United States Patent

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[54] SNARE DRUM HAVING TAPERED AND FLANGED CAST METAL SHELL, AND CAST STRAINER-MOUNTING MEANS

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[21] Appl. No.: 834,913

[52] U.S. Cl. 84/411, 84/415

[51] Int. Cl. G10d 13/02

[58] Field of Search 84/44, 415–417

[56] References Cited

UNITED STATES PATENTS

1,127,589	2/1915	Carnes	84/415
1,752,568	4/1930	Meyer	84/411
2,295,479	9/1942	Jeffries	84/415
2,499,616	3/1950	Walberg	84/411
2,572,504	10/1951	Meriwether	84/411
2,779,227	1/1957	Slingerland	84/411
2,979,981	4/1961	Ludwig	84/411

FOREIGN PATENTS OR APPLICATIONS

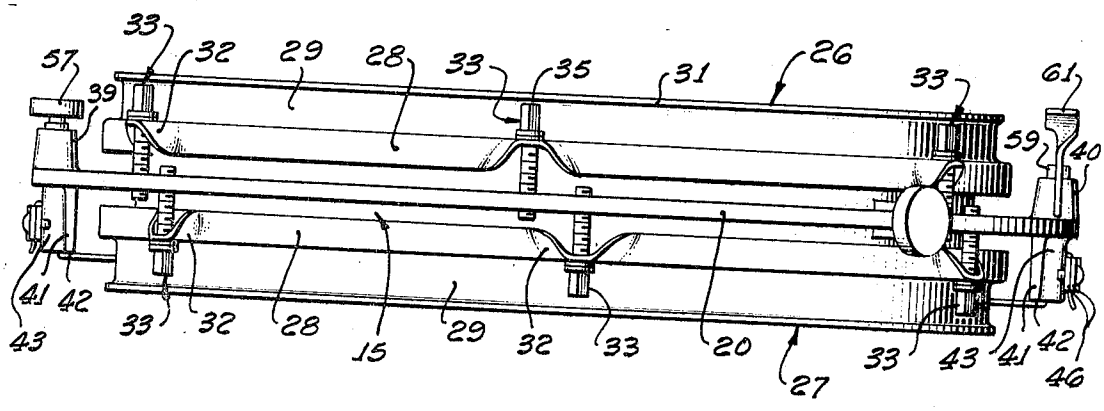
496,281	10/1919	France	84/411

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[57] ABSTRACT

A small, rigid, lightweight share drum for use in schools and elsewhere, and having a tapered flanged shell formed of cast metal. Such shell has a centered and radially outwardly extending flange, and the shell wall tapers axially in both directions from such flange. The strainer-mounting means are cast integrally with the flange, and the adjustment means for the mute or damper extends through such flange. The tension screws extend inwardly from the counterhoops, being threaded through the flange. The flesh hoops are of larger diameter than the bearing edges on the shell, yet the flange and associated tension screws protect such flesh hoops from the effects of accidental bumping or jarring.

5 Claims, 10 Drawing Figures



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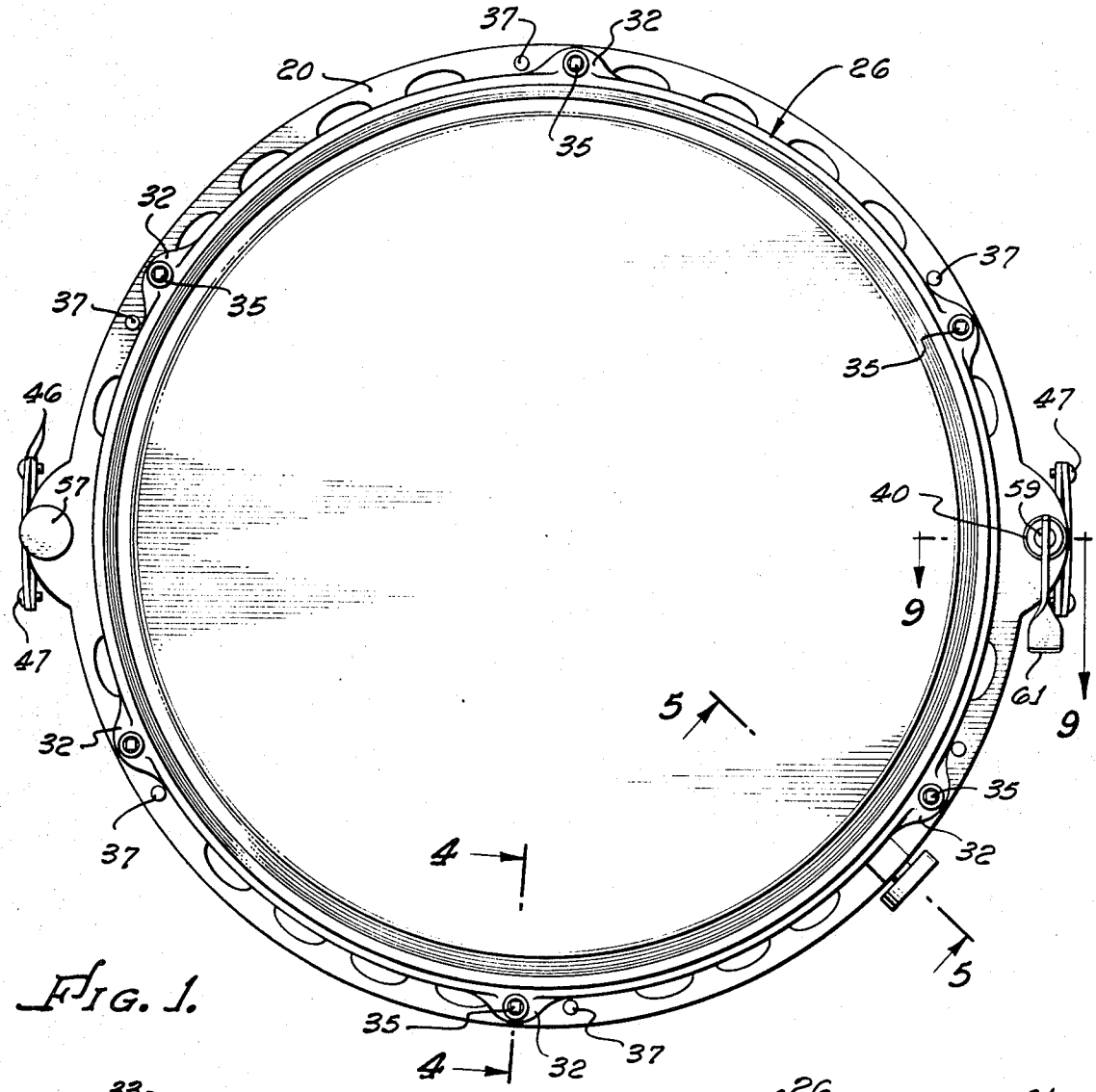


FIG. 1.

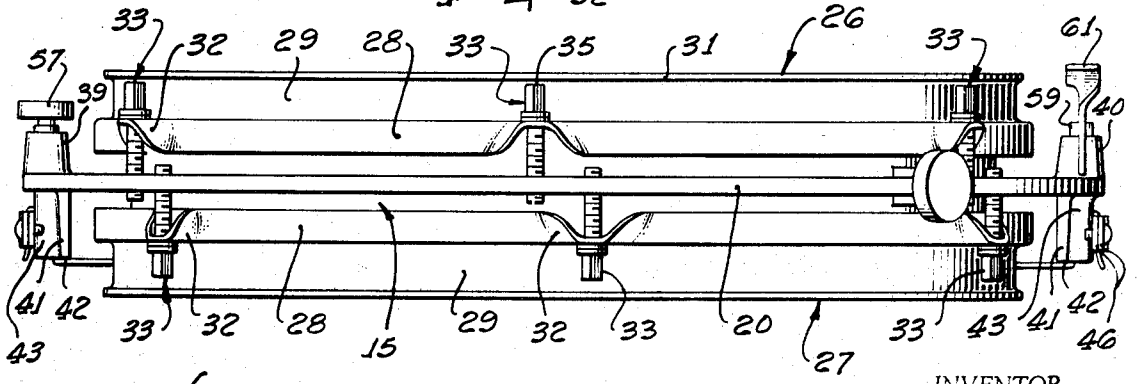


FIG. 2.

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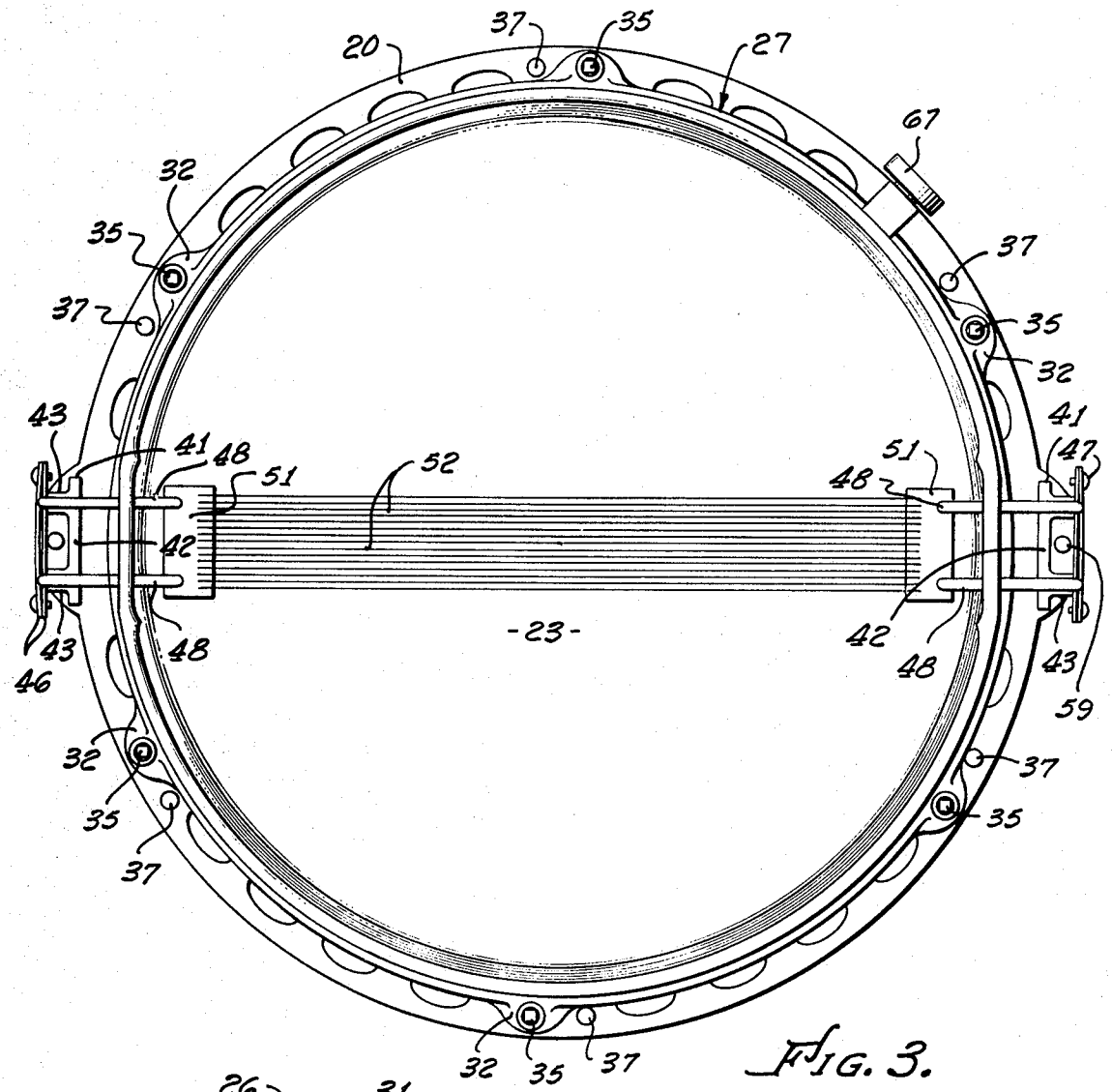


FIG. 3.

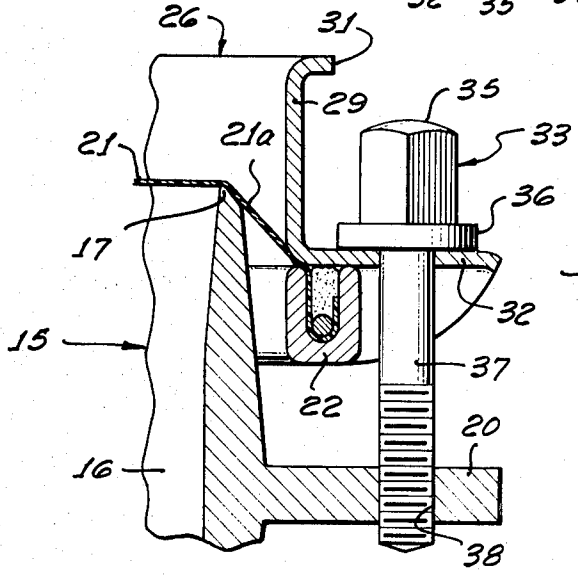


FIG. 4.

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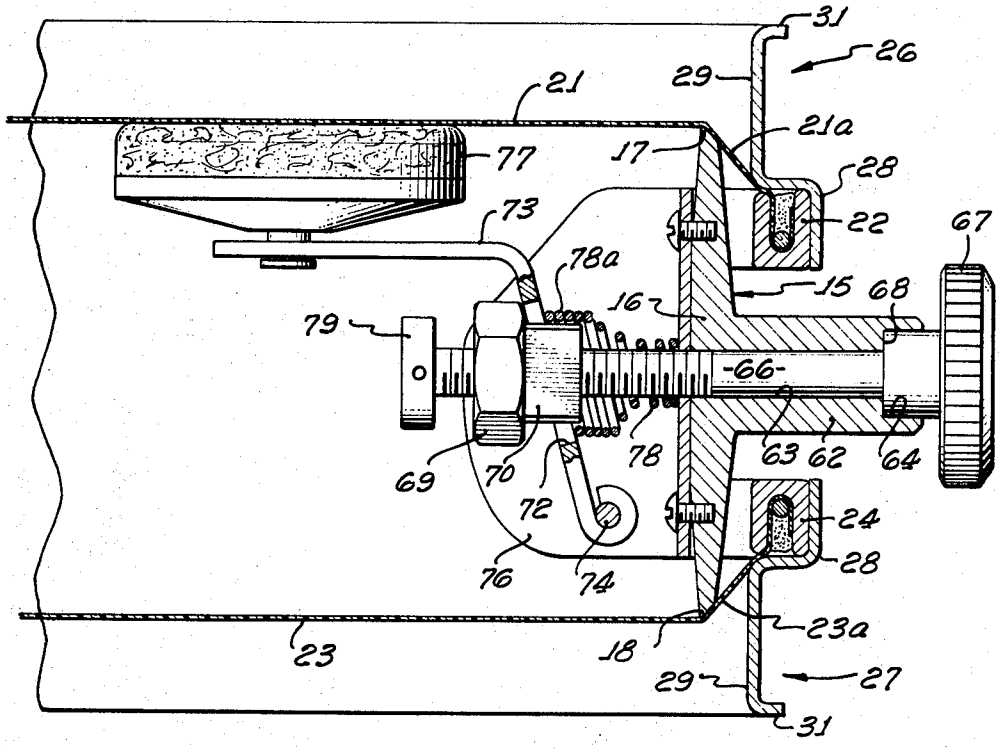


FIG. 5.

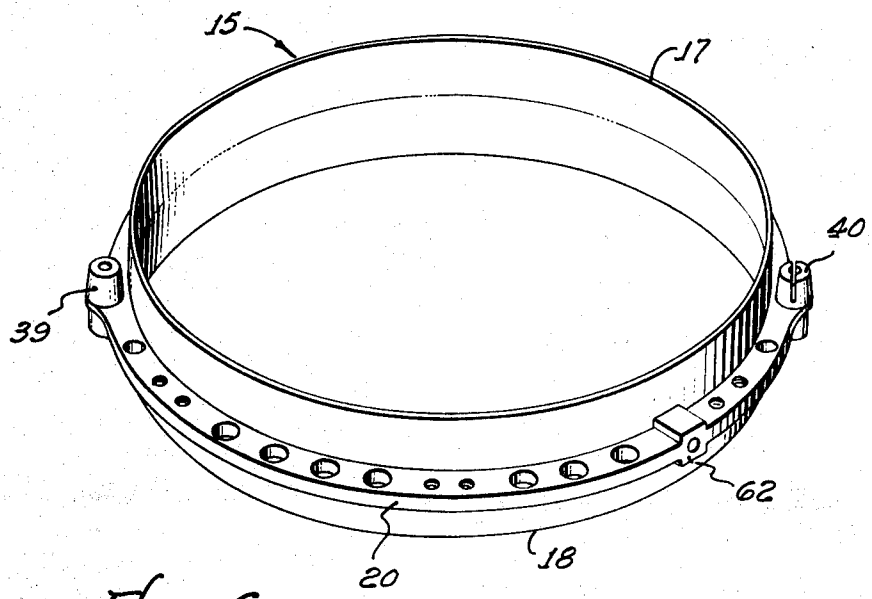


FIG. 6.

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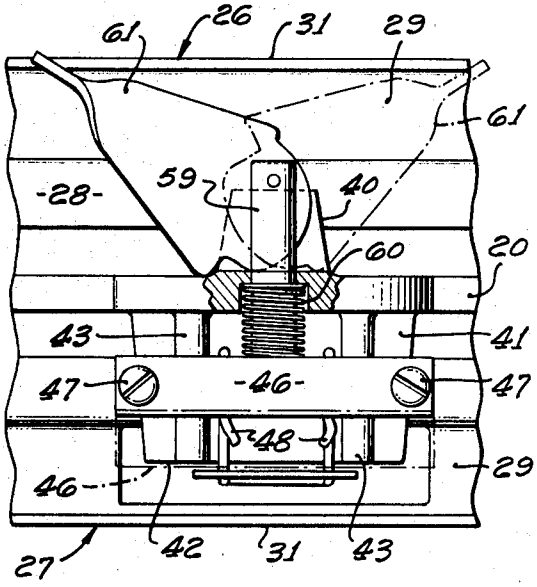


FIG. 7.

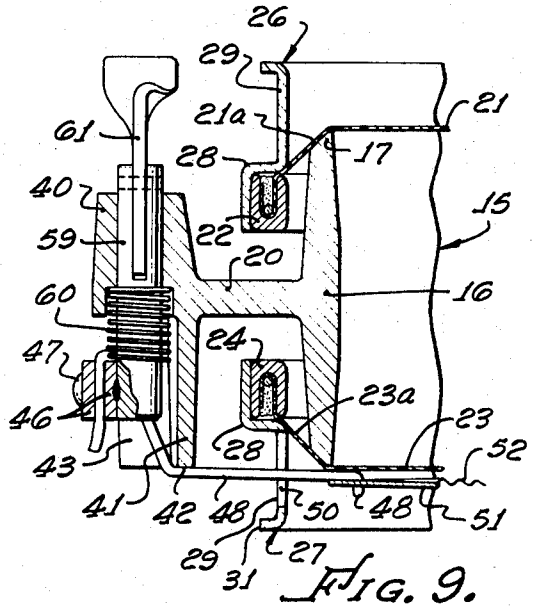


FIG. 9.

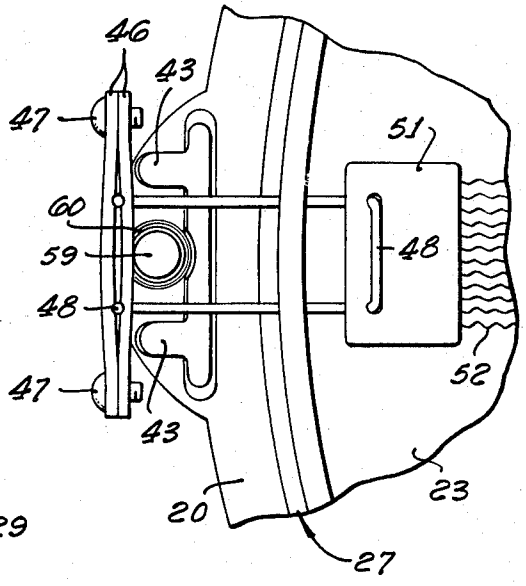


FIG. 8.

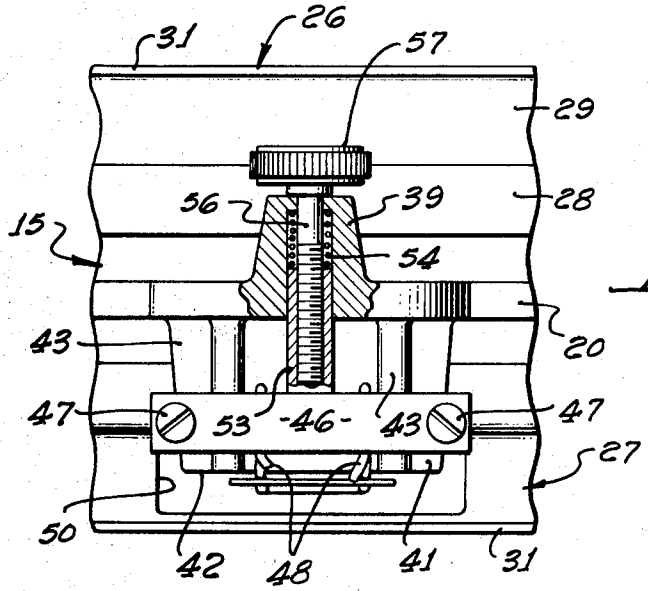


FIG. 10.

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SNARE DRUM HAVING TAPERED AND FLANGED CAST METAL SHELL, AND CAST STRAINER-MOUNTING MEANS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of snare drums.

2. Description of the Prior Art

Various early prior art patents taught the use of snare drum shells which were cast of metal and/or were flanged. Such patents include U.S. Pat. Nos. 899,488, 1,080,440, 1,127,589, 1,277,285, 1,609,940 and 2,687,057. However, the snare drums taught by such patents were not characterized by a substantial degree of commercial practicality, for reasons including the following:

1. The cast shells were not such as to enhance the generated drum tones, and were not characterized by high degrees of rigidity coupled with lightness, this being because the shells were excessively long and were of generally uniform wall thickness as distinguished from tapered.

2. The inner diameters of the flesh hoops were not substantially larger than the bearing edges for the heads, as is required for extremely high-quality drum sounds.

3. There was no effective strainer-mounting means, including tracks for the clamp bars, provided in integrally cast relationship with the flange on the shell, despite the fact that such a relationship results in a high degree of economy, ruggedness and practicality and permits achievement of an effective strainer and snare operation.

4. The adjustment means for the mute or damper were not associated with the flange and did not make use of the large bearing area available for alignment purposes.

5. The tones produced by the prior art drums were not sufficiently high pitched, did not achieve a desired high ratio of snare sound to drum sound, and did not permit beginning students to hear percussion intonation more readily.

6. The threaded elements for connecting the counterhoops through the cast flange were generally hook elements instead of screws. The use of inwardly directed screws which may be readily turned by drum keys and which afford to the student musician a visual indication of the general degree is important from standpoints of practicality, economy and appearance.

For the above and other reasons, there exists a distinct need for an economical, rugged drum for use by students and others and which is pitched slightly higher than conventional drums, so that it will deliver a "sopranino" sound offering benefits including the following: (a) The entire beginning percussion class in a student orchestra or band may play at the same time and still not overpower the ensemble, this being because of the high ratio of snare sound to drum sound; (b) beginning students may hear percussion intonation more easily; and (c) the "sopranino" voice provides sound color necessary for the percussion requirements of a present day band or orchestra. The drum should be both economical and rugged, and also lightweight, in order to satisfy various requirements of students and student bands and orchestras.

SUMMARY OF THE INVENTION

The shell of the drum is a short cast metal cylinder having a relatively wide central flange, and the wall thickness of such cylinder gradually reduces in both directions away from the flange. The diameter of the flange is large, at least as great as the outer diameters of the counterhoops, so that the flange protects the counterhoops and associated flesh hoops against bumps and jars. Thus, it becomes practical to make the flesh hoops substantially larger than the bearing edges, as is required for the highest quality drum sounds. The tension screws extend from the counterhoops to and through the flange, in threaded relationship, thereby aiding in protecting the counterhoops from the effects of bumps, and also facilitating rapid and visual tuning of the heads. Both the strainer-mounting means and the adjustment means for the mute or damper are associated with the flange in rugged and practical ways.

BRIEF DESCRIPTION OF THE DRAWINGS:

FIG. 1 is a top plan view of a snare drum incorporating the present invention;

FIG. 2 is a side elevation of the drum of FIG. 1;

FIG. 3 is a bottom plan view thereof;

FIG. 4 is an enlarged fragmentary sectional view taken on line 4—4 of FIG. 1;

FIG. 5 is an enlarged fragmentary sectional view on line 5—5 of FIG. 1 and illustrating the mute or damper means;

FIG. 6 is a perspective view showing the shell only;

FIG. 7 is an enlarged fragmentary elevational view showing the drum as viewed from the right in FIG. 1;

FIG. 8 is a bottom plan view of the showing of FIG. 7;

FIG. 9 is an enlarged sectional view on line 9—9 of FIG. 1; and

FIG. 10 is a fragmentary elevational view corresponding to FIG. 7 but illustrating the portion of the drum shown at the left side of FIG. 1 instead of the right side thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIGS. 4–6 in particular, the present snare drum has a shell 15 formed of cast aluminum or other lightweight metal. The shell 15 is generally cylindrical in shape, and is short in length (longitudinally of the axis of the cylinder), which makes the resulting snare drum relatively small and high in pitch.

As illustrated in FIGS. 4 and 5, for example, the central portion 16 of the shell (midway between bearing edge portions 17 and 18 thereof) has a substantial wall thickness. However, the wall thickness diminishes progressively in both directions away from central portion 16, so that the shell wall is doubly tapered. Thus, the shell regions relatively adjacent bearing edges 17 and 18 are quite thin. The described double-tapered construction of the shell increases the strength and rigidity thereof and also improves the quality of the generated sounds while at the same time preventing the shell from being excessively heavy.

Cast integrally with the relatively thick central portion 16 of shell 15 is a radially outwardly extending flange 20 which extends around the full circumference of the shell. The width of the flange is sufficiently great to afford protection for the counterhoop and flesh-hoop portions of the drum, as described below. The flange 20 serves to strengthen the shell, to provide means for tensioning the drumheads and to provide means for protecting the counterhoops and flesh hoops against knocking and bumps with consequent detuning.

As shown (for example) in FIG. 5, a batter head 21 is mounted in tensioned relationship on the bearing edge 17, such head being suitably secured to a flesh hoop 22 the inner diameter of which is substantially greater than the outer diameter of the adjacent portion of the shell. Because of the relatively large diameter of the flesh hoop, the portion 21*a* of the batter head outwardly from bearing edge 17 is generally frustoconical in shape and diverges downwardly. This relationship, and also the fact that the bearing edge 17 is relatively thin as illustrated, improves the sounds generated when the batter head 21 is struck.

In like manner, the snare head 23 of the drum is seated on the lower bearing edge 18 and has an outer frustoconical portion 23*a* which is secured to a relatively large diameter flesh hoop 24.

Both the batter head 21 and the snare head 23 may be formed of a suitable synthetic resin film made from polyethylene terephthalate (the polymer formed by the condensation reaction of ethylene glycol and terephthalic acid), for example a film bearing the trademark "Mylar" and manufactured by E. I. du Pont deNemours & Co.

Upper and lower counterhoops 26 and 27, respectively, are seated on the flesh hoops 22 and 24 to support the same and apply tension thereto and thus to the respective drumheads. Such counterhoops 26 and 27 correspond to each other and are preferably formed of metal. Each has an angle-sectioned

inner portion 28 (relatively adjacent flange 20) shaped to nest snugly over the associated flesh hoop 22 or 24. In addition, each counterhoop has a cylindrical body 29 which extends outwardly (away from flange 20) a considerable distance and terminates in a radially outwardly rolled flange 31. The diameter of each body 29 is substantially greater than that of either bearing edge 17 or 18, being instead substantially equal to the diameter of each head portion 21*a* or 23*a* at the region where it meets the associated flesh hoop 22 or 24.

At circumferentially spaced regions around the diameter thereof, each counterhoop portion 28 is bent upwardly in order to form seats 32 for the heads of tensioning screws 33 next to be described.

As best shown in FIG. 4, each tensioning screw 33 includes a square head 35 adapted to be operated by a drum key, and further includes a flange 36 adapted to engage a seat 32 (or a washer, not shown, seated thereon). The shank 37 of each screw 33 extends downwardly through a hole in seat 32 and is externally threaded for threaded engagement with an internally threaded hole 38 in flange 20.

Referring to FIGS. 1 and 3, the tension screws for one counterhoop are, respectively, located closely adjacent the screws for the other counterhoop. Thus, the holes 38 in flange 20 are disposed in pairs, and the pairs are circumferentially spaced around the flange 20.

The outer diameter of shell flange 20 is at least as great as, or greater than, the outer diameter of each counterhoop 26 and 27. Thus, the flange 20 tends to protect the counterhoops 26 and 27 against jarring in the event the snare drum is dropped on its edge, or bumped against a stationary object. In addition, the rigid and close-coupled connections effected by screw shanks 37 between flange 20 and counterhoops 26–27 tend to maintain such counterhoops rigidly concentric with the axis of the shell 15, and despite the fact that neither the flesh hoops 22 and 24 nor the counterhoops 26 and 27 engage such shell.

It follows that the counterhoops (and thus flesh hoops 22 and 24) are automatically centered or aligned relative to the axis of the shell, and maintain such centering or alignment despite jarring, dropping, etc. The mounting of each head 21 and 23 is therefore greatly simplified, and such heads tend to remain properly centered and tuned. This is particularly important in snare drums intended for student use.

Because each screw 33 is inserted toward flange 20, and because the end of shank 37 projects through such flange 20, a student may visually determine when the two heads 21 and 23 are approximately in tune. Since the screw heads 33 are readily accessible to a drum key, turning of each screw 33 is a simple matter.

STRAINER AND SNARE MEANS

As best shown in FIGS. 7–10, diametrically opposite portions of shell flange 20 have formed integrally on the upper sides thereof cylindrical protuberances 39 and 40. Formed under each such protuberance, and also integral with flange 20, is a downwardly extending lug 41 the lower edge 42 of which lies generally in the same plane as that of the adjacent region of bearing edge 18 for snare head 23. In addition, two parallel and vertical tracks 43 are formed integrally with each lug 41 on the exterior side thereof. Such tracks serve to slidably support pairs of clamp plates 46 which are secured to each other by screws 47. Such screws 47 clamp the plates together sufficiently tightly to maintain in locked relationship the ends of snare suspension cords 48, but to permit adjustment of such cords when the screws 47 are loosened.

The snare suspension cords 48 extend through openings 50 (FIGS. 9 and 10) in the lower counterhoop 27 and are secured to plates 51 for the snare wires 52. Such snare wires are preferably elongated helices, and are secured to the plates 51 by soldering or the like. In order to assure that the snare wires 52 will always remain in the proper "kiss" engagement with snare head 23, the lower bearing edge 18 is formed with a suitable snare bed, not shown, such bed being depressed slightly below (toward flange 20) the remainder of the bearing edge 18.

The cords 48 extend upwardly between the track elements 43 on each side of the drum, and thence curve around the innermost clamp plate 46 and downwardly therebetween for friction clamping in response to tightening of screws 47.

Referring particularly to FIG. 10, the inner clamp plate 46 on one side of the drum has connected thereto (as by soldering or welding) a vertical tube 53 which extends upwardly into, and in sliding relationship relative to, a vertical bore in the adjacent protuberance 39. A helical compression spring 54 is seated between the upper end of such tube 53 and a suitable seat within the protuberance, and serves to force tube 53 (and thus the clamp plates 46) downwardly to the maximum position permitted by a strain adjustment screw 56 having a knob 57 at the upper end thereof. The shank of screw 56 is threadedly associated with an internally threaded portion of the tube 53, so that rotation of such shank by turning of knob 57 causes sliding of the clamp plates 46 on tracks 43 to adjust the amount of strain or tension in the snare wires 52.

Proceeding next to a description of the throw off, and referring particularly to FIGS. 7 and 9, a rod 59 is soldered or otherwise secured to the adjacent inner clamp plate 46 and extends upwardly and slidably into a bore in the adjacent protuberance 40. A helical compression spring 60 is provided around rod 59 and seats between a seat in the protuberance and the upper edge of the clamp plate.

The upper portion of the protuberance 40 is notched in order to receive a throw-off lever 61 which is pivotally connected to a notched portion at the upper end of rod 59. The lever 61 is so shaped that, when it is in the solid-line position of FIGS. 7 and 9, the clamp plates are in the upper position illustrated and the snare wires 52 are therefore tensioned to create the desired snare action. When the lever is in the phantom-line position of FIG. 7, the snare wires drop by gravity out of engagement with snare head 23 so that no snare action results.

The described use of integral protuberances 39–40, lugs 41 and tracks 43 provides a rugged, low cost and economical method of achieving fully adjustable snare action, with the desired throw-off feature.

MUTE OR DAMPER MEANS

Referring particularly to FIGS. 5 and 6, one point about the periphery of shell flange 20 is provided with a thickened or boss portion 62 which is bored in order to form a bore 63 having a counterbore 64 at the outer end thereof. Because of the substantial width of the flange, the bore 63 is relatively long and provides stable support for a damper adjustment shaft 66 having an adjustment knob 67 at the outer end thereof. A portion of the knob seats rotatably in counterbore 64 and is in bearing engagement with a shoulder 68 formed between the bore and counterbore.

The inner end of shaft 66 is externally threaded and has mounted thereon a nut 69, such nut being integral with (or rigidly connected to) an oblong protuberance 70 which seats nonrotatably in a slot 72 formed in a bell crank lever 73.

Lever 73 is pivoted at 74 to a suitable channel-shaped bracket 76 which is secured by screws to the internal wall of shell 15. The end of the lever 73 remote from pivot 74 is connected to a mute or damper element 77 having a soft felt portion adapted to engage the interior surface of batter head 21.

A helical compression spring 78 is seated around shaft 66 between protuberance 70 and the web of bracket 76. Such spring has an enlarged portion 78*a* which bears against the lever. A stop collar 79 is fixedly secured at the extreme inner end of the shaft 66.

Rotation of the shaft 66 in response to turning of knob 67 causes the nut 69 to move toward or away from the knob, such nut being prevented from turning due to the fact that its protuberance 70 is nonrotatably disposed in the slot 72. The shifting

of the nut on shaft **66** causes bell crank **73** to pivot about axis **74** (a pin which extends between the webs of the bracket **76**) and thus change the degree of muting or damping of the batter head **21**. The stop collar **79** assures that turning is not continued so far that the nut **69** will come off the inner end of the screw.

OPERATION

In the operation of the drum, the snare and batter heads are rapidly mounted as described above due to the self-centering and self-aligning operation of the screws **33**. The mute means is adjusted by turning the knob **67**, and the throw-off lever **61** is shifted to the proper position depending upon whether or not snare action is desired.

When the drummer strikes the drum with the drumsticks, the sound is relatively high pitched and (as above noted) is characterized by a relatively large proportion of snare sound as distinguished from drum sound. Because of the described construction of the shell, such shell resonates effectively with heads and thereby enhances the resulting tone. The double-tapered construction of the shell wall enhances such vibratory action. The thin bearing edges **17** and **18**, together with the adjacent frustoconical portions **21***a* and **23***a* of the batter and snare heads, also improve the sound. The end result is a sound having a relatively long dwell and very desirable fundamental and overtone characteristics.

It is claimed:

1. A snare drum, which comprises:

a generally cylindrical shell formed of cast metal,

said shell being short,

said shell having a relatively thin annular bearing edge at each end thereof,

a single radially outwardly extending flange provided integrally on said shell at the center thereof,

a batter head and a snare head mounted, respectively, on said annular bearing edges,

each of said heads being connected at the periphery thereof with an annular flesh hoop the inner diameter of which is substantially greater than the outer diameter of the adjacent portion of said shell,

the regions of said heads radially outwardly from said bearing edges being generally frustoconical,

a counterhoop seated on each of said flesh hoops,

the inner diameter of each of said counterhoops being substantially greater than the outer diameter of the adjacent portion of said shell,

the outer diameter of each of said counterhoops being no greater than the outer diameter of said flange,

said counterhoops being disposed adjacent said flange whereby said flange aids in protecting said counterhoops from damage and maladjustment due to jars and bumps,

a plurality of tension screws extended through said counterhoops and threadedly associated with said flange to shift said counterhoops toward said flange and thereby apply tension to said drumheads,

said screws cooperating with said flange in protecting said counterhoops from maladjustment due to jars and bumps,

said tension screws having square heads at the outer ends thereof and located on the sides of said counterhoops remote from said flange,

the inner ends of said screws being externally threaded and being threadedly related to internally threaded openings in said flange, and

strainer and snare means extending over said snare head to create a snare action relative thereto,

said strainer and snare means incorporating portions provided on said flange,

said portions of said strainer and snare means comprising lugs formed integrally on said flange and shaped to provide bearing support for snare-suspension cords,

said portions of said strainer and snare means further comprising protuberances respectively formed integrally on said flange at portions thereof opposite said lugs,

said strainer and snare means further incorporating a throw off mounted in one of said protuberances and operable to disengage the snares from the snare head,

said strainer and snare means further incorporating a tension adjustment element mounted in the other of said protuberances and operable to change the tension of the snares.

2. The invention as claimed in claim **1**, and further comprising:

a bore provided through said flange and extending generally radially of said shell,

a mute adjustment shaft extended through said bore and adapted to rotate therein,

a knob mounted on said shaft externally of said shell, and

an adjustable mute mechanism mounted within said shell and adjustable in response to rotation of said shaft by said knob,

said mute mechanism including a mute portion engaging said batter head.

3. The invention as claimed in claim **1**, in which said shell is formed of cast aluminum.

4. The invention as claimed in claim **1**, in which the wall thickness of said shell is relatively large at the central portion thereof, midway between said bearing edges, said wall thickness of said shell gradually diminishing in directions away from said central portion and towards said bearing edges whereby the wall of said shell is doubly tapered convergently toward said edges.

5. The invention as claimed in claim **1**, in which tracks are formed integrally on said lugs on the sides thereof remote from said shell, in which said snare and strainer means further comprises clamp plates mounted movably on said tracks and connected by said snare-suspension cords to the snares on said snare head, in which elongated elements are connected to said clamp plates and extend into bores in said protuberances, in which one of said elongated elements is associated with said tension adjustment element, and in which the other of said elongated elements is associated with said throw off.

* * * * *