June 12, 1934. J. H. L. DE BATS 1,962,927

TOY

Filed May 28, 1931

Fig. 1

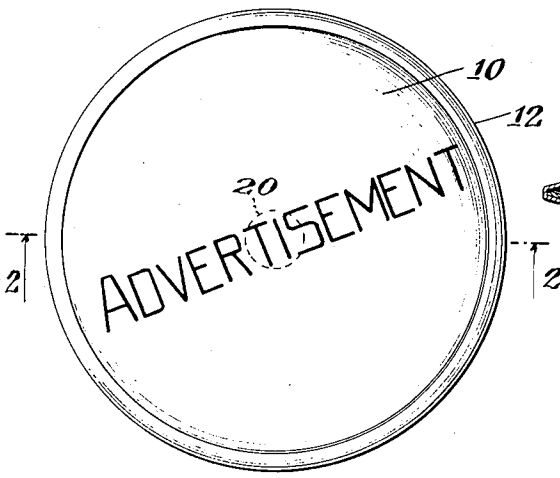


Fig. 6

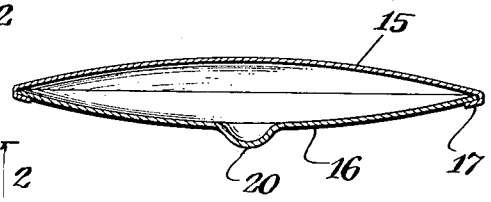


Fig. 2

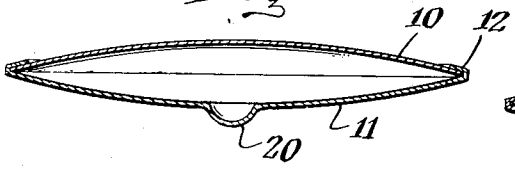


Fig. 7

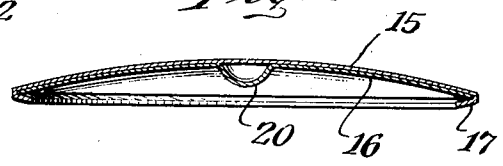


Fig. 3

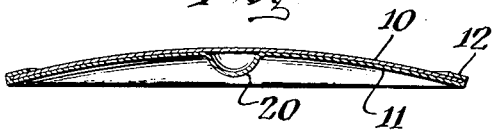


Fig. 4

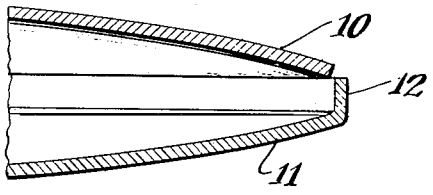
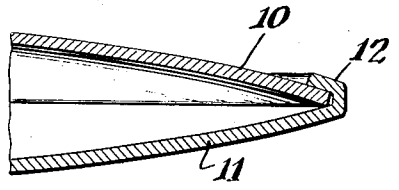


Fig. 5



INVENTOR

Jean Hubert Louis De Bats

BY HIS ATTORNEYS

Austin & Dix

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UNITED STATES PATENT OFFICE

1,962,927

TOY

Jean Hubert Louis De Bats, Newark, N. J.

Application May 28, 1931, Serial No. 540,726

4 Claims. (Cl. 46—37)

This invention relates to toys, and more particularly to a thermostatic toy of the type which is adapted to be operated in part by the heat of the hand.

The invention provides a low temperature thermostatic device which may be moved into a flexed position by the hand or fingers thereof and heated until it remains in said flexed position and which when cooled, as on a cold surface, moves into another position with sufficient force to cause the device to jump into the air. The device may be constituted to operate at temperatures corresponding to the heat of the hand and a cool surface such as a table top respectively in which case it may be held in the hand for heating and may be set on a table for cooling.

An object of the invention is to provide a cheap, simple, convenient and dependable device of the type above indicated which may be readily operated and which is practically indestructible.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part thereof, in which

Fig. 1 is a plan view of one form of the device;

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a similar section showing the thermostatic metal in flexed position;

Fig. 4 is an enlarged detail view of a portion of the component parts;

Fig. 5 is an enlarged detail view of the component parts in assembled position;

Fig. 6 is a sectional view of a modified form of the device; and

Fig. 7 is a sectional view of a modified form of Fig. 6 with the thermostatic metal in flexed position.

Like reference characters denote like parts in the several figures of the drawing.

In the following description and in the claims, various details will be identified by specific names for convenience, but they are intended to be as generic in their application as the art will permit.

Referring to the drawing more in detail and more particularly to Figs. 1–5, the invention is shown as applied to a device comprising a rigid metallic cover member 10 which is formed of sufficient thickness to prevent distortion during operation and may have a design, such as an advertisement, printed or etched or otherwise impressed on the exposed surface thereof. The member 11 of bimetallic metal of layers having respectively different coefficients of expansion forming a substantially unitary metallic sheet and which is mounted adjacent cover member 10 and is provided at its edge with an overlapping flange 12 which is crimped or otherwise secured around the periphery of member 10 for holding the device in assembled position. Members 10 and 11 are formed convex and are normally disposed with their concave surfaces adjoining. Member 11 is so designed that it may be flexed inwardly as shown in Fig. 3 against the concave surface of member 10, and when heated, as by the heat of the hand, will remain in said position. The device may then be placed upon a cold surface, such as a table top, with member 11 resting against said surface. When the thermostatic member 11 becomes sufficiently cool it will spring outwardly to the position shown in Fig. 2 and thereby exert sufficient force to cause the entire device to jump into the air a substantial distance. Thereafter, to be operated again, it is only necessary to heat the device in the hand and exert force on the convex surfaces 10 and 11 to again flex the thermostatic member.

In the modified form shown in Figs. 6 and 7, the rigid cover member 15 is formed somewhat larger than thermostatic member 16 and is provided with flanges 17 which are crimped around the edge of said thermostatic member. It is obvious that either the thermostatic member or the cover may be formed with the crimped flange as illustrated in Figs. 2 and 6 and that the operation of the device will be substantially the same in either case.

The provision of the rigid cover permits the use of a light thermostatic element which may be readily bent from one position to the other. It is to be noted that the device is operated by applying pressure, as between the thumb and finger, on the convex surfaces 10 and 11. Hence, any excess pressure which is applied can only serve to flex the two members and cannot distort their form. If a single thermostatic member were employed without the rigid cover 10 it would be necessary to use a metal sufficiently strong to prevent it from being distorted to a point where operation thereof is interfered with, and when a metal of this type is used it becomes difficult to bend the same in the hand. Further-

more, when the device is operated by a person unfamiliar with its use, distortion might result from applying the bending force at the wrong point. In the present device, on the other hand, the thermostatic element is practically immune from distortion regardless of the direction of application of the bending force.

It is to be understood that the cover member may be of rigid or semi-rigid material, such as iron, steel or tin, and in general the rigidity of the cover member should be greater than that of the thermostatic member in order to prevent the cover member from being flexed when pressure is applied to the device. The thermostatic member may comprise a bi-metallic element formed of metals having different coefficients of expansion and welded together, or other well known thermostatic material which is capable of flexing in response to variations in temperature. The metal is sufficiently light to permit the same to be readily flexed and at the same time is capable of exerting sufficient force to throw the entire device into the air a substantial distance.

The force required for throwing the element into the air is obtained by reason of the rapid movement of the thermostatic metal as the same becomes cooled to the operating point. The thermostatic metal tends to move progressively in response to changes in temperature, but the force exerted on the metal by reason of the convexity thereof is such that movement is prevented until sufficient force is built up to overcome the compressional force exerted on the metal and to cause the element to spring from concave to convex position. In thus moving, the metal contacts with the supporting surface, such as a table top, and the reaction serves to throw the device into the air. The thermostatic element may have a depression 20 formed therein which, when the metal is in flexed position as in Figs. 3 and 7, lies in proximity to or in contact with the supporting surface. This assists in obtaining a rapid heat transfer and causes the device to operate more quickly and also permits the proper contact to be obtained with the supporting surface for producing the desired mechanical reaction.

It may be further noted that the cover member of the present device serves to receive a design, such as an advertisement, which may be applied thereto prior to assembly. This is particularly advantageous inasmuch as difficulty is experienced in applying a design to the thermostatic member by reason of the convexity of the surface and the flexible nature of the metal.

While certain novel features of the invention have been disclosed and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. A thermostatic toy comprising a rigid cover member and a flexible thermostatic member secured thereto, said members having adjoining concave surfaces and being arranged so that said thermostatic member may be flexed into the concave surface of said cover member and locked when heated to a predetermined point.

2. A thermostatic toy comprising a rigid concave cover member and a concave thermostatic member secured thereto, said members being mounted with their concave faces normally adjoining, one of said members being larger than the other of said members to provide a flange, said flange being crimped about said other member to hold said members in assembled position, the arrangement being such that said thermostatic member may be flexed into the concave face of said cover member and locked when heated to a predetermined point.

3. A thermostatic toy comprising a rigid metallic cover member adapted to carry a design, a flexible thermostatic member having its edges secured thereto and being adapted to be flexed against said cover member and locked when heated above a predetermined point and to spring outwardly when cooled below said point.

4. A thermostatic toy comprising a rigid concave cover member adapted to carry a design, a flexible thermostatic member associated therewith, said cover member having a flange crimped around the periphery of said thermostatic member for holding the same in position, said members normally having adjoining concave surfaces, said thermostatic member being adapted to be flexed against said cover member and locked when heated to a predetermined point.

JEAN HUBERT LOUIS DE BATS.