July 8, 1969 R. PAISTE 3,453,923

PERCUSSION INSTRUMENT

Filed Aug. 30, 1967

FIG. 1

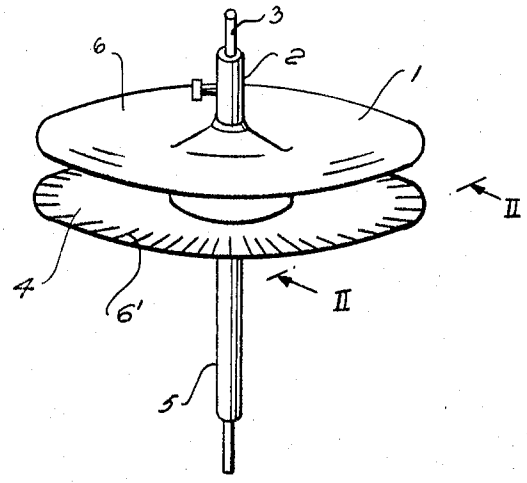


FIG. 2

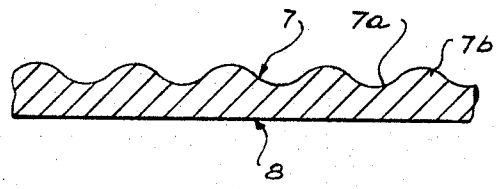
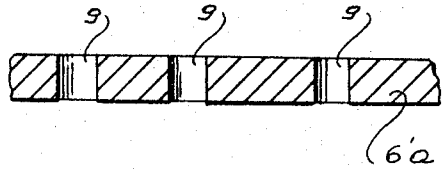


FIG. 3



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PERCUSSION INSTRUMENT

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ABSTRACT OF THE DISCLOSURE

A percussion instrument comprises a pair of percussion members each of which includes a hub portion and a marginal portion which surrounds the hub portion. The hub portion of each member is provided with an annular abutment face which faces the corresponding face of the other member. At least one of the abutment faces is provided with uneven sections.

Background of the invention

The present invention relates to musical instruments in general, and more particularly to percussion instruments. Still more specifically, the present invention relates to cymbals.

Among percussion instruments cymbals are one of the more versatile ones because they are known in a wide range of types and sizes. Thus, cymbals range from tiny sizes which are carried on the fingers of a dancer to very large sizes which are mounted on stands. In all cases, however, the cymbals, which invariably comprise two members, are struck against one another to thereby produce vibration and a resulting sound effect. Unfortunately, it is not always possible to rely completely on obtaining this effect when striking the cymbals, particularly in the case of the larger types which are mounted on a stand. Such types, namely those mounted on a stand, are known as Hi-hat cymbals or as Charleston cymbals. They are generally utilized in a Hi-hat or Charleston-machine which comprises a stand holding the lower cymbal stationary and mounting the uppermost cymbal, which is superposed with the lower one, for substantially vertical movement toward and away from the lower cymbal. Suitable actuating means is provided so that the operator, when he uses this actuating means, effects striking of the upper against the lower cymbal and thereby produces a sound effect. In this type of arrangement the cymbal members are usually of identical size and they comprise a hub portion surrounded by a marginal portion, it being understood that it is the marginal portions of the two members which are struck against one another to produce the desired sound effect. In arrangements of this type, however, it frequently happens that the marginal portions, or rather the abutment faces of these marginal portions which contact one another on striking of the cymbals together, engage one another in direct surface-to-surface relationship along annular zones. This occurs particularly after the cymbals have been in use for a certain period of time and the marginal portions have been matingly deformed by repeated striking against one another. The result of such engagement is a partial or complete damping of the vibrations, and this in turn either distorts the sound effect or does not even permit the sound effect to occur. Attempts to overcome this problem by mounting the lower cymbal member at an angle to the vertical so that the abutment face of the upper cymbal member will strike the abutment face of the lower cymbal member at an inclination relative to the latter, have not been very successful for various reasons, including the fact that the results obtained are not reliably reproducable and that distortion and/or total absence of sound still occurs.

Summary of the invention

The present invention overcomes these disadvantages.

More particularly, the present invention provides a cymbal-type percussion instrument in which surface-to-surface engagement of the abutment faces provided on the two cymbal members along continuous annular zones is impossible.

With the present invention the cymbal members need not undergo extensive changes as compared to their customary construction, thus assuring that the present invention makes the manufacture of cymbal members neither significantly more difficult nor more expensive.

In accordance with one feature of my invention I provide a percussion instrument of the type which comprises a pair of percussion members, namely cymbal members, each of which includes a hub portion and a marginal portion surrounding the hub portion. Each of the hub portions is provided with an annular abutment face which faces in the direction of the corresponding face of the other member. The members are adapted to be struck against one another for percussive engagement of their faces so that the resulting vibration of the members produces a desired sound effect. In accordance with my invention I provide at least one of the abutment faces of other than planar configuration and thereby prevent vibration-damping surface-to-surface contact between the respective faces along a continuous annular zone.

It is clear that such uneven configuration can be obtained in a variety of ways. Thus, the so-provided abutment face can be provided with uneven sections which are circumferentially distributed. Also, such uneven sections can be provided on the abutment face of only one of the members, or they can be provided on the abutment faces of both of the members. Generally it will be necessary only to provide the uneven sections on the abutment face of one of the members, and more particularly on the lowermost one. I have found it to be advantageous to distribute the uneven section with statistical regularity about the circumference of the marginal portion. In other words, while the uneven sections need not be identically configurated they should be distributed with statistical regularity about the circumference of the member on which they are provided, or rather of the marginal portion of such member.

The uneven sections can be provided in a variety of ways, for instance by providing waves and depressions, by providing recesses, by providing cut-outs or in similar manner. I prefer, for various reasons including simplicity of manufacture, a wavy configuration of the abutment face and advantageously the material of the thus-provided cymbal member should be of greater density in the depressions than on the wave projections. It is preferable with this particular type of configuration that the waves and depressions extend at least substantially radially of the cymbal member and it will be obvious that they can, but need not have counterparts on the additional annular face which is provided on each marginal portion and faces in opposite direction from the respective abutment face.

Regardless of how the uneven sections are produced, or what configuration they have, the one invariable requisite is that they prevent surface-to-surface contact between the abutment faces of the two cymbal members along continuous annular zones. This is not to say that the particular configuration of the uneven sections has no influence on the sound effect, which it does; however, this is a matter of simple determination and selection which does not affect the inventive concept herein expressed.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief description of the drawing

FIG. 1 is a somewhat schematic representation of a pair of Hi-hat cymbals as they would be mounted on a Hi-hat machine, which latter is however omitted for the sake of clarity of illustration;

FIG. 2 is a fragmentary section taken on the line II—II of FIG. 1 on a magnified scale; and

FIG. 3 is a view substantially similar to FIG. 2, but illustrating a different embodiment.

Description of the preferred embodiments

Discussing now the drawing in detail, and firstly FIG. 1 thereof, it will be seen that this illustrates an upper cymbal member **1** comprising a hub and a marginal portion **6**, and a lower cymbal **4** also comprising a hub and a marginal portion **6'**. These cymbals **1** and **4** consist of a suitable material which, when struck against a similar material, will vibrate readily and produce a desired sound effect. The upper cymbal **1** is secured in customary manner by means of a clamping sleeve **2** on a central rod **3** of a Hi-hat cymbal machine, whereas the lower cymbal **4** rests on a (nonillustrated) flange of a tubular member **5** of the machine, in which member **5** the rod **3** is received and longitudinally reciprocable. The details of mounting of the cymbal members **1** and **4** are entirely conventional and form no part of the present invention.

The invention is concerned with the configuration of the marginal zone or portion of at least one of the cymbal members, and in the present instance this is the marginal portion **6'** of the lowermost cymbal member **4**. FIG. 2 shows that this marginal portion **6** is provided with circumferentially distributed uneven sections, which in the present instance is in form of a wavy surface configuration **7** in which depressions **7***a* alternate with waves or projections **7***b*. The configuration of the depressions **7***a* and projections **7***b* may be irregular, but the distribution of the waves and projections about the circumference of the member **4** is advantageously provided with statistical regularity. The depressions and projections can be provided by stamping, material removal, hammering, locally applied pressure, or any other suitable method. Advantageously the depressions **7***a* and projections **7***b* extend radially or at least substantially radially of the member **4** and become shallower in radially inward direction. It is also advantageous if the method selected for producing the depressions and projections is of a type which will result in an increase in the density of the material of member **4** in the region of the depressions as compared to the density of the material in the region of the projections.

The embodiment illustrated in FIG. 2 shows the uneven surface configuration **7** provided only on the upwardly directed abutment face of the member **4**, that is the face which engages the member **1** when the members **1** and **4** are struck against one another. The oppositely directed annular face **8** of the marginal portion **6'** of member **4** is shown to be smooth, as visible in FIG. 2. However, it will be understood that there is no reason why the recesses and depressions of the upwardly directed abutment face cannot find counterparts on the annular face **8**, and these counterparts can but need not necessarily be identical with or mirror images of those provided on the upwardly directed abutment face. However, there is no actual need for having the face **8** be so configurated because this will not contribute anything towards the purposes of the invention. It will therefore ordinarily be preferred for aesthetic reasons to have the face **8** remain smooth. Because the surface configuration **7** is constituted in the embodiment of FIG. 2 of relatively shallow depressions **7***a* and projections **7***b*, the presence of the uneven surface configuration is rather difficult to detect and is thus not objectionable from an aesthetic point of view.

Coming to the embodiment of FIG. 3 it will be seen that this view corresponds substantially to the view shown in FIG. 1. It differs from FIG. 1 in that it shows the marginal portion **6***a'* which, as in the other embodiments, may be broadly thought of as a marginal annular abutment zone, to be provided not with recesses and projections on at least its upwardly directed abutment face, but with bores, cutouts or other openings **9** which need not be of identical size or configuration and which need not be spaced at identical distances. It will be clear that the bores **9** can be replaced by incisions extending inwardly from the outer edge of the marginal portion **6***a'*, by identations extending inwardly from this outer edge, or in another suitable manner. In fact, a very great variety of possibilities exists for providing the marginal annular abutment zone or zones with circumferentially spaced recess portions in form not only of depressions, bores, projections and incisions, but other configurations replacing them, and all of these are suitable for and in accordance with the present invention as long as they accomplish the central inventive concept, namely to prevent contact between the abutment faces of the cymbal members **1** and **4** along continuous annular zones of engagement.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of instruments differing from the types described above.

While the invention has been illustrated and described as embodied in a cymbal-type percussion instrument, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

I claim:

1. A percussion instrument of the type comprising a hub portion and a disc-shaped portion surrounding said hub portion and having a marginal annular abutment zone having a general plane extending radially of said hub portion and facing the corresponding marginal annular abutment zone of the other member, said members being adapted to be struck against one another for percussive engagement of said marginal annular abutment zones of said disc-shaped portions whereby the resulting vibration of said members produces a desired sound effect, at least one of said marginal annular abutment zones having circumferentially spaced recess portions so as to prevent vibration-damping surface-to-surface contact between said disc-shaped portions along said marginal annular abutment zones thereof.

2. An instrument as defined in claim **1**, said members being superposed with one member above and the other member below; and wherein said one marginal annular abutment zone is provided on said other member.

3. An instrument as defined in claim **2**, wherein said circumferentially spaced recess portions are constituted by depressions provided in said one marginal annular abutment zone.

4. An instrument as defined in claim **2**, wherein said recess portions are circumferentially spaced in a recurring pattern.

5. An instrument as defined in claim 2, wherein said recess portions are constituted by elongated depressions having substantially even configuration and extending substantially radially of the member with which said one marginal annular abutment zone is associated.

6. An instrument as defined in claim 2, wherein said recess portions are cutouts penetrating said one marginal abutment zone.

7. An instrument as defined in claim 5, wherein said elongated depressions alternate with elongated ridges, and wherein the material of said one marginal abutment zone has in the regions of said ridges a lesser density than in the region of said depression.

8. An instrument as defined in claim 2, wherein the other marginal abutment zone is substantially planar.

9. An instrument as defined in claim 2, wherein the other marginal abutment zone is also provided with circumferentially spaced recess portions in correspondence with those provided on said one marginal abutment zone.

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