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(11) **EP 1 512 447 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.03.2005 Bulletin 2005/10

(51) Int Cl.7: **A63H 37/00, A63H 33/00**

(21) Application number: **03019630.7**

(22) Date of filing: **04.09.2003**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**
Designated Extension States:
AL LT LV MK

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(54) **Sound-producing metallic toy disk**

(57) A sound-producing metallic toy disk includes a round metal sheet (10) being punched at a central area to provide a curved recess (13), and at an inner area near an outer edge thereof to form a first concentric recess section (12) having a diameter larger than that of

the curved recess. A sheet portion of the round metal sheet located between the first recess section and the curved recess tends to quickly shift to produce clear and crisp sound when a force is applied to the curved recess.

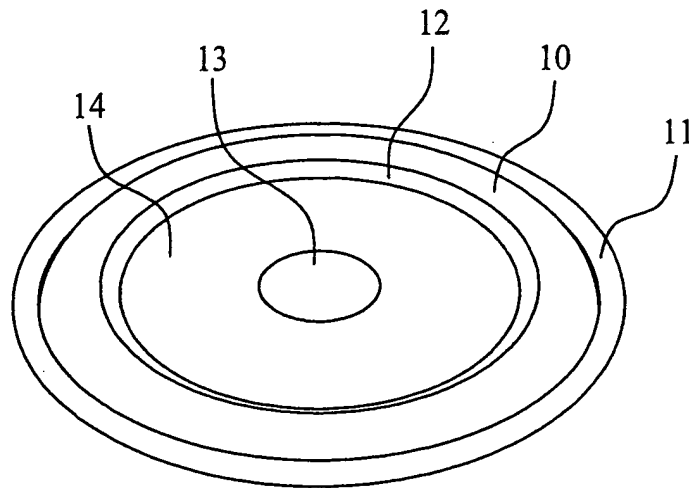


FIG. 1

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Description

[0001] The present invention relates to a metallic toy disk, and more particularly to a metallic toy disk that is able to produce sound.

[0002] Conventional toy disks are made of paper and usually have various color designs printed on two round surfaces thereof. Due to these various color designs, the paper toy disks are not only a popular toy among children, but also special collections of some people. With advancements in the manufacturing techniques, there is developed a metallic toy disk formed through punching a sheet metal material.

[0003] A currently available metallic toy disk basically includes a round metal sheet, an outer edge of which is smoothly curled to avoid cutting a player. The round metal sheet is also punched to form a concentric recess that increases an overall structural strength of the toy disk to avoid deformation thereof in the process of curling the outer edge.

[0004] The above-described conventional metallic toy disk is apparently monotonous in terms of the manner in which the metallic toy disk may be played. It is therefore desirable to develop a new metallic toy disk that may be played in different manners and produced without increasing the manufacturing cost thereof.

[0005] A primary object of the present invention is to provide a metallic toy disk that may produce sound. To achieve this object, the metallic toy disk of the present invention mainly includes a round metal sheet, which is punched at a central area to provide a curved recess, and at an inner area near an outer edge thereof to form a first concentric recess section having a diameter larger than that of the curved recess, so that a sheet portion of the round metal sheet located between the first recess section and the curved recess tends to quickly shift to produce clear and crisp sound when a force is applied to the curved recess, making the metallic toy disk interesting for play in another different manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

Fig. 1 is a top perspective view of a sound-producing metallic toy disk according to the present invention;

Fig. 2 is a cross sectional view of Fig. 1; and

Figs. 3A to 3C shows movements of the metallic toy disk of the present invention in producing sound.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0007] Please refer to Figs. 1 and 2 that are top perspective and cross sectional views, respectively, of a sound-producing metallic toy disk according to the present invention. As shown, the metallic toy disk of the present invention includes a round metal sheet 10, an outer edge of which is punched to form a smoothly curled edge 11, lest the metallic toy disk should have any sharp edge to injure a user. The round metal sheet 10 is internally punched to form a first concentric recess section 12, which is adapted to increase an overall structural strength of the round metal sheet 10.

[0008] The metallic toy disk of the present invention is characterized in that a downward curved recess 13 is formed at a central area of the round metal sheet 10 by way of punching. Please refer to Fig. 2. A bottom of the curved recess 13 is not lower than a lowest point on the whole round metal sheet 10. Therefore, the curved recess 13 would not have any influence on the function initially designed for the toy disk.

[0009] A sheet portion 14 of the round metal sheet 10 located between the first recess section 12 and the curved recess 13 tends to swiftly move up and down when a force is applied to the curved recess 13, and thereby produces clear and crisp sound.

[0010] Please refer to Figs. 3A to 3C. When a user applies a downward force on the curved recess 13 in a direction indicated by the arrow G1, as shown in Fig. 3A, and when the applied force is larger than a supporting force that could be provided by the sheet portion 14 of the round metal sheet 10, the sheet portion 14 would quickly shift downward as indicated by the arrows G2 in Fig. 3B. Since the sheet portion 14 vibrates when it quickly shifts downward, a clear and crisp sound is produced. Thereafter, when the force applied to the curved recess 13 in the direction of G1 is released, the sheet portion 14 returns to an original position due to an inherent restoring force thereof, as indicated by the arrows G3 in Fig. 3C. And, a clear and crisp sound of a different frequency is produced when the sheet portion 14 restores to its original position. That is, when a user pushes the curved recess 13 once, the metallic toy dish would interestingly produce crisp sound twice to largely increase the fun of playing the metallic toy disk.

[0011] In comparing with the conventional metallic toy disk, the present invention includes an additional process to form the curved recess 13 without increasing the manufacturing cost thereof, while an interesting sound effect may be produced with the metallic toy disk of the present invention.

Claims

1. A sound-producing metallic toy disk, comprising a round metal sheet, an outer edge of which is

smoothly curled in a predetermined manner, and an inner area of which near an outer edge thereof is punched to form a first concentric recess section; said metallic toy disk being **characterized in that** said round metal sheet is punched at a central area to form a downward curved recess, a diameter of which being smaller than that of said first recess section, and that a sheet portion located between said first recess section and said curved recess tends to quickly shift to produce clear and crisp sound when a force is applied to said curved recess.

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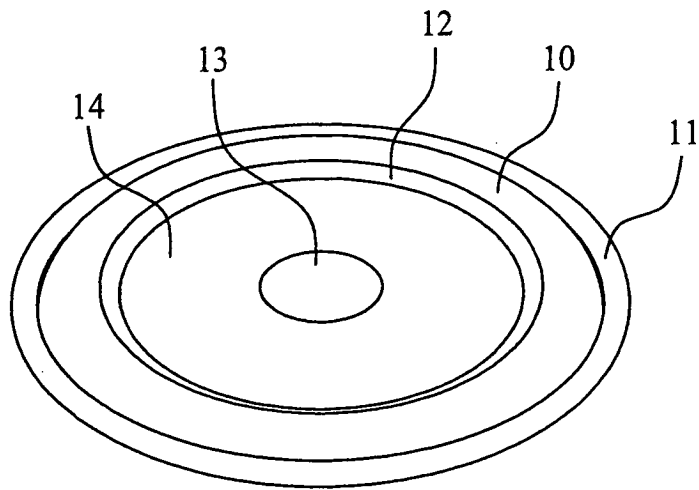


FIG. 1

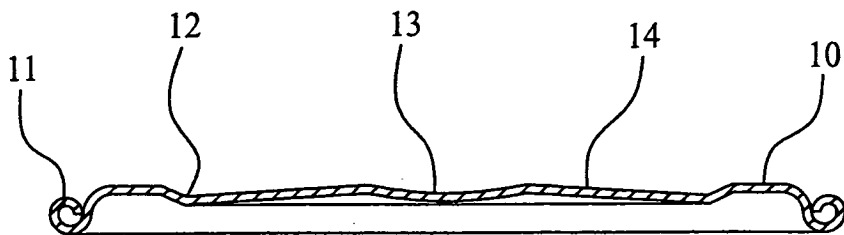


FIG. 2

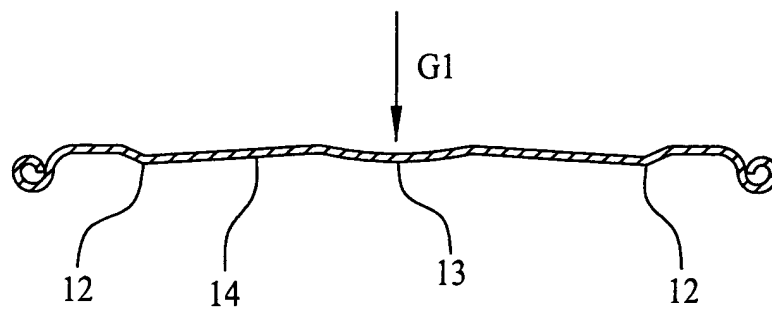


FIG. 3A

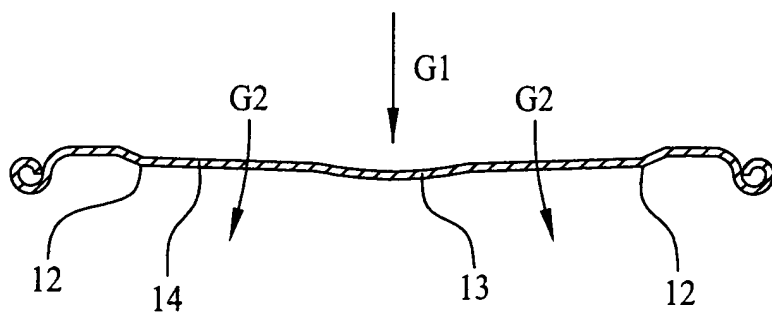


FIG. 3B

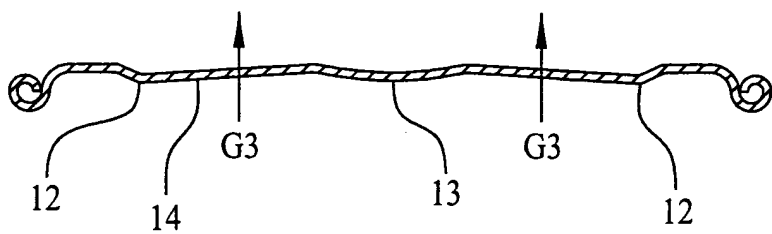


FIG. 3C



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EUROPEAN SEARCH REPORT

Application Number
EP 03 01 9630

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 4 152 863 A (KUBIATOWICZ JAMES F) 8 May 1979 (1979-05-08) * column 2, line 7 - column 3, line 21; figures *	1	A63H37/00 A63H33/00
A	US 2001/018310 A1 (LYMAN DANIEL F) 30 August 2001 (2001-08-30) * paragraph [0023]; figure 1 *	1	
A	US 1 677 122 A (JOHNSON NORMAN E) 10 July 1928 (1928-07-10) * page 1, line 41 - line 77; figures *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A63H B44D
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 28 November 2003	Examiner Lucas, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 03 01 9630

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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28-11-2003

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