

OPENER DEVICE

BACKGROUND

1. TECHNICAL FIELD

[0001] The present invention relates to the field of opener devices.

2. DISCUSSION OF RELATED ART

BRIEF SUMMARY

The present invention discloses an opener device for tearing and opening of a container comprised of:

- At least two blades;
- an elastic symmetrical outer frame and inner elastic symmetrical frame, integrated with the at least one blade, said blades are positioned at specific locations along the inner elastic symmetrical frame; and at least two push buttons located at opposite locations along the inner symmetrical frame, wherein once pushing only one button the at least one blade position is unchanged due to imbalance of applied forces at the different areas and in case pushing simultaneously both buttons the force balance at all the different parts of the elastic symmetrical frame is maintained.
- a casing configured to enclose said inner and outer elastic symmetrical frames.

According to some embodiments of the present invention at least two blades are integrated within at least two carts which are part of elastic symmetrical frame.

According to some embodiments of the present invention the blades move along the slopes which are part of carts, moving in two directions in different dimensions: first horizontally outwards and second vertically upwards.

According to some embodiments of the present invention where the press buttons are pressed inwardly, and the blades are in the open position relatively at the outward location.

According to some embodiments of the present invention the at least two blades are positioned at symmetrical opposite position facing each other

According to some embodiments of the present invention the inner elastic symmetrical frame has a circular ring shape.

According to some embodiments of the present invention the carts are in-between the outer frame and the inner elastic symmetrical outer elastic symmetrical frame.

According to some embodiments of the present invention the blade is connected to a bar, which slides along a slope integrated in the outer elastic symmetrical frame.

According to some embodiments of the present invention the elastic inner symmetrical frame has special design of multi levels of subframe elements, this design contributes to create the specific elastic deformation to achieve correct movement of to the carts

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] The present invention will be more readily understood from the detailed description of embodiments thereof made in conjunction with the accompanying drawings of which:

Figs. 1A-1B are top view illustrations of the opener device in modes: close mode and open mode, according to some embodiments of the invention;

Figs. 1C-1D are bottom view illustrations of the opener device in modes: close mode and open mode, according to some embodiments of the invention;

Figs. 2A-1B are cross section view illustrations of the opener device in close mode, according to some embodiments of the invention;

Fig. 2C are bottom view illustrations of the opener device in open mode, according to some embodiments of the invention;

Fig. 3A is cross section enlarge view illustrations of a the: close mode, according to some embodiments of the invention;

Fig. 3B are cross section enlarge view illustrations of the opener device in open mode, according to some embodiments of the invention;

Fig. 3C is top enlarge view illustrations of a the: close mode, according to some embodiments of the invention;

Fig. 3D is top enlarge view illustrations of the opener device in open mode, according to some embodiments of the invention;

Fig. 4 is top view image of the opener device, according to some embodiments of the invention;

Fig. 5 is top view schematic functional diagram of the opener device showing applied force on the blade, according to some embodiments of the invention;

Fig. 6A is a top view schematic diagram showing applied force on the blade, according to some embodiments of the invention;

Fig. 6B is a side view schematic diagram showing applied force on the blade, according to some embodiments of the invention;

DETAILED DESCRIPTION

Before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawings. The invention is applicable to other embodiments or of being practiced or carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein is for the purpose of description and should not be regarded as limiting.,

Figs. 1A-1B are top view illustrations of the opener device in two modes: close mode and open mode, according to some embodiments of the invention.

The opener case device 1 is comprised of circular elastic inner frame 10 positioned within in open case device 1 having outer symmetrical circular elastic frame 2 and at least one blade 16(A, B) which is integrated within cart 14(A, B) which are part of inner

circular elastic frame 10, the frame. The carts 14(A, B) are located in between the circular elastic inner frame 10 and the outer circular elastic frame 2.

The circular inner elastic frame 10 comprise at least two buttons 12(A, B). When pressing both buttons 12A and 12 B simultaneously the circular elastic frame parts 10A and 10B are elastically deformed, such that the carts 14(A, B) move with the blade along the slopes 15(A, B), hence the blade move in two directions in different dimensions: first horizontally outwards and second vertically upwards. The closed position of the blade is seen in Fig. 1A, 1C and the open position is seen in Figure 1B, 1D.

According to some embodiments of the present invention the slope is linear as seen in the figures.

According to some embodiments of the present invention the slope can be curved.

When pressing simultaneously both buttons 12A and 12B, the elastic deformation creates equivalent symmetrical forces (see figure 5) which are applied on the frame parts 10A/B, the carts 14A/B and the blades, resulting the movement of the blades as described above.

Fig. 1A is top view illustrations of the opener device in close mode where the press buttons are idle position and the blades 16 (A, B), are in the initial position relatively at the inward location.

Fig. 1B is top view illustrations of the opener device in open mode where the press buttons are pressed inwardly and the blades 16 (A, B), are in the open position relatively at the outward location.

When pressing only one on of the buttons 12A or 12B, the elastic deformation creates nonequivalent nonsymmetrical forces which are applied on the carts 14A/B and blade

16A/b, preventing the movement of the blades due to friction created between the carts and the slopes.

This opener provides a safety mechanism, as the blade can be changed to open mode only when pressing the two buttons simultaneously.

According to some embodiments of the present invention, the circular elastic frame 10, has special design 19B of multi levels of subframe, this design contributes to create the specific elastic deformation to achieve correct movement of to the carts.

Fig. 1C-1D are bottom view illustrations of the opener device in different modes: close mode and open mode, according to some embodiments of the invention;

Fig. 1C is bottom view illustrations of the opener device in close mode where the press button is idle position and the blades 16 (A, B), are in the initial position relatively at the inward location.

Fig. 1D is bottom view illustrations of the opener device in open mode where the press button is pressed inwardly and the blades 16 (A, B), are in the open position relatively at the outward location.

Figs. 2A-1B are cross section view illustrations of the opener device in close mode, according to some embodiments of the invention.

In these cross sections view it can be seen that when press buttons are in idle position and the blades 16 (A, B), are in the initial position relatively at the lower location.

Fig. 2C are bottom view illustrations of the opener device in open mode, according to some embodiments of the invention.

In this cross section view it can be seen that the press button is pressed inwardly and the blades 16 (A, B), are in the open position relatively at the upper location.

Fig. 3A is cross section enlarge view illustrations of a the: close mode, according to some embodiments of the invention.

In this enlarged cross section view it can be seen that when the press button is idle position and the blades 16 (A, B), are in the initial position relatively at the lower location.

Fig. 3B are cross section enlarge view illustrations of the opener device in open mode, according to some embodiments of the invention;

In this enlarged cross section view it can be seen, that when the press button is pressed inwardly, the blades 16 (A, B), are in the open position relatively at the upper location.

Fig. 3C is top enlarge view illustrations of a the: close mode, according to some embodiments of the invention;

In these enlarged cross sections view it can be seen that when press button are idle position and the blades 16 (A, B), are in the initial position relatively at the inward location.

Fig. 3D is the top enlarge view illustration of the opener device in open mode, according to some embodiments of the invention.

In these enlarged cross sections view it can be seen that when press buttons are in pressed position and the blades 16 (A, B), are in the initial position relatively at the inward location.

Fig. 4 is a top view image of the opener device, according to some embodiments of the invention.

In this image it can be seen, that when the button are in pressed position the blades 16 (A, B), are in the initial position relatively at the outward and upper location.

Fig. 5 is a top view schematic functional diagram of the opener device showing applied forces on the blade, according to some embodiments of the invention.

The basic force F applied at the push buttons, is split into sub forces F1, F2, F3 and F4, through the circular frame, resulting movement of the carts and the blades in two-dimension vertical inwards and horizontal upwards.

To activate the mechanism of the opener, it is necessary to activate two equal and opposite forces in their direction.

When one force is applied from one direction or two unequal forces from two directions, the mechanism is stacked. When no force is applied, the mechanism will return to a non-activated state.

Mathematic equations that explain the two different states.

Activate State

$$F1=F3$$

$$F1 \gg F2$$

$$F3 \gg F4$$

Didactive State

$$F1 \mu s > f2 \cos[f0] \alpha \quad \text{OR} \quad F3 \mu s > \cos[f0] \alpha$$

Fig. 6A is a top view schematic diagram showing applied force on the blade, according to some embodiments of the invention;

On the cart 10 are applied symmetrical forces: F1, F2, F3 and F4 which push the cart 32 to the right with the blade 30 upwards. When the forces are not symmetrical (when pushing only one button) the cart doesn't move due to friction force applied on the cart.

Fig. 6B is a side view schematic diagram showing applied force on the blade, according to some embodiments of the invention;

According to this embodiment, the cart may have a circular bar 40, or optionally shaped as circular bar of ball, which can move along the slope 36.

[0001] The system of the present invention may include, according to certain embodiments of the invention, machine readable memory containing or

otherwise storing a program of instructions which, when executed by the machine, implements some or all of the apparatus, methods, features and functionalities of the invention shown and described herein. Alternatively or in addition, the apparatus of the present invention may include, according to certain embodiments of the invention, a program as above which may be written in any conventional programming language, and optionally a machine for executing the program such as but not limited to a general purpose computer which may optionally be configured or activated in accordance with the teachings of the present invention. Any of the teachings incorporated herein may wherever suitably operate on signals representative of physical objects or substances.

[0002] Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions, utilizing terms such as, "processing", "computing", "estimating", "selecting", "ranking", "grading", "calculating", "determining", "generating", "reassessing", "classifying", "generating", "producing", "stereo-matching", "registering", "detecting", "associating", "superimposing", "obtaining" or the like, refer to the action and/or processes of a computer or computing system, or processor or similar electronic computing device, that manipulate and/or transform data represented as physical, such as electronic, quantities within the computing system's registers and/or memories, into other data similarly represented as physical quantities within the computing system's memories, registers or other such information storage, transmission or display devices. The term "computer" should be broadly construed to cover any kind of electronic device with data processing capabilities, including, by way of non-limiting example, personal computers, servers, computing system, communication devices, processors (e.g. digital signal processor (DSP), microcontrollers, field programmable gate array (FPGA), application specific integrated circuit (ASIC), etc.) and other electronic computing devices.

[0003] The present invention may be described, merely for clarity, in terms of terminology specific to particular programming languages, operating systems, browsers, system versions, individual products, and the like. It will be appreciated that this terminology is intended to convey general principles of

operation clearly and briefly, by way of example, and is not intended to limit the scope of the invention to any particular programming language, operating system, browser, system version, or individual product.

[0004] It is appreciated that software components of the present invention including programs and data may, if desired, be implemented in ROM (read only memory) form including CD-ROMs, EPROMs and EEPROMs, or may be stored in any other suitable typically non-transitory computer-readable medium such as but not limited to disks of various kinds, cards of various kinds and RAMs. Components described herein as software may, alternatively, be implemented wholly or partly in hardware, if desired, using conventional techniques. Conversely, components described herein as hardware may, alternatively, be implemented wholly or partly in software, if desired, using conventional techniques.

[0005] Included in the scope of the present invention, inter alia, are electromagnetic signals carrying computer-readable instructions for performing any or all of the steps of any of the methods shown and described herein, in any suitable order; machine-readable instructions for performing any or all of the steps of any of the methods shown and described herein, in any suitable order; program storage devices readable by machine, tangibly embodying a program of instructions executable by the machine to perform any or all of the steps of any of the methods shown and described herein, in any suitable order; a computer program product comprising a computer useable medium having computer readable program code, such as executable code, having embodied therein, and/or including computer readable program code for performing, any or all of the steps of any of the methods shown and described herein, in any suitable order; any technical effects brought about by any or all of the steps of any of the methods shown and described herein, when performed in any suitable order; any suitable apparatus or device or combination of such, programmed to perform, alone or in combination, any or all of the steps of any of the methods shown and described herein, in any suitable order; electronic devices each including a processor and a cooperating input device and/or output device and operative to perform in software any steps shown and described herein; information storage devices or physical

records, such as disks or hard drives, causing a computer or other device to be configured so as to carry out any or all of the steps of any of the methods shown and described herein, in any suitable order; a program pre-stored e.g. in memory or on an information network such as the Internet, before or after being downloaded, which embodies any or all of the steps of any of the methods shown and described herein, in any suitable order, and the method of uploading or downloading such, and a system including server/s and/or client/s for using such; and hardware which performs any or all of the steps of any of the methods shown and described herein, in any suitable order, either alone or in conjunction with software. Any computer-readable or machine-readable media described herein is intended to include non-transitory computer- or machine-readable media.

[0006] Any computations or other forms of analysis described herein may be performed by a suitable computerized method. Any step described herein may be computer-implemented. The invention shown and described herein may include (a) using a computerized method to identify a solution to any of the problems or for any of the objectives described herein, the solution optionally include at least one of a decision, an action, a product, a service or any other information described herein that impacts, in a positive manner, a problem or objectives described herein; and (b) outputting the solution.

[0007] The scope of the present invention is not limited to structures and functions specifically described herein and is also intended to include devices which have the capacity to yield a structure, or perform a function, described herein, such that even though users of the device may not use the capacity, they are, if they so desire, able to modify the device to obtain the structure or function.

[0008] Features of the present invention which are described in the context of separate embodiments may also be provided in combination in a single embodiment.

[0009] For example, a system embodiment is intended to include a corresponding process embodiment. Also, each system embodiment is intended to include a server-centered "view" or client centered "view", or

"view" from any other node of the system, of the entire functionality of the system, computer-readable medium, apparatus, including only those functionalities performed at that server or client or node.

What is claimed is:

1. An opener device for tearing and opening of a container comprised of:
 - At least two blades;
 - an elastic symmetrical outer frame and an inner elastic symmetrical frame, integrated with the at least one blade, said blades are positioned at specific locations along the inner elastic symmetrical frame; and at least two push buttons located at opposite locations along the inner elastic symmetrical frame, wherein once pushing only one button the at least one blade position is unchanged due to imbalance of applied forces at the different areas and in case pushing simultaneously both buttons the force balance at all the different parts of the elastic symmetrical inner frame is maintained.
 - a casing configured to enclose said outer and inner elastic symmetrical frame.
2. The opener device of claim 1 wherein at least two blades are integrated within at least two carts which are part of inner elastic symmetrical frame.
3. The opener device of claim 2 wherein the blades move along the slopes which are part of carts, moving in two directions in different dimensions: first horizontally outwards and second vertically upwards.
4. The opener device of claim 1 wherein when the buttons are pressed inwardly the blades are in the open position relatively at the outward location.
5. The opener device of claim 1 wherein the at least two blades are positioned at symmetrical opposite position facing each other.
6. The opener device of claim 1 wherein the inner and outer elastic symmetrical frames have a circular ring shape.
7. The opener device of claim 1 wherein the carts are in-between the outer elastic symmetrical frame and the inner elastic symmetrical frame.
8. The opener device of claim 1 wherein the inner elastic symmetrical frame has special design of multi levels of subframe elements, this design contributes to create the specific elastic deformation to achieve correct movement of to the carts,
9. The opener device of claim 1 wherein the blade is connected to a bar, which slides along a slope integrated in the inner elastic symmetrical frame.