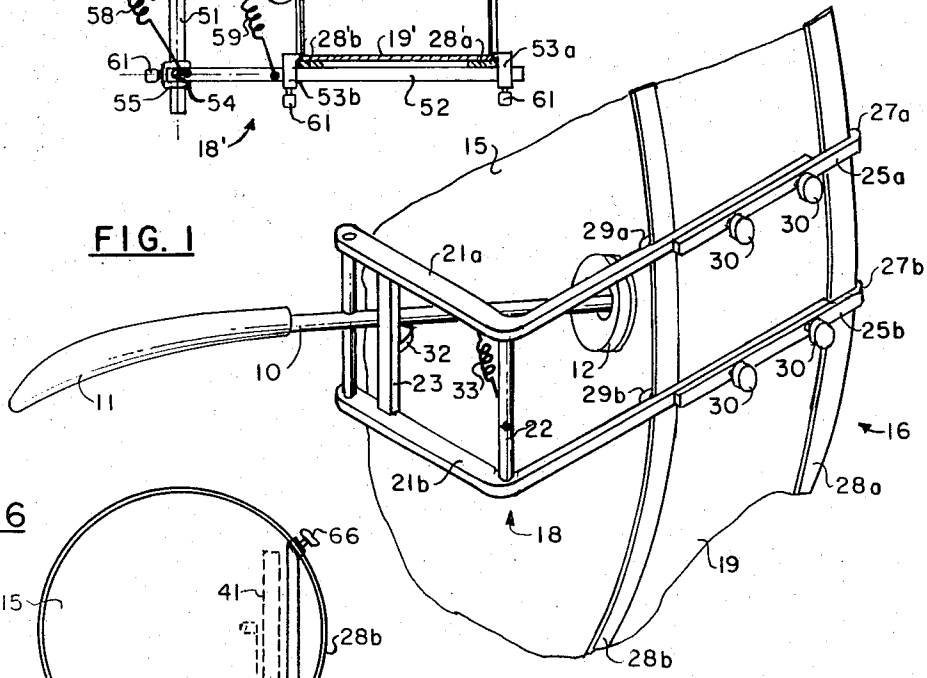


FIG. 6

DRUM PITCH ADJUSTMENT DEVICE

BACKGROUND OF THE INVENTION

This invention relates generally to percussion instruments and in particular to devices for adjusting the tone and pitch of drums.

Various devices in the prior art have been used to muffle the sound of a drum but only the kettledrum or timpani was "tuned" to a particular pitch by adjusting the tension of the drum head or vibrating or sound producing membrane.

This tension was achieved by various mechanical devices, such as, hand screws or pedal mechanisms connected to the hoop holding the drum head. That is, the hoop to which the drum head or vibrating membrane was attached was pulled more tightly over the drum shell to increase the tension in the head and thus increase the pitch of the drum. To decrease the pitch, the drum head tension was reduced by releasing some of the pressure on the drum head hoop.

Devices used to muffle the sound of the drum comprised, generally, soft pads which were urged against the drum head to absorb or modify the tone of the drum.

SUMMARY OF THE INVENTION

The device of the present invention; instead of applying tension to the drum head hoop, applies pressure directly to the drum head to vary its tension while also applying pressure at particular locations radially from the centerline of the drum head with tone quality being modified by the mechanical characteristics of the pressure device that is applied to the drum head.

It is, therefore, an object of the present invention to provide a device for changing the pitch of a drum.

It is another object of the present invention to provide a device for changing the tone of a drum.

It is a further object of the present invention to provide a device for changing the pitch of a drum that is operable by the musician while playing the drum.

It is still another object of the present invention to provide a device for continuously varying the pitch of a drum.

It is still a further object of the present invention to provide a device for varying the pitch of a drum by applying a pressure device to the drum head at various locations and at various pressures.

These and other objects of the present invention will be manifest upon study of the following detailed description when taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an isometric view of the drum pitch adjustment device of the present invention.

FIG. **2** is a top view of the drum pitch adjustment device of the present invention showing its method of operation in greater detail.

FIG. **3** is a sectional view of the pressure device end of the pitch adjustment device of the present invention showing a pressure plate device.

FIG. **4** is a section view of the pressure device end of the ptich adjustment device of the present invention showing a pressure roller type of pressure device.

FIG. **5** is a top view of a second embodiment of the drum pitch adjustment device of the present invention.

FIG. **6** is a view of a damping band used to minimize drum head or membrane slap.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIGS. **1** and **2**, the drum tone and pitch adjustment device of the present invention comprises, basically, a leg operated actuating lever **10** having a leg engaging member **11** attached to one end of lever arm **10** and adapted to receive the force applied by the side of the leg of the musician playing the drum using a foot beater (not shown), and a pressure device **12** connected to the other end of lever arm **10** and adapted to engage the surface of drum head or vibrating membrane **15** of drum **16**, all of which is pivotally connected to a support bracket **18** which is attached to shell **19** of drum **16**.

Support bracket **18** comprises a pair of support arms **21***a* and **21***b* spaced apart by spacer rod **22** and lever arm stop bracket **23** and a pair of adjustable drum attachment hooks **25***a* and **25***b* slidably connected to support arms **21***a* and **21***b*, respectively, with hook ends **27***a* and **27***b*, respectively, adapted to engage drum head hoop **28***a*. Another pair of drum head hooks **29***a* and **29***b* are attached to support arms **21***a* and **21***b*, respectively, and are adapted to engage drum head hoop **28***b*. Wing nuts **30** are used to maintain hooks **27***a*, **27***b*, **29***a* and **29***b* in engagement with hoops **28***a* and **28***b*.

Support bracket **18** further comprises a lever arm stop **32** which is attached to lever arm stop bracket **23**. A return spring **33** is connected to spacer rod **22** and lever arm **10** and is biased to urge lever arm **10** against stop **32** thus reducing the pressure, caused by pressure device **12**, against drum head **15**.

With reference to FIG. **3**, there is shown one type of pressure device **12** comprising a pressure plate sole **34** adapted to slidably engage the surface of drum head **15** which is attached to pressure plate foot block **35** which, in turn, is adapted to receive the end of lever arm **10** in a manner permitting pressure to be applied evenly over the surface of sole **34** for any angle that lever arm **10** makes with drum head **15**.

Sole **34** and foot block **35** can be fabricated from any non-resilient hard substance such as metal, plastic or hardwood, where only pitch change is desired.

If muffling of drum head **15** is desired, foot block **35** can be fabricated from a sound absorbing material such as felt or other resilient or sound absorbing material.

With the proper selection of material and pressure applied to the drum head, the apparatus of the present invention can also be used to vary the duration of the tone.

As for the material out of which sole **34** is fabricated, where it engages drum head **15**, it should have a hard and smooth surface with a low coefficient of friction to permit it to slide easily over the surface of drum head **15**.

With reference to FIG. **4**, a second type of pressure device is shown in the form of a pressure roller assembly **40** comprising a roller **41** rotatably mounted on the end of lever arm **10** and, if only pitch change is desired, roller **41** can be fabricated out of any hard substance such as metal, plastic or hardwood, or, if muffling is desired, it can be fabricated from a sound absorbing material such as felt.

With reference to FIG. **5**, another embodiment of the present invention is shown which comprises the same basic elements as shown in FIGS. **1** and **2**, namely, a leg operated actuating lever **10'** having a leg engaging

member 11' with a pressure device 12' adapted to engage drum head 15' of drum 16', all of which is pivotally connected, at point 48, to a support bracket 18' which is attached to shell 19' of drum 16'. The pivotal connection thus permits arm 10' to move in the direction of arrow 49.

However, lever arm 10' is off-set by off-set bracket 50 which is pivotally connected at point 48 to adjustable arm 51 of support bracket 18'.

Support bracket 18' comprises a support bar 52 to which are connected clamping brackets 53*a* and 53*b* which are adapted to engage drum hoops 28'*a* and 28'*b*, respectively.

An adjustable arm clamp 55 is pivotally connected at point 54 to one end of support bar 52 and is adapted to clamp or hold support bar 51 at a particular location and also to permit support bar 51 to swing in the direction of double arrow 56.

A first spring 58 is connected between arm 10', at a point near member 11' and support bar 52, to bias arm 10' in the direction of arrow 49.

A second spring 59 is connected between arm 10', at a point near pressure device 12' and support bar 52, to bias arm 10' in the opposite direction of arrow 49.

Austing screws 61 are provided at various locations for the purpose of clamping all the parts together.

To operate the drum pitch adjustment device of the present invention, the musician playing the drum using a foot operated beater, places the side of his leg against leg engaging member 11.

When it is desired to increase the pitch of the drum, the musician urges lever arm 10 away from center line 43 in the direction of arrow 44, which in turn urges pressure plate 12 against drum head 15 and at the same time moves it toward center line 43.

This combination of both increasing the pressure and moving the point at which the pressure is applied more toward the center of drum head 15 causes the pitch of the drum head to increase when drum head 15 is struck at one place, for example, at the center of drum head 15.

For the embodiment shown, when pressure is applied to one side, the tension throughout drum head 15 will be assymetric due to the variation in pull of drum head hoop 28*b* caused by the off-center location of pressure device 12 on the drum head. This will result in variation in drum head pitch when drum head 15 is struck at various locations about the periphery of drum 15, which effect can be used by the musician of so desired.

The action of both increasing the pressure on membrane 15 and moving the location of the pressure radially toward center line 43 of membrane 15 can be seen in FIG. 2 where the plane of drum head or membrane 15, while at rest, and the arc of pressure device 12, as lever arm 10 is rotated, defines a circular segment, the plane of which segment is coincident with a line that is radial from centerline 43.

With respect to the apparatus illustrated in FIG. 5, the operation or urging of lever 10' in the direction of arrow 49 will not only cause lever arm 10' to rotate about pivot point 48 of off-set bracket 50 and adjustable arm 51, but will also cause rotation of adjustable arm 51 about pivot point 54 of adjustable arm clamp 55 and support bar 52 in the direction of arrowhead 63 of arrow 56.

It can be seen that the resulting motion of pressure device 12' will be determined by the vector sum of all the forces exerted by the leg of the operator, first spring 58, second spring 59 and drum head 15.

As a further development of the drum pitch adjustment device of the present invention, a plurality of pressure plates can be fastened to drum 16 about its shell 19 which are actuated by lever arm 10 to create a symmetrical tension in drum head 15 such that the effective diameter of drum head 15 is made smaller with increase tension to provide an even greater pitch range as compared with other methods for changing pitch that increase only the tension of the drum head.

With reference to FIG. 6, as a further improvement of the tone quality, a damping band 65 may be used with clamps onto drum hoop 28*b* using wing nuts or screws 66.

Band 65 is arranged to bow inwardly toward drum head 15 to apply a slight pressure to drum head 15 and dampen vibrations occuring in the circular segment of drum head 15 on the side of roller 41 (shown dotted) between drum hoop 28*b* and roller 41 where roll 41 makes no contact with drum head 15 which causes drum head 15 to slap against roller 41.

It can also be seen that the apparatus of the present invention can be adapted for operation by the other leg of the musician such that as one leg is used for beating the drum, the other leg can be used to operate the apparatus of the present invention.

I claim:

1. A drum and pitch adjustment device for a drum comprising
   - means for applying a pressure at a particular location on the surface of a sound producing membrane of a drum, and
   - means for changing the location of said pressure while said pressure is being applied to said membrane.

2. The drum tone and pitch adjustment device as claimed in claim 1 wherein said means for applying a pressure at a particular location on the surface of a sound producing membrane of a drum comprises
   - a pressure device adapted to movably engage the surface of said sound producing membrane.

3. The drum tone and pitch adjustment device as claimed in claim 2 wherein said pressure device comprises
   - a pressure plate adapted to slidably engage the surface of said sound producing membrane.

4. The drum tone and pitch adjustment device as claimed in claim 2 wherein said pressure device comprises
   - a roller connected to one end of said means for applying pressure.

5. The drum tone and pitch adjustement device as claimed in claim 1 wherein said means for changing the location of said pressure comprises
   - means for changing the location of said pressure radially from the center of said membrane.

6. The drum tone and pitch adjustment device as claimed in claim 5 wherein said means for changing the location of said pressure radially from the center of said membrane comprises
   - a bracket assembly attached to said drum, and
   - means pivotally connected to said bracket assembly for rotatably moving said means for applying pressure to said membrane in which the arc of said means for applying pressure and the plane of said membrane define a circular segment.

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