United States Patent

Burnham

[15] **3,705,527**

[45] **Dec. 12, 1972**

[54] **MULTITONE WOODEN DRUM**

[72] Inventor: **Stephen G. Burnham,** 4312 E. Princeton, Spokane, Wash. 99207

[22] Filed: **March 20, 1972**

[21] Appl. No.: **235,986**

[52] **U.S. Cl.**.....**84/403,** 84/411

[51] **Int. Cl.**.....**G10d 13/08,** G10d 13/02

[58] **Field of Search**.....84/402, 403, 411

[56] **References Cited**

UNITED STATES PATENTS

D100,734	8/1936	Lira	84/411 UX
2,458,462	1/1949	Zimmerman	84/403

Primary Examiner—Richard B. Wilkinson
Assistant Examiner—John F. Gonzales
Attorney—Greek Wells et al.

[57] **ABSTRACT**

A multitone drum is described having a wooden head and a plurality of solid wooden bars. Each bar is rigidly supported at one end with the other end extending freely in cantilever fashion out over a resonant cavity of the drum.

7 Claims, 5 Drawing Figures

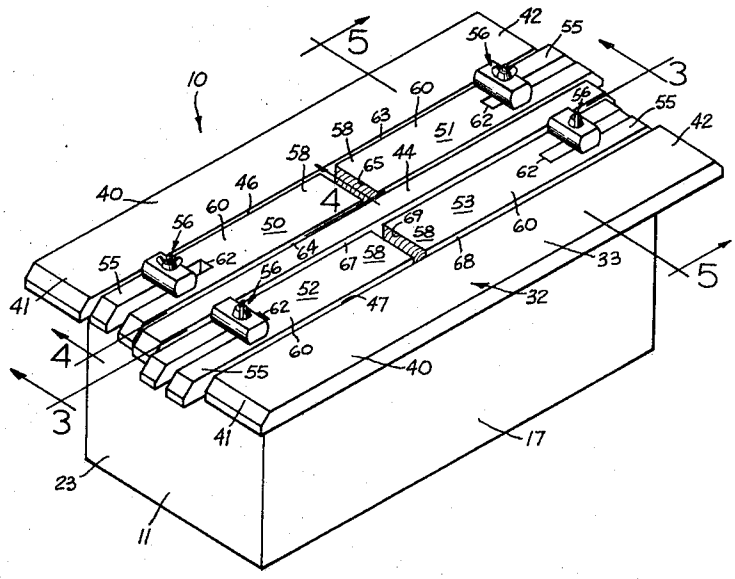


FIG 1

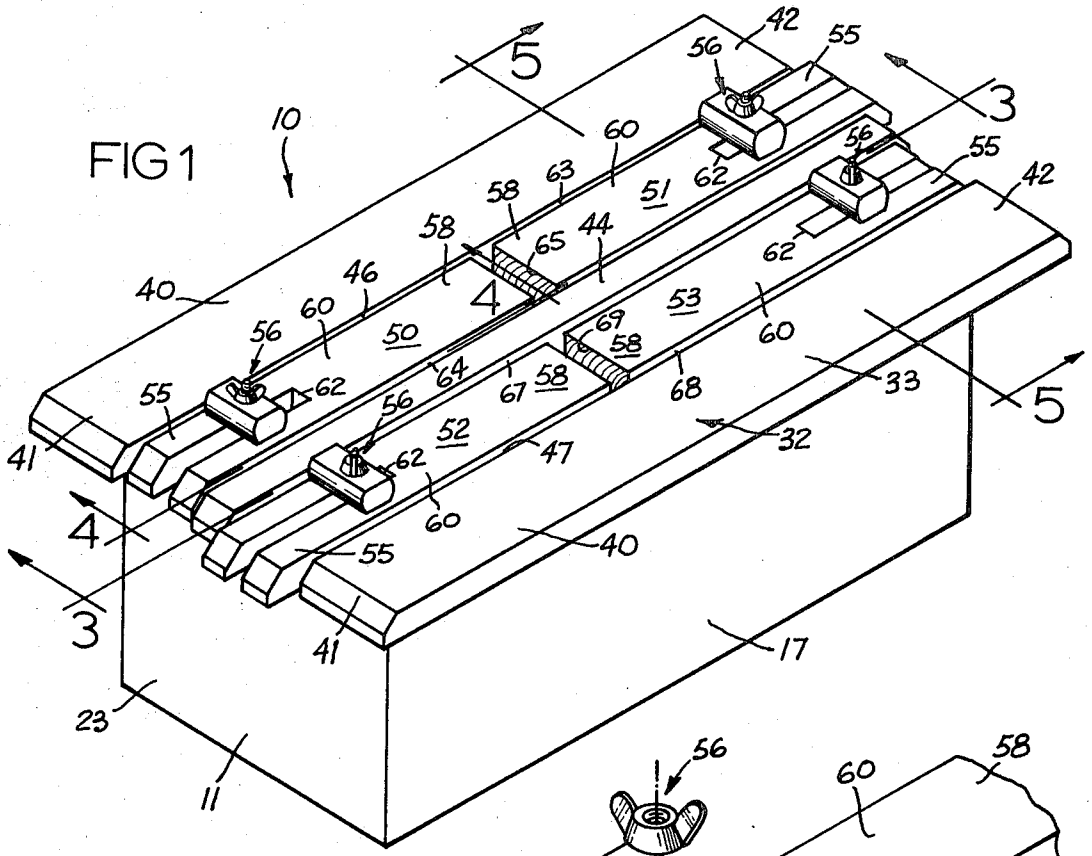
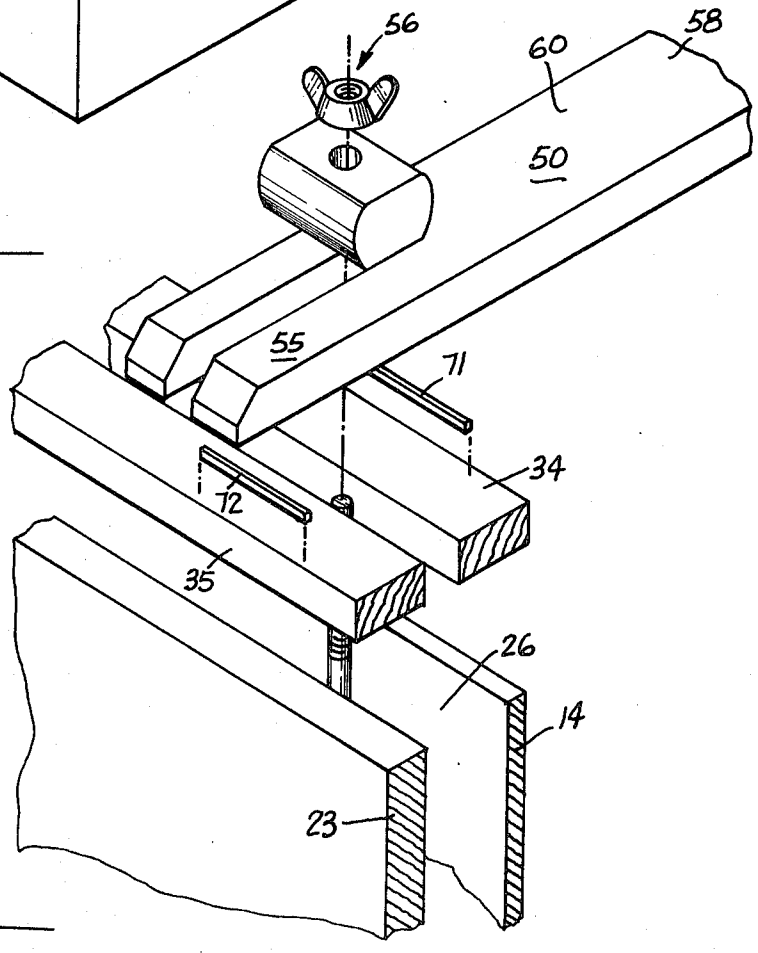

10
5
3
4
42
55
56
60
58
63
51
62
44
65
46
40
50
53
69
64
67
68
33
32
47
52
41
17
23
11

FIG 2


56
60
58
50
55
71
34
72
35
26
14
23

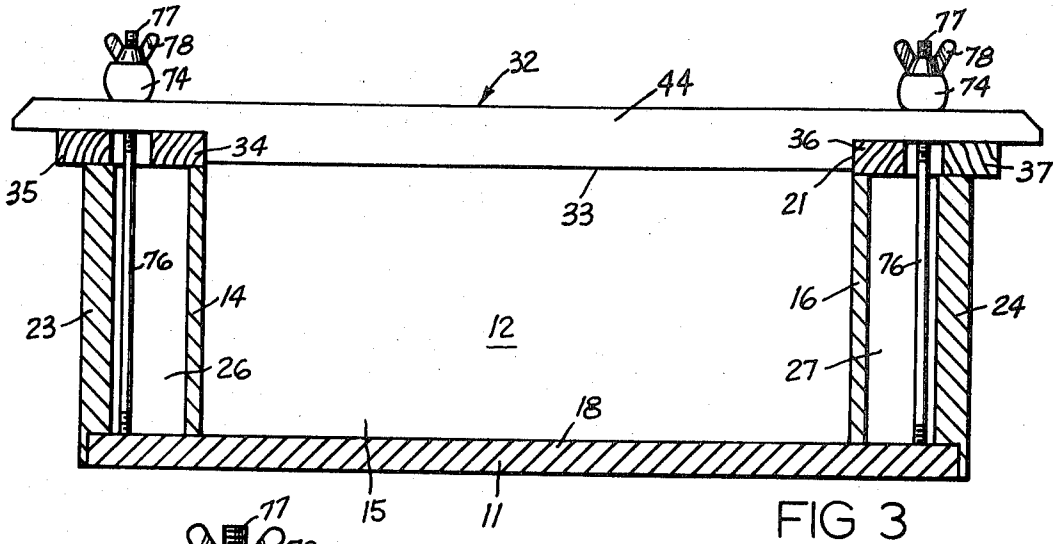


FIG 3

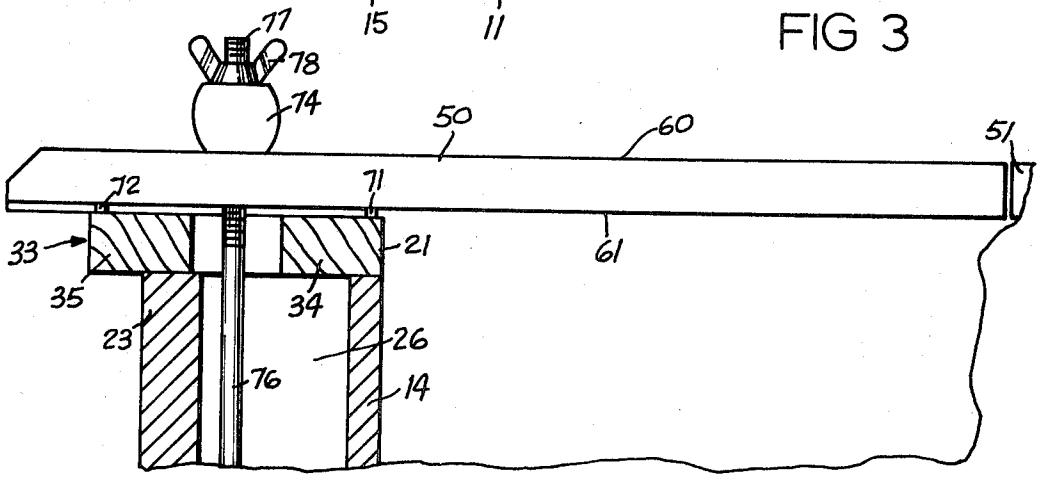


FIG 4

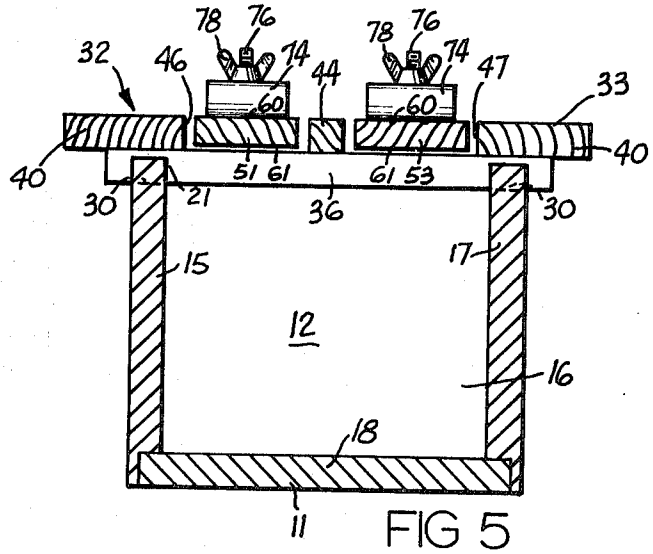


FIG 5

MULTITONE WOODEN DRUM

BACKGROUND OF THE INVENTION

This invention relates to drums, and more particularly to drums capable of being tuned to generate more than one tone.

The drum is one of the oldest musical instruments known to mankind. Early wooden drums included nothing more than logs that had been hollowed out. The construction of drums has developed to the present day in which most drum structures includes a vibratile vellum of parchment skin stretched over the opening of a resonant cavity such as a cylinder of wood or a bowl-shaped metallic vessel. Typical of such drums are those termed tom-tom, congo, bongo, snare drum and bass drum. The single tone generated from such drums principally depends upon the head size and the depth of the resonant chamber. Very little success has previously been encountered in providing a multitone drum in which full, rich tones can be generated.

Most multitone effects are accomplished by placing a multitude of drums in close position so that the drummer can create the multitones by striking a variety of the drums.

One of the principal objects of this invention is to provide a single wooden drum capable of generating several tones, each of which are full and rich in body.

An additional object of this invention is to provide a multitone wooden drum in which each tone is tuneable to obtain the desired pitch.

A further object of this invention is to provide a multitone wooden drum that is relatively simple to manufacture and may be available to the general public at costs comparable or less than most present-day drums.

These and other objectives and advantages of this invention will become apparent upon the reading of the following detailed description of a preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of a multitone drum incorporating the principal features of this invention;

FIG. 2 is a fragmentary exploded isometric view showing the assembly of several of the parts of the multitone drum;

FIG. 3 is a vertical cross section taken along lines 3—3 in FIG. 1;

FIG. 4 is a vertical cross section taken along lines 4—4 in FIG. 1; and

FIG. 5 is a cross section view taken along lines 5—5 in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in detail to the drawings, there is illustrated in FIG. 1 a multitone wooden drum identified generally by the reference numeral **10**. The multitone wooden drum includes a sound box **11** having a resonant cavity **12** therein. The sound box **11** (FIG. 3 and 5) has side walls **14–17** and a bottom wall **18**, that encloses the resonant cavity except for a cavity top opening **21**. Additionally, the sound box **11** includes support walls **23** and **24** that are substantially parallel to the side walls **14** and **16** but spaced outward therefrom. Secondary cavities **26** and **27** are formed between the side walls **14** and **23** and side walls **16** and **24** respectively. Top corner notches **30** are formed in the side walls **15** and **17**.

The drum **10** includes a drum head **32** that is mounted on the sound box **11** substantially enclosing the cavity opening **21**. The drum head **32** includes a frame **33** having cross members **34** and **35** that bear on side wall **14** and support wall **23** and cross members **36** and **37** that bear upon side wall **15** and support wall **24** respectively.

The drum head further includes two spaced longitudinal side members **40** that are secured to the ends of the cross members **34–37**. Each longitudinal side member **40** has an end **41** secured to the cross members **34** and **35** and an end **42** secured to the frame cross members **36** and **37**.

An intermediate longitudinal wood strip **44** extends between the cross members **34–35** and cross members **36–37** intermediate the longitudinal side members **40**. The intermediate longitudinal wood strip **44** divides the cavity opening **21** into two elongated longitudinal openings **46** and **47**.

One of the principal features of this invention is the provision that the drum head **32** includes at least four elongated solid wood bars **50-53** that are positioned in the elongated openings **46** and **47** which when struck provide the tones that are amplified by the resonant cavity **12**. The wooden bars **50** and **51** are mounted in the elongated opening **46** in opposing relationship. The wooden bars **52** and **53** are mounted in the elongated opening **47** in a similar opposing relationship. It is preferable that each of the bars have a different length to produce different tones. Each of the bars is rectangular in cross section and preferably have the same width and thickness. It has been found through experimentation that it is important to maintain the width between three and five times greater than the thickness to obtain the rich full tones. Each bar has one end **55** that is rigidly supported to the drum head frame **33** by support means **56** with the remainder of the bar extending in cantilever fashion into the cavity opening **21** over the bottom wall **18** terminating in a free unsupported end **58**. The free ends **58** of the wooden bars are in adjacent opposing relationship over the bottom wall **18**.

Each of the wooden bars has a top surface **60** and a bottom surface **61**. Longitudinal adjustment slots **62** are formed in the one end **55** to enable each wooden bar to be tuneable to a desired pitch. When the wooden bars **50** and **51** are mounted in the elongated opening **46**, the bars are spaced slightly from the longitudinal side member **40** and the intermediate longitudinal strip **44** forming longitudinal slits **63** and **64**. The free ends **58** of the wooden bars **50** and **51** are positioned so that the free ends **58** do not engage and provide a transverse slit **65**. Likewise, the wooden bars **52** and **53** are mounted in the elongated opening **47** providing longitudinal slits **67** and **68** between the longitudinal side member **40** and the intermediate longitudinal wood strip **44** respectively. Transverse end slot **69** is formed between the free ends **58** of the bars **52** and **53**.

An additional important feature of the drum head is the provision of the support means **56** for rigidly and independently supporting each wooden bar so that each bar will create its own distinctive tone with as little vibrational transmission as possible through the drum

head frame 33 between the bars. The support means 56 includes individual three-point support arrangements for each one end 55 of the wooden bars.

The support means longitudinally spaced support members or bars 71 and 72 that are mounted transverse to the longitudinal direction of the bars with the support member 71 being affixed to the inside edge of cross members 34 and 36 and the support members 72 being mounted on the outside edge of the cross members 35 and 37. The support members 71 and 72 are longitudinally spaced with respect to the wooden bars to engage the bottom surface 61 of the bar at two longitudinal locations. The support means further includes an intermediate support member 74 that engages the top surface 60 of the bars longitudinally intermediate the support members 71 and 72 to provide the third three-point support arrangement. The support member bar 71 may be thought of as a "fret" to define the vibrational length and tone of each bar. When properly mounted, the pitch of each bar is determined by the distance between the fret or support member 71 and the free end 58.

The support means 56 further includes a tightening means for bearing the support members 71, 72, and 74 firmly against the one end 55 to produce a clear full tone from each bar. Tightening means includes rods 76 that are fixed to the bottom wall 18 and extend upward through the secondary cavities 56 and 57 and the adjustment slot 62 to the to the intermediate support means 74. The rods 76 have an upper threaded end 77 to receive a wing nut 78 thereon. As the wing nut is turned during the tightening operation the wing nut pushes down firmly against the intermediate support member 74 to clamp and grip the one end firmly between the support members 71, 72 and 74. It should be noted that the three-point support arrangement has a tendency to provide a bending moment on the one end 55 so that the bottom surface 61 of the bar is pushed downwardly in firm engagement with the support member or fret 71. It has been found that the three-point support arrangement enables hand tightening of the wing nut 78 to create sufficient force required to rigidly grip the one end 55 to produce the full and clear tone with the pitch of the tone being determined by the distance from the fret 71 to the free end. If the one end 55 is not rigidly secured as mentioned, each wooden bar will not have the distinctive clear and full tone characteristic which is such an important part of this distinctive wooden drum.

Each wooden bar may be tuned by adjusting the bar in relation to the support means utilizing the adjustment slot 62 to move the wooden bars longitudinally. The intermediate longitudinal wood strip 44 has a very important function in minimizing the vibrational transmission between the wooden bars 50 and 52 and the wooden bars 51 and 53. It may be stated that the wooden strip 44 provides a vibrational dampening arrangement between adjacent pairs of the wooden bars. The wooden bars 50 and 51 may be considered as a pair and the wooden bars 52 and 53 may be considered as an adjacent pair to the wooden bars 50 and 51.

An additional important feature of this invention is that the longitudinal side members 40, intermediate wood strip 44 and the wooden bar 50-53 are all positioned in substantially the same plane so that the drum head has a substantially flat top surface enabling a drummer to easily move percussion tools over the top of the drum head to create a melody or sound effect desired.

It should be appreciated that the cross members 34–37 are rigidly supported on the end walls 14, 16, 23 and 24 respectively to prevent vibrational transmission through the cross members 34–37 from one tone bar to another. Furthermore, such rigid support enables the frets 71 to operate more effectively the tone bars.

It should be understood that the above described embodiment is simply illustrative of the principles of this invention and that numerous other embodiments may be readily devised without deviating from the unique characteristics of the drum. Only the following claims are intended to define or limit this invention.

What I claim is:

1. A multitone wooden drum comprising:
   a resonant cavity having a bottom wall and joined upright side walls forming a top opening;
   a drum head fixed to the side walls substantially enclosing the top opening;
   said drum head having a plurality of elongated solid wooden bars of varying lengths; and
   support means for independently supporting one end of each wooden bar adjacent the side walls with a free end extending unsupported into the top opening over the bottom wall so that the tone pitch produced by each wooden bar when struck is determined by the distance from the support means to the free end.

2. The multitone drum as defined in claim 1 wherein the support means includes a fret transversely to each bar adjacent said one end and means for pressuring the one end firmly against the fret to limit the vibrational characteristics of the bar from the fret to the free end to create a distinctive tone when the bar is struck.

3. The multitone drum as defined in claim 1 wherein the support means has adjustment means for enabling the distance from the fret to the free end to be readily adjusted.

4. The multitone drum as defined in claim 1 wherein the support means includes a three-point support arrangement engaging one end of each bar in which the support means has two longitudinally spaced support means engaging one side of each bar adjacent said one end and a third support means engaging the other side of each bar longitudinally spaced intermediate the two support members and a tightening means for tightening one of the support means against the bar to force the bar firmly against the support members to limit the vibration of the bar to that portion of the bar from the free end to the support member closest to the free end.

5. The multitone drum as defined in claim 1 wherein the support means supports the one end of the bars along opposite side walls with the free end of each bar extending into the cavity opening opposing the free end of another bar to define a complementary pair of bars.

6. The multitone drum as defined in claim 5 wherein the drum head has a wooden strip extending between opposite side walls separating adjacent pairs of bars to decrease the vibrational transmission between adjacent pairs.

7. The multitone drum as defined in claim 1 wherein the wooden bars are positioned in substantially the

same plane to provide a rather flush top surface on the drum head.

* * * * *