April 22, 1969 E. R. GRIFFITH 3,439,568

PERCUSSION TYPE ELECTRONIC MUSICAL INSTRUMENT

Filed April 12, 1965

FIG. 1

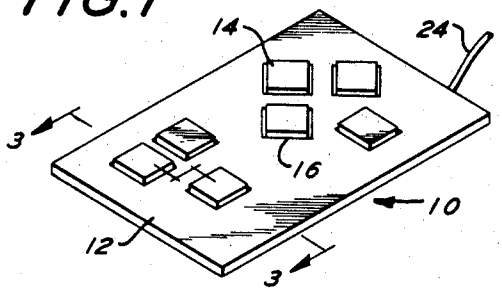


FIG. 2

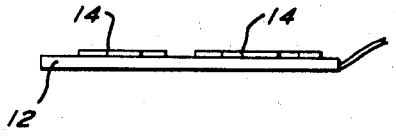
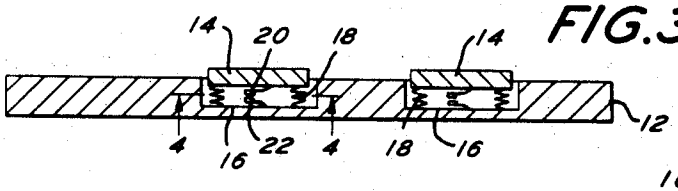


FIG. 3



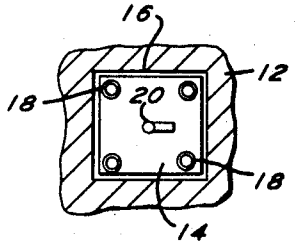


FIG. 4

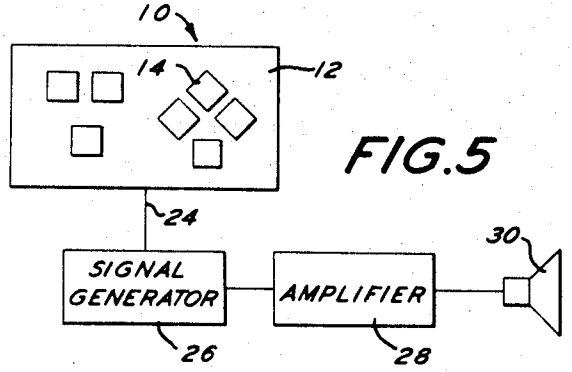


FIG. 5

FIG. 7

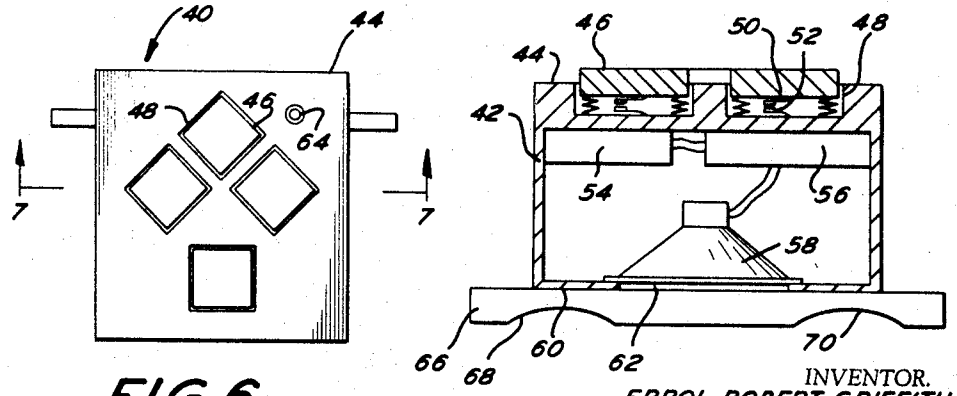


FIG. 6

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PERCUSSION TYPE ELECTRONIC MUSICAL INSTRUMENT

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U.S. Cl. 84—1.01 4 Claims

ABSTRACT OF THE DISCLOSURE

A percussion type musical instrument includes a generally planar surface having a plurality of reciprocably mounted blocks of a size, shape and arrangement which permits them to be struck readily by the fingers or heel of the hand of the player. The blocks are mounted on a portable surface which may be connected by cable to electronic tone generating apparatus at a remote location, or the electronic tone generating apparatus may be mounted in a housing below the surface, which housing is also portable.

This invention relates to an electric musical apparatus. More particularly, this invention relates to a portable keying device for an electrical percussion type instrument.

In the performance of music, it is not unusual for the instrumental group to make use of the small percussion instruments such as Tom-Tom, Sand Blocks, Bass Drum, Wood Blocks, Castanets, Bongo Drums, etc. In fact, some of the percussion instruments such as the Bongo Drums are used in solo performances. These percussion effects have been simulated electronically by means of suitable signal generator circuitry, amplifiers and transducers.

The present invention provides a novel portable or easily transportable switching device that can be operated in a rhythmic manner to produce various percussion effects. The present invention also provides an electronic percussion instrument that includes a novel switching device that can be operated in a rhythmic manner to produce various percussion effects. The technique required for performance of these effects is greatly simplified by the present invention, since in playing the instrument it permits the use of the hands and fingers in a way not unlike the manner in which several of the instruments indicated above are played. Moreover, the present invention permits the construction of individual portable, electronic percussion instruments for solo performances.

It therefore is the general object of this invention to provide a novel electronic percussion instrument.

It is another object of the present invention to provide a novel switching device for an electronic percussion instrument.

It is still another object of the present invention to provide an electronic percussion instrument having a novel switching device incorporated therein.

It is yet another object of the present invention to provide a switching device for an electronic instrument having a novel arrangement of switching devices therein for improving the rhythmic manner in which such instruments may be played.

It is still another object of the present invention to provide a novel portable electronic percussion instrument that can be played in a manner not unlike the type of instrument whose tone is reproduced.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there are shown in the drawings forms which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a perspective view of a first embodiment of the present invention illustrating a switching device for an electronic percussion instrument.

FIGURE 2 is a side elevational view of the switching device shown in FIGURE 1.

FIGURE 3 is a transverse section of the switching device illustrated in FIGURE 1 showing the detail of the switches taken along the line 3—3.

FIGURE 4 is a partial sectional view illustrating the bottom plan of one of the switches taken along the line 4—4.

FIGURE 5 is a schematic block diagram of the switching device and electronic circuitry.

FIGURE 6 is a top plan view of a unitary electronic percussion instrument comprising a second embodiment of the present invention.

FIGURE 7 is a sectional view of the conductive embodiment shown in FIGURE 6 taken along the line 7—7.

Referring now to the drawings in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a perspective view of an electronic percussion instrument switching device designated generally as **10**.

As shown, the switching device comprises a support board **12** upon which are mounted a plurality of resiliently mounted blocks **14**. Each block **14** is the keying member of a switch adapted to close an electronic circuit designed to ultimately generate a percussion acoustic signal.

Each block **14** is supported partially within a recess **16** formed in the board **12**. The blocks **14** are supported by means of coiled compression springs **18** attached to each corner thereof. In this manner the blocks **14** are capable of being reciprocated toward and away from the board **12** when they are struck by the instrument player. The peripheral dimensions of recess **16** are larger than those of the blocks **14** so that the block may be reciprocated without substantial interference by the recess. Further, the enlarged recess **16** permits the blocks **14** to be slightly canted as they are reciprocated. If desired, the interior surface of recess **16** may be covered with a sound-deadening material such as felt flocking to prevent any unwanted noises generated by the blocks **14** striking the sides or bottom of recess **16**. The board **12** and blocks **14** may be made of wood or plastic as desired.

A switch consisting of a first contact **20** mounted on the block **14** and a second contact **22** mounted within the recess **16** is provided with each block and recess combination on the board **12**. The contacts **20** and **22** are mounted so that their contacting portions are centrally located. In this manner, the contacts **20** and **22** will close the electrical circuit even though the block is depressed by the force applied at its edges and thereby canted as it is reciprocated.

Each of the contacts **20** and **22** is connected to appropriate electrical conductors that lead through a cable **24** adapted to be connected into an electrical acoustic tone generating unit. Thus, referring to FIGURE 5, the switching device **10** is shown connected by the cable **24** to a signal generator **26**. In operation, the signal generator **26** is connected to an appropriate power supply and generates an electronic signal adapted to reproduce a particular percussion tone, when transduced into sound. The signal generator **26** is connected to an amplifier **28** which in turn is connected to a transducer **30** which may be a speaker. Thus, by connecting the contacts **20** and **22** to appropriate electronic circuitry, reciprocation of a block **14** results in the generation of such tones as a Tom-Tom, Castanet, Sand Block, Wood Block and Bass Drum. As the appropriate electronic circuitry to be used in signal generator **26** and amplifier **28** is known to those skilled in the art, it need not be described in detail.

The switching unit **10** is designed to be a completely portable component of the electronic percussion instru-

ment. Thus, the board **12** is preferably 18 to 26 inches in length and 11 to 16 inches in width. Each block **14** is approximately 3 inches square and the recesses **16** are approximately 3¼ inches square. The board **12** can be placed on a supporting surface such as a table or the like, or it can be placed on a player's leg and be played in the sitting position. As thus constructed, the switching unit **10** is truly adapted for use in a convenient place by orchestra or band members, even though they travel from place to place.

As best shown in FIGURES 1 and 5, the blocks **14** are arranged in two groups of three and four blocks respectively. The left hand group of three blocks is normally played by the left hand and the righthand group by the right hand. Each group is arranged so that two blocks can be alternately reciprocated by the player's fingers and the heel of his hand. Thus, the two longitudinally aligned blocks **14** in the lefthand group may be a sand block and castanets respectively. The lower block in the lefthand group may be the bass drum. The righthand group of blocks **14** may be arranged so that reading counterclockwise beginning with the righthandmost block **14**, there is provided a Tom-Tom, Wood Block, Tom-Tom, and Sand Block. While this arrangement is preferred, other arrangements may also be provided.

Referring now to FIGURES 6 and 7, there is shown an electronic percussion instrument that comprises a complete integrated unit designated generally as **40**. As shown, the unit **40** comprises a housing **42** having a substantially planar upper supporting surface **44**. The surface **44** supports a plurality of blocks **46** partially supported within recesses **48**. The blocks **46** are resiliently supported by spring **49** in the same manner that the springs **18** support blocks **14** in the embodiment of FIGURE 1. A pair of switch contacts **50** and **52** are centrally mounted on the blocks **46** to close an electrical circuit when the blocks are reciprocated. The interior or recesses **48** may be covered with a sound-deadening material if desired.

The housing **42** encloses a combination power supply and signal generator **54** for generating an electric signal adapted to produce an acoustic tone when amplified and transduced by amplifier **56** and speaker **58**. The speaker **58** is supported by surface **60** adjacent the opening **62** through which acoustic tones may pass. The combination power supply and signal generator **54** may be powered from a battery pack (not shown) mounted within the housing **42**. A combination off-on volume control switch **64** is mounted in the top surface **44**, providing master control to the electrical circuitry.

As best shown in FIGURE 7, a yoke-like support **66** is mounted on the surface **60**. The support **66** is provided with a pair of circular cutouts **68** and **70** adapted to receive a player's leg. In this manner, the player may support the unit **40** on his legs while in a sitting position. As thus supported, the device may be operated by rhythmically reciprocating the blocks **46**.

As shown in FIGURE 6, the blocks **46** are arranged in a group similar to the right hand group shown in FIGURES 1 and 5. The blocks **46** are arranged so that they can be alternately played by the fingers and the heel of the player's hand. If desired, the blocks **46** can be operative to close electronic circuits adapted to produce the sounds of a set of Bongo Drums. Thus, the second embodiment of this invention may be used as a portable electric Bongo Drum Set. Of course, other percussion tones could be initiated by the blocks **46**, if desired.

Alternative supporting means for the unit **40** may also be provided. Thus, the unit **40** may be provided with pairs of legs one of which pair is shorter than the other. In this manner, the unit **40** can be supported on a table or the like with the rear edge being higher than the front edge.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. In an electronic percussion instrument including a plurality of percussion tone signal generators, each generator being capable of producing one of several percussion tones, an amplifier for amplifying the electronic signal generated by said percussion tone signal generators, and a transducer for transducing an amplified electronic signal into sound; the improvement comprising a free standing supporting surface which is portable, a plurality of blocks reciprocably mounted in juxtaposition to said surface, resilient bias means normally biasing said blocks away from said surface, said blocks being of a size whereby they may be struck simultaneously by all of the fingers of a human hand, electrical switch means connected in circuit with a percussion tone signal generator, amplifier and transducer for causing energization of the same when said switch means are operated, said switch means being mounted in operative association with said blocks for operation when said blocks are moved toward said surface.

2. An electric percussion instrument in accordance with claim **1** wherein the distance between selected members permits them to be alternately moved toward and away from said surface by the fingers and heel of a player's hand.

3. In an electric percussion instrument in accordance with claim **1** wherein said resilient means are springs extending between said surface and said movable elements.

4. An electric percussion instrument in accordance with claim **1** wherein a yoke is mounted under said surface for supporting said surface on a player's legs.

References Cited

UNITED STATES PATENTS

2,684,411	7/1954	Verkvil	200—172 X
3,207,835	9/1965	Holman et al.	84—1.03

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U.S. Cl. X.R.

84—1.03, 1.13, 1.26; 200—157, 159, 172