United States Patent [19]

Frigo et al.

[11] **3,791,249**

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[54] **DRUM**

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Related U.S. Application Data

[62] Division of Ser. No. 103,752, Jan. 4, 1971, Pat. No. 3,724,313.

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

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

[58] **Field of Search** 84/411, 374, 410

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Attorney, Agent, or Firm—Hill, Sherman, Meroni, Gross & Simpson

[57] **ABSTRACT**

A drum or other musical percussion instrument made of a seamless cylindrical shell of an integral synthetic plastic, such as a methyl methacrylate resin, with a tone or sound modulator associated therewith comprising a one- or multi-part panel of similar transparent plastic material mounted for rotation about an axis parallel to a drum head and intersecting said shell with clearance therebetween and between the panel and the head, or heads, of the drum to permit adjustability of the panel into various angular positions relative to the plane of the head in order to modulate the sounds caused by playing on said head.

3 Claims, 9 Drawing Figures

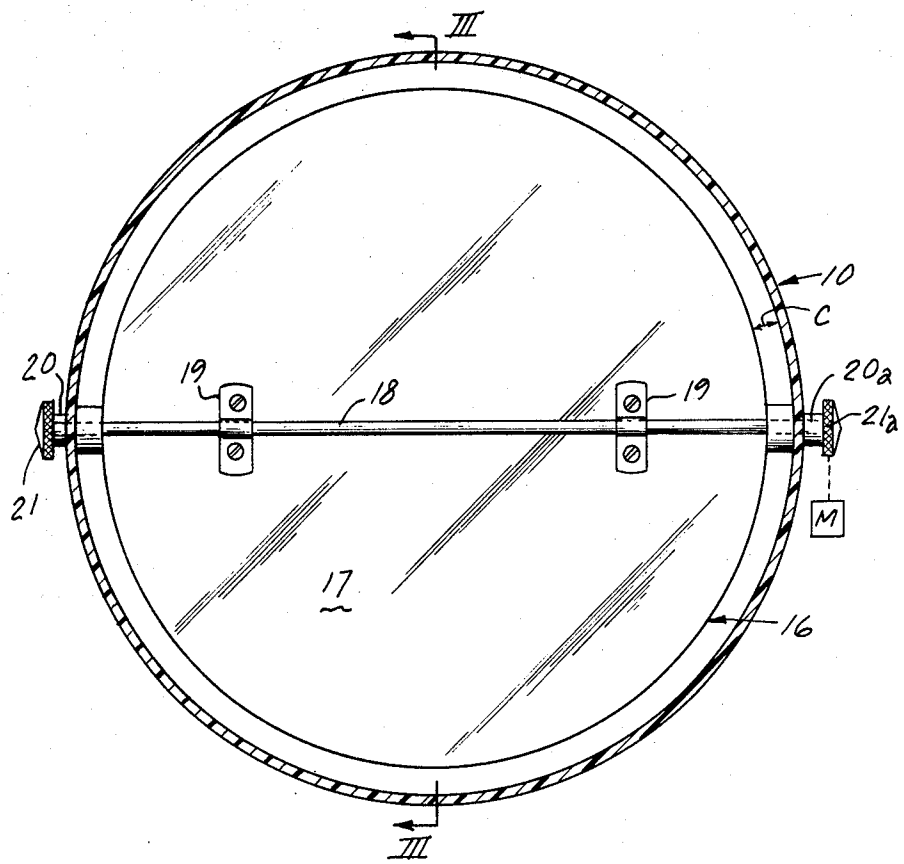


Fig. 2

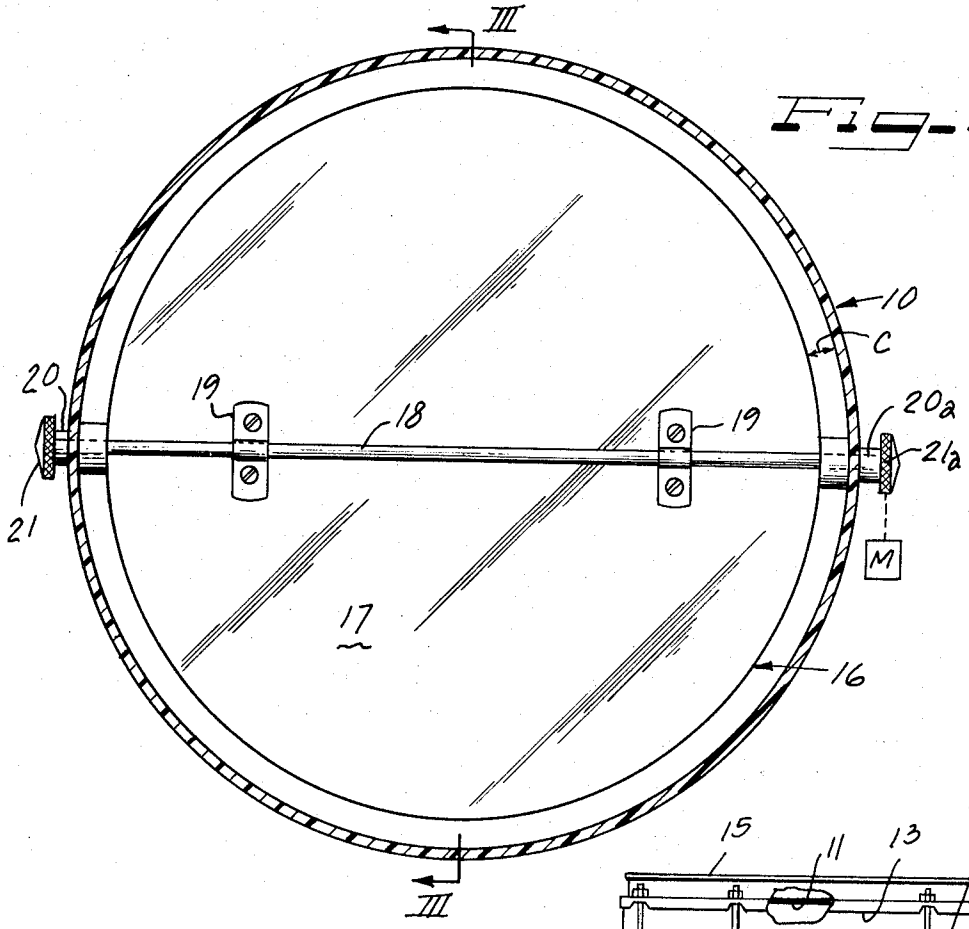


Fig. 1

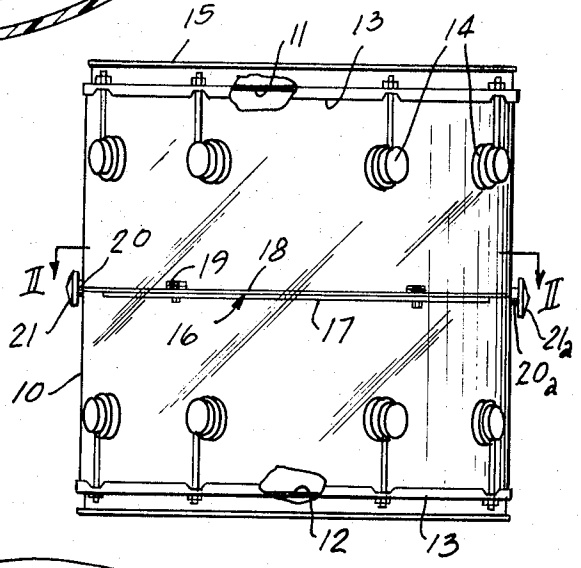
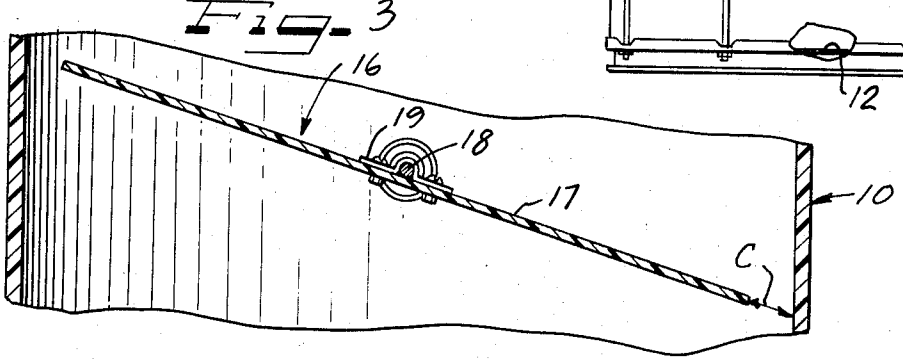


Fig. 3



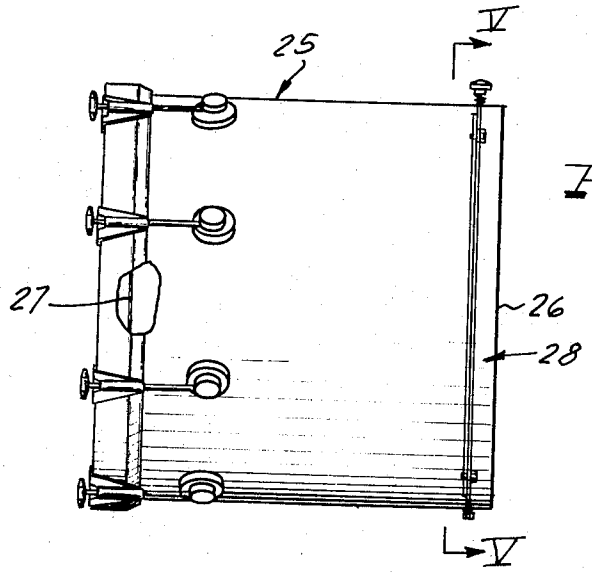
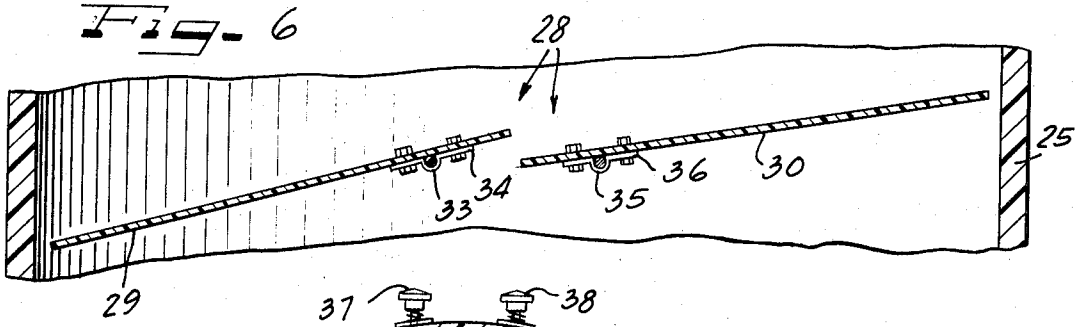


Fig. 4

Fig. 6



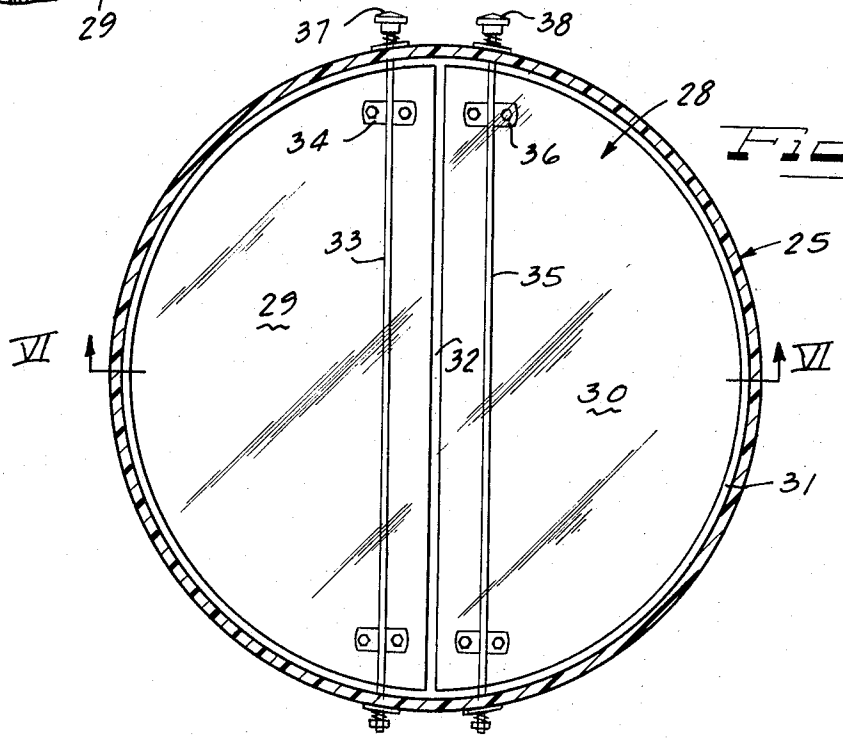


Fig. 5

Fig. 7

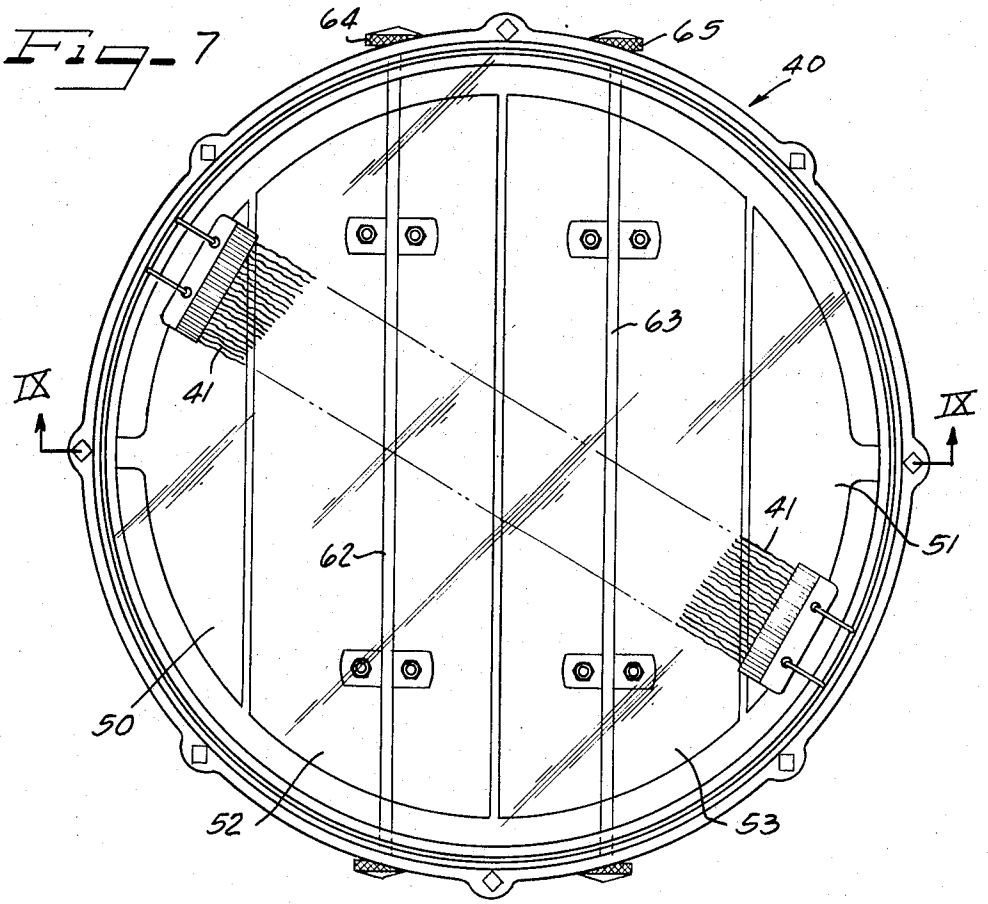


Fig. 8

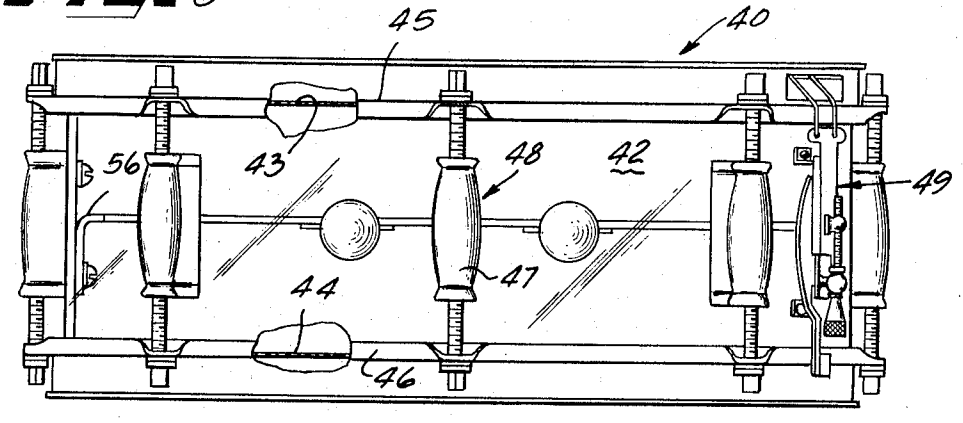
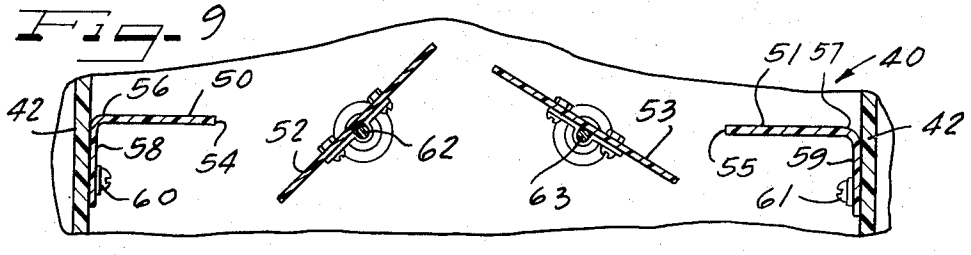


Fig. 9



DRUM

This is a continuation, division, of application Ser. No. 103,752, filed Jan. 4, 1971, now U.S. Pat. No. 3,724,313.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to the musical drum art wherein a cylindrical shell is provided with a head, or heads, with adjustable means for tensioning at least one head in order to obtain the desired musical notes upon playing the drum.

The Davis U.S. Pat. No. 3,019,685, disclosing a musical drum in which the shell is formed in halves of an injection molded plastic, and the Fischetti U.S. Pat. No. 3,264,927, in which the cylindrical body is closed by a composite sheet, one layer of which is formed of an acrylic plastic, represent prior art known to applicants, but applicants know of no prior art presenting a staisfactory solution to the problem that applicants have solved of obtaining unusual tonal qualities and effects, while at the same time providing a totally transparent drum structure that in cooperation with a novel arrangement of sound modulators of similar transparent plastic material makes possible the obtaining of novel and unusual sound effects.

SUMMARY OF THE INVENTION

The present invention relates to a musical percussion instrument, specifically a drum, in which the shell is formed of seamless cast or molded, transparent plastic material, such as an acrylic resin and is of a uniform thickness within the limits of about ⅜ inch and ½ inch. A feature of the drum of our invention is the provision of a sound modulator that comprises a damper-like panel mounted for rotation about an axis intersecting the shell and parallel to and spaced from the head of the drum, or other enclosure, or the damper-like panel can constitute the closure, itself, for one end of the drum shell.

In accordance with our invention, the damper-like panels, whether made of one, two or more transparent, relatively rigid panels or sections of transparent plastic material, are so mounted about an axis or axes as to be angularly adjustable with respect to the plane of the head. By manual selection of the angular relationship between the damper and drum head, the operator can easily and quickly change or modulate the sound obtained by playing on the drum.

It is therefore an object of this invention to provide a drum having a seamless cylindrical shell of clear, transparent synthetic resin, or plastic material, thereby obtaining greater rigidity and an additional aesthetic effect and tonal quality not possessed by drums of conventional design or appearance and made of conventional materials.

It is a further object of this invention to provide drums wholly made of clear, transparent, synthetic resin material, except for the "hardware," whereby unusual qualitative as well as quantitative effects are obtained, such as enhanced resonance, additional volume of sound and longer drawn-out vibrations, or, expressed differently, slower attenuation.

It is a further important object of our invention to provide a snare drum, which, as compared to a metal snare drum, gives no "ring" but, instead, gives a total quality that is more pleasing, in general, to the ear.

It is a further object of this invention to provide drums formed of a transparent acrylic resin which, in comparison with drums of similar size to those made with a wooden shell, give a greater sound effect.

It is a further important object of this invention to provide sound modulators, also formed of clear, transparent synthetic resin, whereby unusual sound effects can be obtained and varied at will by the drummer.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is an elevational view of a drum embodying the principles of our invention;

FIG. **2** is an enlarged sectional view taken substantially along the line II—II of FIG. **1**, with parts omitted;

FIG. **3** is a fragmentary vertical sectional view taken substantially along the line III—III of FIG. **2** with the sound modulator angularly adjusted relative to the head of the drum;

FIG. **4** is a side elevational view of a modified form of drum embodying our invention with the axis of the drum in a horizontal plane;

FIG. **5** is an enlarged sectional view, taken substantially along the line V—V of FIG. **4**, with the sound modulator panels in parallelism closing an open end of the drum;

FIG. **6** is a fragmentary enlarged sectional view taken substantially along the line VI—VI of FIG. **5**, with the two panels of the sound modulator in an angular relationship other than 180°;

FIG. **7** is a plan view of a snare drum, with a portion of the snare removed, illustrating a modified form of sound modulator;

FIG. **8** is a side elevational view of the snare drum of FIG. **7** with parts broken and in elevation; and

FIG. **9** is a fragmentary sectional view taken substantially along the line IX—IX of FIG. **7**, with the two sections of the sound modulator at angular positions with respect to each other.

AS SHOWN ON THE DRAWINGS

In FIGS. **1** to **3** the reference numeral **10** designates a seamless, integral cylindrical shell of a clear, transparent molded plastic, preferably an acrylic resin and more specifically a methyl methacrylate resin. The shell **10** is preferably formed as a part of a clear cast acrylic resin tube of indefinite length that has been cut transversely into sections having the length or depth desired in the finished drum shell. Depending upon the dimension of the shell **10** that is desired, the thickness of the transparent resin shell can may vary between about ⅜ inch and 1 ½ inches in thickness. By way of example, if the drum has an 18 inch outside diameter (od) the thickness of the shell **10** might be about ½ inch. All of the conventional drum sizes can be produced from clear, transparent resins in accordance with the present invention. Also, as in conventional drums, the drums of our invention are provided with means for tuning the drums, including means for adjusting the amount of tension applied to the membranes constituting the heads of the drum. In FIG. **1**, there are two heads, **11** and **12** each of which is preferably formed of mylar. Means including rings **13** and tensioning means **14** acting through said rings **13** serve to tension the head, or heads, in a conventional manner. The retaining ring **13**, which is preferably made of metal,

provides a smooth rounded outer edge **15** that is free from any obstruction that might interfere with the beating of the drum. Conventional drum sticks are used for playing the drums of our invention.

A sound modulator, indicated generally by the reference numeral **16**, comprises a circular disc **17** of a clear, transparent plastic material, preferably the same as the plastic material used in the shell **10**. The disc **17** is mounted for rotation about a rod **18** that extends diametrically across the cylindrical shell **10** parallel and in spaced relation to the drum head **11**. The rod **18** is attached to the circular disc **17** by means of brackets and fastening means **19**, of which a pair are shown. The ends **20** and **20***a* of the rod **18** extend through and project beyond the contiguous portions of the shell **10** and carry knobs **21** and **21***a* secured thereto for manually rotating the rod **18** and thus changing the angular relationship between the disc **17** and the head **11**. In FIGS. **1** and **2** the disc **17** is shown in parallelism with the head **11**, while in FIG. **3** the disc **17** is shown at an angle of approximately 30° to the head **11**.

The diameter of the disc **17** is sufficiently less than the diameter of the shell **10**, and the depth of the drum between heads is sufficiently great to permit the modulator disc **17** to be turned through a complete revolution. The peripheral clearance between the disc **17** and the wall of the shell **10** is indicated by the reference letter C. in FIG. **2** where the disc is parallel to the head **11** and in FIG. **3** where the disc **17** is at an angle other than 180° to the head **11**. Because of this clearance, the sound modulator disc **17** can be rotated through a complete 360° and such rotation can be accomplished manually by manipulation of the knobs **21** or **21***a*, or, if desired, power means indicated schematically by reference letter M can be provided for rotating the sound modulator **16** selectively and at any desired speed. An unusual sound effect is thereby obtained, which can be varied at will by varying the speed of rotation of the disc **17**.

In FIGS. **4**, **5** and **6**, the cylindrical drum shell is indicated generally by the reference numeral **25**. It is preferably made of the same or a similar clear, transparent plastic material as the drum shell **10**, but the shell is open at one end, as at **26**, while the other end is provided with the usual head and adjustable tensioning means such as those already described in connection with the drum of FIGS. **1** to **3**, inclusive.

In the case of the drum **25**, the drum is intended to be positioned with its axis in a horizontal plane and therefore with its playing head **27** in a vertical plane. The other end of the drum shell is open, as at **26**, with a sound modulating assembly, indicated generally by the reference numeral **28**, positioned near said open end. Said sound modulator assembly **28** comprises a pair of semi-circular discs **29** and **30** of smaller combined diameter so as to provide peripheral clearance at **31** and straight-edge clearance at **32**. The semi-circular disc **29** is mounted for rotation upon a rod **33** fixedly secured to the semi-circular disc **29** by fastening means **34**. Similarly, the semi-circular disc **30** is mounted for rotation upon a rod **35** mounted on said disc by fastening means **36**. The ends of the rods **33** and **35** extend through and project beyond the shell **25**, and knobs **37** and **38**, respectively, are secured to the ends thereof to effect turning movement of the semi-circular discs **29** and **30**. Since the end **26** of the drum shell **25** is open, the two semi-circular panels **29** and **30** of the sound modulator assembly are free to be rotated or turned from the parallel position illustrated in FIGS. **4** and **5** to any angular relationship including that illustrated in FIG. **6**. Thus, the sound modulating effect can be varied in this type of drum structure shown in FIGS. **4** to **6**, inclusive, in much the same manner and to substantially the same degree as in the case of the drum structure shown in FIGS. **1** to **3**, inclusive.

FIGS. **7** to **9**, inclusive, illustrate a snare drum **40** the snare of which is indicated at **41**. The drum **40** comprises a relatively shallow cylindrical shell **42** provided at each end (top and bottom when in a horizontal position, as in FIG. **8**) with heads **43** and **44**, maintained under tension by rings **45** and **46**, respectively, and tensioning means **48**. The tensioning means **48** may be of conventional structure, as may also be the means **49** (FIG. **8**) for tensioning the snare **41**.

In the drum **40** the sound modulating means includes a plurality of, in this case four (4) panels, including two stationary panels **50** and **51** at either side, and two rotatably mounted intermediate panels **52** and **53**. The panels **50** and **51** are provided with straight inner edges **54** and **55** and with outer arcuate edges **56** and **57** from which depend flanges **58** and **59** integral with the panels **50** and **51** and secured by fastening means **60** and **61** to the wall of the shell **42**.

The panel **52** is mounted for rotation about a rod **62**, while the panel **53** is mounted for rotation upon a rod **63**. Said rods **62** and **63** are provided with means **64** and **65**, respectively, for securing the same to the panels **52** and **53** and the rods are provided at their outer projecting ends with knobs **64** and **65**, respectively, for rotating said panels **52** and **53**. In order to provide freedom of movement, clearance spaces **64**, **65** and **66** are provided between the adjacent straight edges of the panels **50–52**, **52–53** and **53–51**. This permits the panels **52** and **53** to be rotated into any desired angular positions relative to each other and to the stationary panels **50** and **51**. As before, the panels **50**, **52**, **53** and **51** are all made of a clear, transparent plastic material, preferably a methyl methacrylate resin.

In general, all of the embodiments of the sound modulator of our invention can be manipulated to raise or lower pitch by the equivalent of one-third of the pitch of the particular drum absent the sound modulator. Surprisingly, the substitution of a methyl methacrylate resin for the materials previously used in making drum shells, and the absence of any seam or any other discontinuity in the shell, impart a much more mellow sound than when the shell is made of metal or wood. Where the shell is formed of wood, there is a hollow sound that is not present in the playing of any of the drums of our invention. Also, as pointed out herein above, the provision of our sound modulator, embodying any of the forms illustrated and described herein, gives a completely novel sound to our drums when played, as compared with conventional drums. By rotating the panels of the various forms of sound modulator systems illustrated herein, the drummer can obtain unique sound effects that particularly appeal to audiences who like rock-n-roll music and other forms of modern music.

It will be understood that modifications and variations may be effected without departing from the spirit and scope of the novel concepts of the present invention.

We claim as our invention:

1. In a musical drum having a cylindrical shell and a tensioned membrane providing a complete closure for at least one end of said shell and a surface to be played on, the improvement comprising

a sound modulating device within the shell,

said device being comprised of a damper-like panel mounted for rotation about an axis intersecting said shell and extending parallel to said closure,

the edges of said panel being sufficiently spaced from said closure and from said shell to provide clearance therebetween and permit free rotation of said panel into various angular relationships to said membrane to thereby change the pitch of said drum.

2. A drum as defined by claim 1, wherein said shell and said panel are both formed of a synthetic transparent plastic.

3. A musical drum comprising

a seamless cylindrical shell of an integral synthetic plastic,

a head closure for at least one end of said shell, and

a damper-like panel mounted for rotation about an axis intersecting said shell and parallel to and sufficiently spaced from said shell that said panel can be rotated with clearance between said panel and said shell and between said panel and said head closure,

said panel being adjustable into angular positions relative to said head closure to vary the pitch of the sounds caused by playing on said head closure.

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