April 23, 1929. A. V. DA COSTA 1,709,841

TONE PRODUCING TOY

Filed Aug. 4, 1927

Fig. 1.

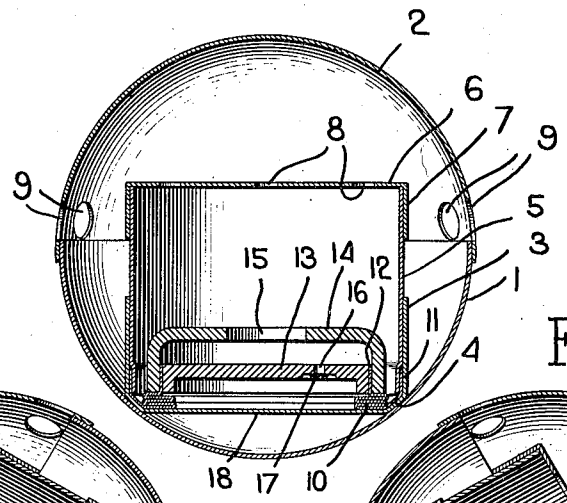



Fig. 3.

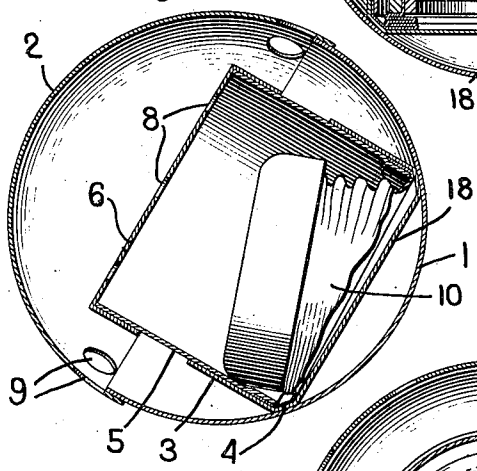



Fig. 4.

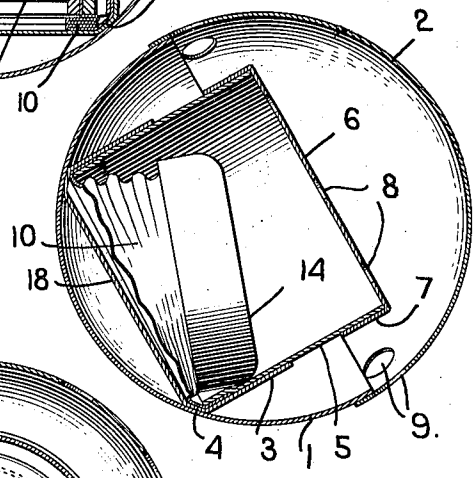
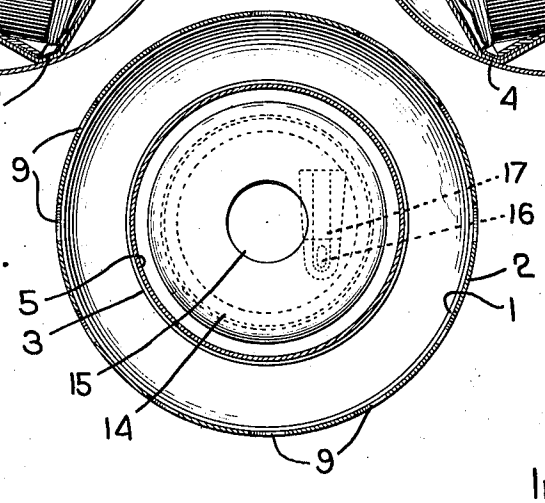



Fig. 2.




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# UNITED STATES PATENT OFFICE.

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## TONE-PRODUCING TOY.

Application filed August 4, 1927. Serial No. 210,671.

This invention relates to improvements in toys and the principal object of the invention is to provide a toy adapted to produce a noise when moved from its normal stable position of rest.

A further object of the invention is to provide a toy of this character presenting a surface adapted normally to rest upon a flat support with substantially a single point or line of contact therewith, such, for example, as a curved, preferably spheroidal or spherical base.

In its preferred form the toy is in the form of a hollow spherical shell having a pneumatic tone-producing device with actuating means capable of a limited free movement in any direction and operable to produce a tone when displaced from its normal stable position.

A further object of the invention is to provide a base or shoulder for the tone-producing device which is homogeneously united to the hollow casing, thereby providing a structure in which the tone-producing device will not become detached from the casing by rough usage.

Other objects and features of the invention will more fully appear from the following description and the accompanying drawing and will be particularly described in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which,

Fig. 1 is a vertical sectional view of a hollow sphere containing a pneumatically operable tine-producing device;

Fig. 2 is a horizontal transverse sectional view through Fig. 1 substantially diametrically thereof;

Fig. 3 is a view, similar to Fig. 1, illustrating the spherical shell moved in one direction from stable position and showing the position of the pneumatically operable tone-producing device in operative position; and,

Fig. 4 is a similar view illustrating the shell displaced from its normal stable position in the opposite direction from that shown in Fig. 3.

While the casing for the tone-producing device may be of any desirable form which is so constructed as to permit the device to rest upon a flat surface when in stable position with a single point or line of contact therewith, the preferred form of casing desirably is of spherical or spheroidal form.

As illustrated herein the casing is in the form of a hollow shell comprising a hemispherical base section 1 and a complementary hemispherical cover section 2 with the edges of the sections telescoping slightly. Desirably these casing sections are formed of a nitro-cellulose composition, such as celluloid, and when assembled are homogeneously secured together by causing the overlapping and contacting surfaces of the sections to be partially liquefied by a suitable solvent such as ethyl alcohol, acetone, and the like.

The tone-producing device is so mounted in the hollow shell as to be inoperative when the device is in a stable position, but is adapted to produce a tone by movement from the stable position in any direction.

In the preferred construction shown in the drawing the sound-producing device is contained in a cylindrical casing having a cylindrical basal section 3 provided with a spherically convex peripheral edge 4 which conforms to the spherical curvature of the inner wall of the base section 1 of the shell, and is secured homogeneously thereto by the application to the spherical peripheral edge of said casing, or to the interior of the shell, or both, of a suitable solvent for the material of the shell. Thus the casing of the tone-producing device and the shell is made practically integral and the danger of separation of such parts, which might occur if the same were merely secured together by glue or cement, is avoided.

The casing for the tone-producing device as shown has a cylindrical wall 5 concentric with and engaging the wall 2 of the base section and a cover 6 having a flange 7 engaging the cylindrical wall 5. These members of the container for the tone-producing device may be suitably secured together in any desired manner. The cover desirably is provided with apertures 8 to permit access of air to the interior of the casing of the tone-producing device and the upper section of the shell desirably is also provided with suitable apertures 9 to permit air to enter into and escape from the chamber of the shell.

The tone-producing device comprises an impervious bellows 10, preferably of rubber or rubberized fabric, having a lower outer extension or flap 11 which is located be-

tween the walls 3 and 5 and secured thereto by suitable cement. The opposite edge of the bellows is provided with a cylindrical extension or flange 12 which is clamped between the cylindrical periphery of a preferably metallic upper wall 13 of the bellows and a complementary circumferential flange of a weight 14. The weight 14 is provided with a central aperture 15 and the wall 13 also is provided with a smaller aperture 16 in which a tone-producing reed 17 is mounted. The bottom wall 18 of the casing for the tone-producing member desirably forms the lower wall of the bellows. The diameter of the wall 13 and weight 14 is considerably less than the diameter of the casing 5 so that the tone-producing device is capable of a limited free movement in any direction when the spherical shell is moved from its stable position as, for example, when it is rolled along a floor.

When the device is in the stable position the bellows will lie collapsed upon the base 18, as illustrated in Fig. 1. When, however, the spherical casing is moved from such stable position, as when rolled along the floor, the weighted upper wall of the bellows will move bodily from its normal stable position, thereby opening the bellows, as illustrated in Figs. 3 and 4, thus causing the air to rush through the apertures 15 in the weight and 16 in the wall of the bellows and thereby actuating the reed which is located in the aperture 16. The cylindrical wall of the casing serves to limit the lateral movement of the weighted wall of the bellows so that the weight of such wall, when displaced from its normal position, will tend immediately to restore the shell to its normal position of rest, and in so doing will collapse the bellows, thus forcing such air as has entered through the aperture 16 into the bellows out through said aperture, thereby actuating the reed.

Any suitable type of reed may be employed, but preferably one is provided which will produce a tone similar to a baby's cry. Such a device is particularly attractive to children, as, when it is rolled along the floor, a succession of "baby cries" is produced.

It will be understood that the embodiment of the invention disclosed herein is of an illustrative character and is not restrictive and that various change in form, construction and arrangement of parts may be made within the spirit and scope of the claims.

It will also be understood that various other forms of tone-producing devices may be employed within the meaning and scope of the claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A toy comprising a hollow apertured spheriodal shell formed of rigid, but soluble material, a sound-producing device enclosed therein with a base of like material having a spherically convex peripheral edge homogeneously united to said shell and a sound-producing device mounted upon said base and movable relatively thereto operable when displaced from stable position to produce a tone.

2. A toy comprising a hollow apertured spherical shell of nitro-cellulose composition, a pneumatically operable sound-producing device enclosed therein with a base of like material having a spherically convex peripheral edge homogeneously united to said shell and a bellows connected to said base having a weighted wall provided with an aperture containing a reed.

3. A toy comprising a hollow apertured substantially spherical shell comprising a hemispherical base section and a complementary hemispherical cover section with overlapping edges homogeneously secured together, a pneumatically operable tone-producing device within said shell comprising a cylindrical casing provided with a spherically convex peripheral base edge homogeneously united to the base portion of said shell and a bellows secured to the base of said cylindrical casing having a weighted top wall of less diameter than that of said cylindrical casing provided with an aperture having a reed therein.

4. A toy comprising a hollow spherical shell, a tone-producing device therein at one side of its mid point having a flexible bellows connected at one end to said shell and provided at its other end with a weighted apertured wall acting by gravity when moved by rotation of the shell from a predetermined stable position to restore the shell to stable position, and a reed in the aperture operable during the movement toward stable position to produce a tone.

5. A toy comprising a shell having an outer convexly curved surface, a tone-producing device within said shell comprising a weight movable to different positions relative to the shell upon a rocking or rolling movement thereof in any one of a plurality of different intersecting planes, a vibratory member, and means associated with said member and operated by movement of said weight to force air to vibrate said member to produce a tone.

6. A toy comprising a shell having a rounded supporting outer surface, a tone producing device including a readily yieldable element attached to the inner surface of the shell to one side of its mid point through the shell, a sound-producing member positioned to be affected by movement of said element, and a weight connected to effect a movement of said element when the shell is tipped from a given position, and return said shell to stable position.

7. A toy comprising a shell having a

rounded supporting base portion, a tone-producing device in the shell having a readily yieldable element secured within a restricted area to the base portion of the shell to one side of a diameter through the shell, a vibratory sound-producing member positioned to be affected by movement of said element, and a weight connected to effect movement of said element when the shell is rolled from its stable position on its base, said weight also serving to roll this shell back to such stable position.

8. A toy comprising a shell having an outer convexly curved surface, a tone-producing device within said shell comprising a weight movable to different positions relative to the shell upon a rocking or rolling movement thereof in any one of a plurality of different planes, a vibratory member, and a bellows associated with said member and connected to said weight and operable by a movement of the weight to force air to vibrate said member and produce a tone.

9. A toy comprising a shell having an outer convexly curved surface, a tone-producing device within said shell comprising a weight movable to different positions relative to the shell upon a rocking or rolling movement thereof to operate said device, said weight being positioned at one side of the mid point of the shell to tend to roll the shell back to cause a given single point or line on its surface to contact with its support.

10. A toy comprising a shell having an outer convexly curved surface, a tone-producing device within said shell comprising a weight movable to different positions relative to the shell upon a rocking or rolling movement thereof in any one of a plurality of different planes, means for guiding the movement of said weight, a vibratory member, and means associated with said member and operated by movement of said weight to force air to vibrate said member and produce a tone.

11. A toy comprising a shell having an outer convexly curved surface, a tone-producing device within said shell comprising a flattened weight movable relative to said shell, guiding means loosely surrounding said weight for generally directing its movement but permitting the inclination of said weight to said guide in any one of a plurality of different planes, a vibratory member, and means associated with said member and operated by a movement of said weight to force air to vibrate said member and produce a tone.

In testimony whereof, I have signed my name to this specification.

ARTHUR VINCENT DA COSTA.