Abstract: A cracker (1) including a central body (2), and a pair of opposing pull-formations (4) frangibly connected to opposite ends of the central body. A sound module (10) is disposed substantially within the central body and is adapted upon activation to produce a predetermined sequence of audible tones. The cracker further includes activation means (15) for the sound module and triggering means (21) operable such that detachment of either one of the pull-formations from the central body causes the triggering means to activate the sound module.
TITLE: "A MUSICAL CRACKER"

FIELD OF THE INVENTION

The present invention relates generally to party accessories, and more particularly to "Christmas crackers", otherwise known as party crackers or bon bons.

BACKGROUND OF THE INVENTION

The following discussion of the prior art is intended to provide an appropriate technical context for the invention and enable the advantages of it to be more fully appreciated. However, any reference to prior art should not be construed as an express or implied admission that such art is widely known or forms part of common general knowledge in the field.

Traditional Christmas crackers or bon bons comprise a generally tubular central body portion and a pull-formation at each end. The central body usually contains a small novelty item such as a toy, a party hat, a joke or a combination of such items. Each pull-formation is joined to the central body by means of a frangible connection, typically formed from paper or cardboard. Internal elongate activation strips extend inwardly from the respective pull-formations and are detachably connected in overlapping relationship within the central body. The activation strips incorporate friction tabs and a minute quantity of an explosive such as gunpowder in the overlapping zone. In this way, when the cracker is pulled from both ends with sufficient force, one of the pull-formations randomly detaches and is separated from the central body, whereby the activation strips also become separated from one another. During the separation process, relative sliding movement of the overlapping friction tabs detonates the explosive, to produce a harmless but strongly audible "bang", which is intended to heighten the sense of celebration and surprise.

One significant difficulty with crackers of this type relates to transportation and distribution of the product in commercial quantities. More particularly, with heightened security measures being imposed internationally, the transportation of
explosives, even in small quantities, is subject to increasingly stringent controls, restrictions, prohibitions and cost premiums. These measures have had the effect of increasing transportation and wholesale distribution costs in and between a significant number of jurisdictions, to the point of reducing the commercial viability of certain aspects of product distribution, particularly by sea, road and rail transport, using postal or courier services, to the point where the product has become commercially marginal, and in some circumstances non-viable. The transportation of explosives also constitutes a safety hazard.

Some attempts have been made to overcome these difficulties, by means of alternative activation and sound production mechanisms that do not make use of explosives. However, these alternative systems have not been operable consistently and reliably in response to the random separation of either pull-formation and have therefore compromised an important aspect of the traditional element of surprise.

It is an object of the present invention to overcome or substantially ameliorate one or more of the disadvantages of the prior art, or at least to provide a useful alternative.

SUMMARY OF THE INVENTION

Accordingly, the invention provides a cracker including:

a central body;

a pair of opposing pull-formations frangibly connected to opposite ends of the central body;

a sound module disposed substantially within the central body and adapted upon activation to produce a predetermined sequence of audible tones;

activation means for the sound module; and

triggering means operable such that detachment of either one of the pull-formations from the central body causes the triggering means to activate the sound module.
Preferably, the triggering means include a pair of triggering mechanisms, each being operatively associated at one end with a respective one of the pull-formations and being operatively connected at the other end with the activation means.

Preferably, each trigger mechanism includes an elongate activation strip, which is preferably secured at one end to the respective pull-formation. In a preferred form, the sound module is electronic, including a battery, speaker and microchip containing stored information corresponding to the predetermined sequence of audible tones.

Desirably, the activation means include a pair of switches wired in parallel with the sound module. In one particularly preferred form of the invention, each switch includes a movable first contact resiliently biased toward a second contact. Prior to activation, a proximal end of the associated activation strip is preferably disposed to separate the first and second contacts so as to maintain the switch in an inoperative or open state. Preferably also, upon physical removal of the proximal end of the activation strip, the first and second contacts are resiliently biased into engagement whereby the switch is moved into an operative state, the triggering circuit is closed, and the sound module is thereby activated.

In the preferred embodiment, the predetermined sequence of audible tones corresponds to a tune associated with a traditional religious festival, such as a Christmas Carol, a song such as "Happy Birthday" associated with a traditional cultural celebration, a national anthem, a well-known musical theme, or any other tune or song, whether associated with a religious or cultural festival, or otherwise. The predetermined sequence of tones could also include a single tone, an essentially random sequence, or a non-musical sound, such as the sound of a small explosion reminiscent of a traditional cracker. Preferably, the microchip is programmed such that the song, tune tone or sound is only repeated a predetermined number of times. Most preferably, in embodiments of the invention adapted to play a song or tune, the sequence is repeated twice, whereas in embodiments adapted to generate an explosive sound, for example, the sequence is preferably played only once.
A preferred embodiment of the invention will now be described, by way of
example only, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a cracker, according to the invention;

Figure 2 is a cross-sectional view showing the internal components of the
heimer of figure 1;

Figure 3 is an exploded perspective view showing the sound module, activation
switches and triggering mechanisms of the cracker shown in Figures 1 and 2; and

Figure 4 is a circuit diagram in respect of the sound module, battery, speaker and
switch mechanisms of the cracker.

Referring to the drawings, the invention provides a cracker 1, having a central
generally tubular body 2, defining an internal containment region 3, and a pair of
opposing pull-formations 4, joined to opposite ends of the body by respective frangible
connecting portions 5. In the preferred embodiment, the body 2, pull-formations 4 and
connecting portions 5 are integrally formed from a paper-covered cardboard panel,
rolled into a tube with overlapping longitudinal edges joined together along an
adhesion line. The overlapping edges are preferably joined by means of double-sided
adhesive tape, but may alternatively be joined by gluing, interlocking flaps or tabs,

stapling, stitching or other suitable means.

The connecting portions are defined by respective series of circumferentially
spaced cut-outs 6. Each series of cut-outs defines a circumferential line of weakness
and also allows a radial contraction between the associated pull-formation and the
central body. A string tie 7, contracts the connecting portion in this region, and
thereby provides the traditional neck region of reduced diameter at each end of the
central body.
The cracker includes a sound module 10 incorporating a battery 11, speaker unit 12, and an integrated circuit or microchip 13 containing stored information corresponding to a predetermined sequence of audible tones, such as a Christmas Carol, festive tune or other sound.

As best seen in figures 3 and 4, the cracker further includes an activation mechanism 15, in the form of a pair of switches 16, connected in parallel. Each switch includes a movable first contact 17, resiliently biased toward a stationary second contact 18, on an underlying circuit board 19. The sound module and associated activation mechanism are ideally wrapped together in heat-shrink plastic 20, and glued to an internal surface of the containment region 3 of the body (see figure 2), which also contains a traditional toy, gift or novelty item (not shown). In alternative embodiments, the sound module and the activation mechanism are contained in an integral housing, or alternatively in respective discrete housings, which may optionally be connected together.

The cracker further includes a pair of trigger mechanisms 21, each being attached at one end to a respective one of the pull-formations and being operatively connected at the other end to the activation mechanism 15, whereby detachment of either one of the pull-formations from the central body as the cracker is pulled, causes the respective trigger mechanism to activate the sound module. The sound module is adapted upon activation to play the predetermined tune, and the microchip is preferably programmed such that the tune is played only a predetermined number of times.

In the preferred embodiment, each trigger mechanism includes an elongate activation strip 22 formed from or incorporating a suitable insulating material such as cardboard or plastic. Each activation strip is secured at one end to the associated pull-formation and is positioned at the proximal end between the first and second contacts of the respective switch 16, so as to maintain the switch in an inoperative or open state. In this way, separation of either one of the pull-formations from the main body of the cracker physically removes the proximal end of the associated activation strip from the respective switch, whereby the first and second contacts are resiliently biased into engagement. The switch is thereby moved into an operative state, closing the
triggering circuit and activating the sound module. The outer ends of the activation strips are preferably secured to the respective pull-formations, so that the cracker will operate effectively without the pull-formations or activation strips needing to be held or gripped in any particular way by the users. It will be appreciated, however, that this feature is optional, and that in alternative less preferred embodiments, the outer ends of the activation strips may simply rest within the respective pull-formations without being secured, in which case reliable activation is dependent upon the users gripping the activation strips in conjunction with the respective pull-formations.

Because the switches 16 are connected in parallel, as best seen in figure 4, because the triggering mechanisms are symmetrically arranged, and because there is nothing otherwise inherent in the cracker that would bias separation or activation toward one pull-formation or the other, the sound module is activated irrespective of which pull-formation separates from the main body of the cracker, and each pull-formation is equally likely to separate. Importantly, this preserves the element of randomness and surprise associated with traditional crackers. It will be appreciated, however, that other forms of switching devices and triggering mechanisms may alternatively be used.

The invention provides a simple and reliable cracker, which provides an aural component of festivity and surprise, in a novel form. The invention is cost-effective to manufacture, because it can essentially be assembled, rolled, sealed and crimped in the conventional manner, without the need for more complex and expensive production techniques. Furthermore, the cracker of the present invention advantageously retains a traditional outward appearance and despite its internal sophistication, avoids any inherent bias toward one pull-formation or the other, such that the element of random bilateral activation is also effectively retained. Moreover, the invention achieves these ends without the use of explosives. This in turn makes the process of packaging, transporting and distributing the crackers in commercial quantities a relatively more straightforward, less expensive and less hazardous exercise. In these and other respects, the invention represents a practical and commercially significant improvement over the prior art.
Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.
CLAIMS:

1. A cracker including:
   a central body;
   a pair of opposing pull-formations frangibly connected to opposite ends of the central body;
   a sound module disposed substantially within the central body and adapted upon activation to produce a predetermined sequence of audible tones;
   activation means for the sound module; and
   triggering means operable such that detachment of either one of the pull-formations from the central body causes the triggering means to activate the sound module.

2. A cracker according to claim 1, wherein the triggering means include a pair of triggering mechanisms, each being operatively associated at one end with a respective one of the pull-formations and being operatively connected at the other end with the activation means.

3. A cracker according to claim 2, wherein each of said trigger mechanisms includes an elongate activation strip.

4. A cracker according to claim 3, wherein each of said activation strips is secured at one end to a respective one of the pull-formations.

5. A cracker according to any one of the preceding claims, wherein the sound module is electronic, and includes a battery, a speaker and a microchip containing stored information corresponding to the predetermined sequence of audible tones.

6. A cracker according to any one of the preceding claims, wherein the activation means include a pair of switches operatively connected in parallel with the sound module.

7. A cracker according to claim 6, wherein each of said switches includes a movable first contact resiliently biased toward a second contact.

8. A cracker according to claim 7, wherein prior to activation, a proximal end of each activation strip is disposed to separate the first and second contacts of a respective
one of said switches, so as to maintain the respective switch in an inoperative or open state.

9. A cracker according to claim 8, wherein upon physical removal of the proximal end of each of said activation strips, the corresponding first and second contacts of the respective switch are resiliency biased into mutual engagement, whereby the respective switch is moved into an operative state and the sound module is thereby activated.

10. A cracker according to any one of the preceding claims, wherein the predetermined sequence of audible tones corresponds to a musical tune.

11. A cracker according to claim 10, wherein the musical tune and is associated with a traditional, cultural or religious celebration or festival.

12. A cracker according to claimed 10, wherein the predetermined sequence of tones is non-musical in character.

13. A cracker according to claim 12, wherein the predetermined sequence of tones is an aural representation of a small explosion reminiscent of a traditional cracker.

14. A cracker according to any one of the preceding claims, wherein the sound module is programmed such that the predetermined sequence of audible tones is repeated a predetermined number of times.

15. A cracker according to any one of the claims 1 to 13, wherein the sound module is programmed such that the predetermined sequence of audible tones is sounded only once.

16. A cracker according to any one of the preceding claims, wherein the pull-formations are connected to opposite ends of the central body by means of respective frangible connecting portions.

17. A cracker according to claim 16, wherein the central body, the pull-formations, and the connecting portions are integrally formed from a single panel of sheet material.

18. A cracker according to claim 17, wherein the central body, the pull-formations and the connecting portions are formed by rolling the panel of sheet material into a tube such that longitudinal edges of the tube overlap, joining the overlapping edges, and forming neck regions of reduced diameter near the connecting portions.
19. A cracker according to claim 17 or claim 18, wherein the sheet material is cardboard.

20. A cracker according to any one of claims 16 to 19, wherein the connecting portions are defined by respective series of circumferentially cut-outs.

21. A cracker according to any one of the preceding claims, wherein the sound module and the activation means are wrapped together in heat-shrink plastic, and secured to an internal surface of a containment region defined within the central body.

22. A cracker according to any one of claims 1 to 20, wherein the sound module and the activation means are contained within an integral housing, which is disposed within the central body.

23. A cracker according to any one of the preceding claims, wherein the central body further contains a removable novelty item.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.
A63H 37/00 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DWPI:A63H-037/IC, cracker, bon-bon

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>GB-2383000-A (RASMUSSEN) 18 June 2003 See whole document.</td>
<td>1 to 23</td>
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<tr>
<td>X</td>
<td>GB-2243306-A (BRITE SPARKS LIMITED) 30 October 1991 See whole document.</td>
<td>1 to 23</td>
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Further documents are listed in the continuation of Box C

See patent family annex

- Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
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  - "O" document referring to an oral disclosure, use, exhibition or other means
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Form PCT/ISA/210 (second sheet) (April 2005)
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX