United States Patent

[11] 3,594,925

[72] Inventor **Jean Pierre Abbat**
Los Angeles County, Calif.

[21] Appl. No. **788,437**
[22] Filed **Jan. 2, 1969**
[45] Patented **July 27, 1971**
[73] Assignee **Brutoco Developement Co.**
Covina, Calif.

[54] **AMUSEMENT DEVICE**
7 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** ..... **35/19 R,** D25/1
[51] **Int. Cl.** **G09b 23/10**
[50] **Field of Search** 35/19, 60; 273/58.5; D46/1; D25/1; 272/60, 63; 46/130, 16, 17

[56] **References Cited**

UNITED STATES PATENTS

831,907	9/1906	Townsend	46/130
1,164,686	12/1915	Wagner	46/16 x
1,252,616	1/1918	Reif	46/17
2,704,667	3/1955	Sanders	46/17 X
3,266,175	8/1966	Palumbi	35/60 X
3,351,343	11/1967	Papp	273/58 X

FOREIGN PATENTS

90,861	3/1897	Germany	46/130

OTHER REFERENCES

Potomac Section of Washington Post, page 38 " Hula Balls" Dec. 8, 1968

Knott Catalogue of Scientific Instruments Rec' d Jan. 10, 1917, page 89 only, Class 35 library

Leybold Physics Apparatus For Teaching Rec' d July 19, 1966, page 30 only, Design Group Library

Primary Examiner—Harland S. Skogquist
Attorneys—John P. Scholl and Kendrick and Subkow

ABSTRACT: An amusement device comprising a generally parallelepiped-shaped frame member in which a plurality of spherical mass retaining yokes are freely suspended. The frame member includes a pair of sideplates detachably connected by a plurality of elongated braces, and the mass-retaining members are detachably mounted in the frame member, whereby the entire device may be assembled in a relatively compact package for carrying or storing.

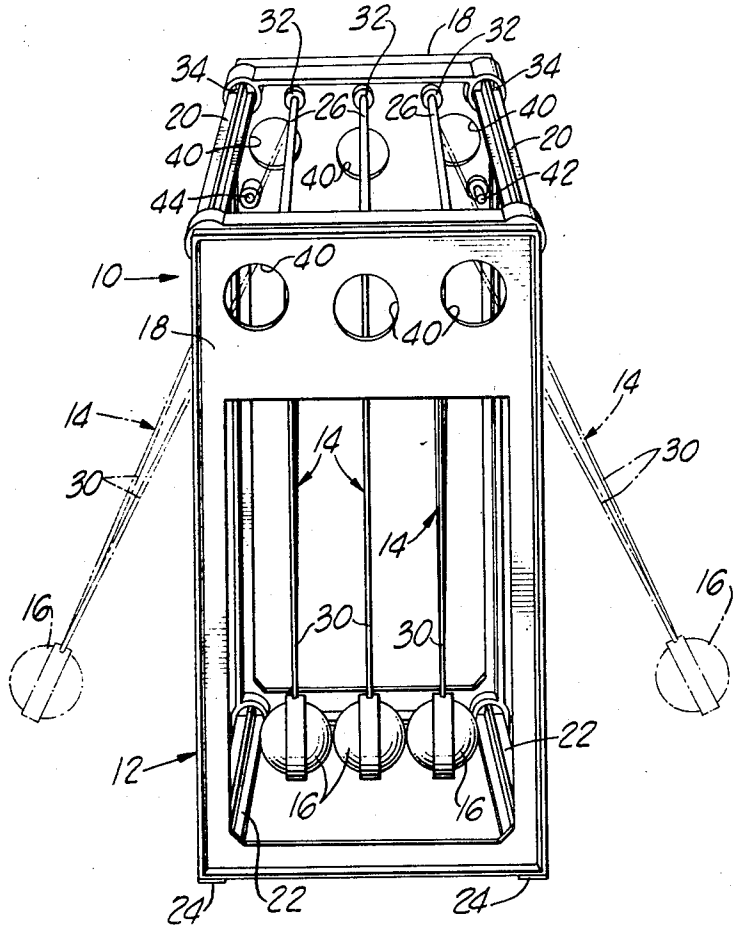


FIG. 1.

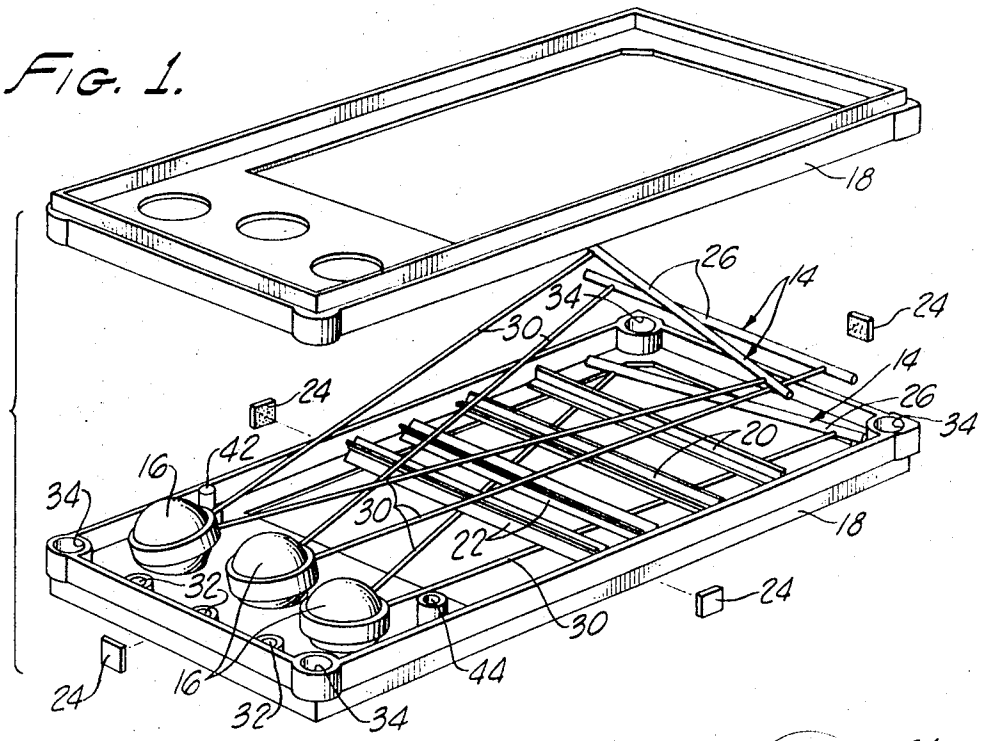
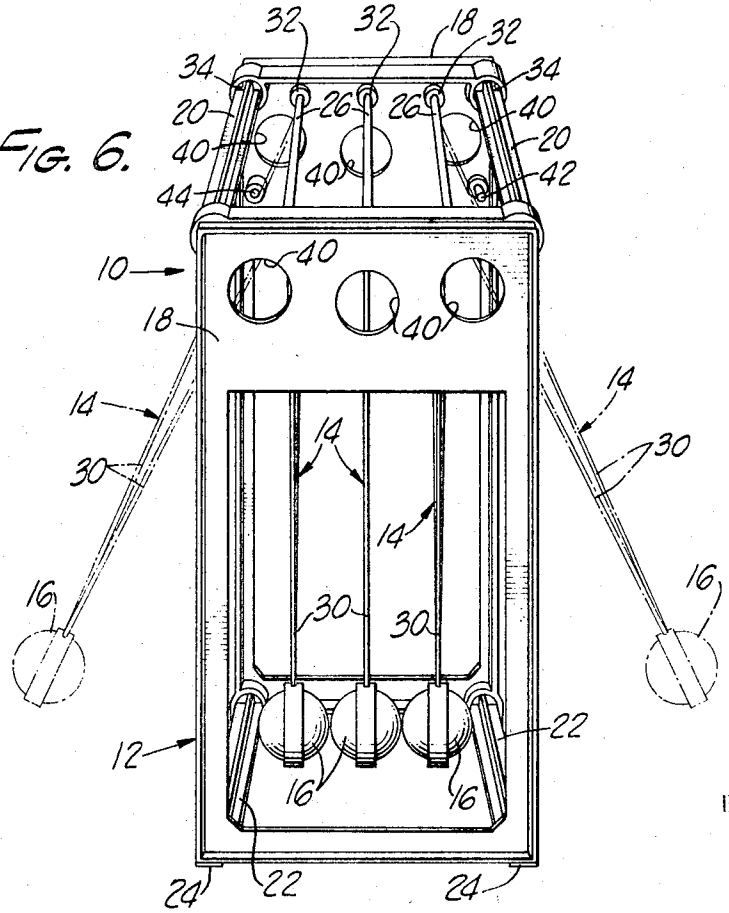


FIG. 6.



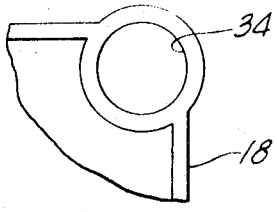


FIG. 7.

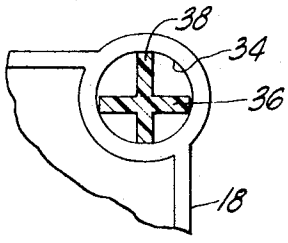


FIG. 8.

INVENTOR
JEAN PIERRE ABBAT
BY KENDRICK and SUBKOW
ATTORNEYS

FIG. 2.

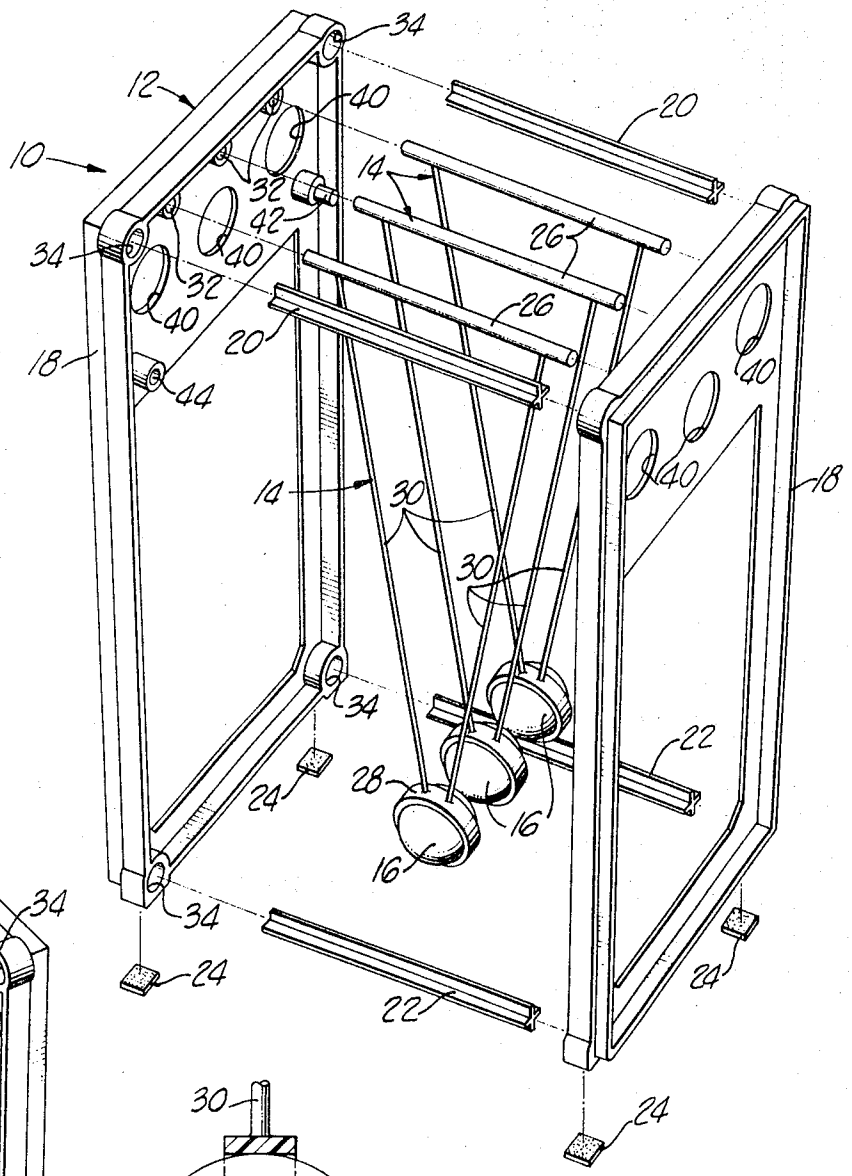
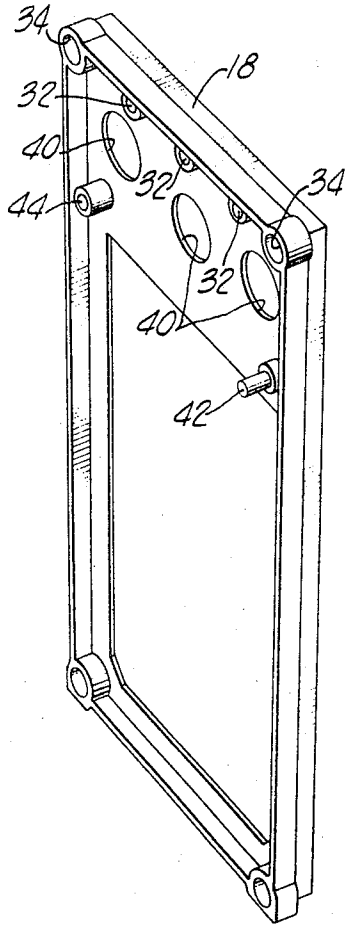


FIG. 3.



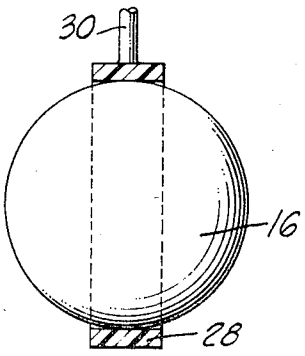


FIG. 4.

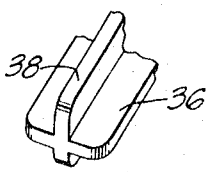


FIG. 5.

INVENTOR
JEAN PIERRE ABBAT
BY KENDRICK and SUBKOW
ATTORNEYS

AMUSEMENT DEVICE

FIELD OF THE INVENTION

The present invention relates to an improved amusement device which is relaxing, and is educational in illustrating Newton's Third Law of Motion—that every action is accompanied by an equal and opposite reaction.

SUMMARY OF THE INVENTION

Briefly, the amusement device of the present invention comprises an upstanding frame member having a plurality of mass-retaining members swingably mounted therein. Each of the mass-retaining members freely suspends a generally spherical mass at the lower end thereof which is adapted to swing and contact the masses held by the other retaining members.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded perspective view of the amusement device of the present invention assembled in a compact package for carrying or storing;

FIG. **2** is an exploded perspective view of the amusement device assembled for operation;

FIG. **3** is a perspective view of one of the sideplates of the amusement device;

FIG. **4** is a vertical sectional view of one of the ball-retaining rings of the amusement device;

FIG. **5** is a perspective view of the end of one of the braces which holds the frame of the amusement device together;

FIG. **6** is a perspective view of the amusement device assembled for use;

FIG. **7** is an elevation view of one of the corners of the side plate of the amusement device; and

FIG. **8** is an elevation view of one of the corners of the side plate receiving the end of one of the braces.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, the amusement device **10** of the present invention comprises a generally parallelpiped-shaped frame member **12** which swingably supports a plurality of ball-retaining yokes **14**, **14**, **14** carrying balls **16**, **16**, **16** at their lower ends.

The frame member **12** comprises a pair of sideplates **18**, **18** facing one another and detachably connected by upper and lower braces **20**, **20** and **22**, **22**, respectively. An adhesive pad **24** may be provided on the bottom edge of each sideplate to prevent the frame from sliding on and marring the table surface on which the device rests when in use.

Each ball-retaining yoke **14** includes an upper support shaft **26**, a ball-retaining ring **28** and a pair of suspension arms **30**, **30** connected between the shaft and the ring. The ball **16** is preferably snap fit in its retaining ring **28** but may, of course, be otherwise suitably mounted therein.

Each sideplate **18** includes a series of shaft-receiving sockets **32**, **32**, **32** adjacent its upper edge for receiving the ends of the ball-retaining member support shafts **26**, **26**, **26**. Each sideplate further includes sockets **34** in each of its four corners thereof for receiving the ends of the connecting braces **20**, **20** and **22**, **22**.

The balls **16** are preferably made of steel, and the ball-retaining yokes **14** are preferably a bendable plastic material. The frame, including the sideplate **18** and the braces **20**, **22** may also be made of plastic.

As best shown in FIGS. **5** and **8**, each of the braces **20**, **22** is preferably *t*-shaped in cross section with one of the legs **36** of the "*t*" intersecting the other leg **38** at a point spaced from the center point of that leg. As shown in FIG. **8**, when the end of the brace **20** is inserted in one of sockets **34**, that socket and the end of the brace will deform slightly to form a more secure connection.

In use, with the amusement device **10** assembled as shown in FIG. **6**, one of the end balls **16** is lifted outwardly, as shown

in phantom lines, and allowed to drop and contact the other balls. When contacted, the other end ball **16** will first be forced outwardly and then drop back and contact the other two balls to force the first end ball outwardly again, and so on. The device may, of course, be used in a variety of ways, such as by lifting both end balls at the same time and dropping them against the center ball. The device has been found to provide a tranquilizing, relaxing and soothing diversion for adults, and is educational for children as illustrating Newton's Third Law of Motion. Of course, more than three ball yokes and balls may be provided, if desired.

As best shown in FIG. **1**, the amusement device **10** may be quickly and easily disassembled and reassembled into a relatively small, compact package for carrying or storing. Disassembly is accomplished by simply removing the four braces **20**, **20**, **22**, **22** from the sockets **34** in the sideplates **18**, whereupon the ends of the support shafts **20** of the ball-retaining members **14** will drop out of their sockets. One of the sideplates **18** may then be laid on a surface with the inner surface facing upwardly, and the ball-retaining members **14** may be laid on top of it with each ball fitting in one of the cutout holes **40**, **40**, **40** provided in each sideplate. The braces are then laid sideways across the ball-retaining members, and the other sideplate is placed on top of the package so that the pins **42**, **42** and pin-receiving sockets **44**, **44** provided on the inner surface of each sideplate register or align with one another. If desired, the adhesive pads **24** may be placed along the juncture of the sideplate edges to further maintain the plates in the compact carrying package.

What I claim is:

1. An improved collision ball type of amusement device which may be packaged as a compact unit, and which may be readily assembled, disassembled and reassembled; said improved amusement device comprising:

a pair of upstanding side members detachably connected to one another; each of said upstanding side members having an upper end; each of said upstanding members including means for engaging connecting means;

connecting means extending between and detachably connecting said pair of upstanding side members in spaced relation to one another;

a plurality of spaced ball-retaining members detachably and swingably mounted between said upstanding side members; each of said ball-retaining members including a supporting shaft detachably mounted between said upstanding side members adjacent said upper ends of said side members; each of said ball-retaining members further comprising ball-suspending means connected to said supporting shaft and extending downwardly therefrom; each of said ball-suspending means having a lower end adapted to hold a ball; and

a ball mounted in said lower end of each of said ball-suspending means.

2. An improved collision ball type of amusement device according to claim **1**, wherein each of said upstanding side members comprises a substantially rectangular frame member provided with a plurality of spaced sockets adjacent its said upper end; said sockets being adapted to receive the ends of said supporting shafts of said ball retaining members.

3. An improved collision ball type of amusement device according to claim **1**, wherein each of said upstanding side members comprises a substantially rectangular frame member having four corners; and wherein said means for engaging said connecting means comprises means defining a socket at each of said corners; and wherein said connecting means comprises shaftlike connecting braces extending between and detachably connecting said upstanding side members; each of said connecting braces having opposite ends extending into said corner sockets of said upstanding side members.

4. An improved collision ball type of amusement device according to claim **1**, wherein each of said upstanding side members comprises a substantially rectangular frame member having four corners; and wherein said means for engaging said

connecting means comprises means defining a socket at each of said corners; and wherein said connecting means comprises shaftlike connecting braces extending between and detachably connecting said upstanding side members; each of said connecting braces having opposite ends extending into said corner sockets of said upstanding side members; wherein each of said corner sockets comprises a substantially circular, deformable socket; each of said connecting braces being generally *t*-shaped in cross section, with one leg of the "*t*" intersecting the other leg of the "*t*" at a point spaced from the center of said other leg, whereby each of said brace-receiving sockets in said side plates will deform when the end of a connecting brace is inserted into said socket, thereby forming a secure connection.

5. An improved collision ball type of amusement device according to claim **1**, wherein each of said upstanding side members comprises a substantially rectangular frame member having a web portion; and means defining a plurality of holes in said web portion for receiving and retaining the ends of said balls when said amusement device is disassembled and packaged into a compact unit.

6. An improved collision ball type of amusement device according to claim **1**, wherein each of said balls comprises a spherical steel ball.

7. An improved collision ball type of amusement device according to claim **1**, wherein said upstanding side members, said connecting means and said ball-retaining members are all molded from a bendable plastic material.