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(54) **PUSH POP FIDGET DEVICE FOR STRESS RELIEF**

(57) The present invention is directed to a fidget device for use as a toy. More particularly, said fidget refers to a push pop fidget device for stress relief in adults and children, comprising a plurality of hollow bodies enclosing a slime composition. Upon pressing or pushing in said hollow bodies, the fidget devices makes a satisfying soft popping sound, which provokes a stress relieving effect in the user.

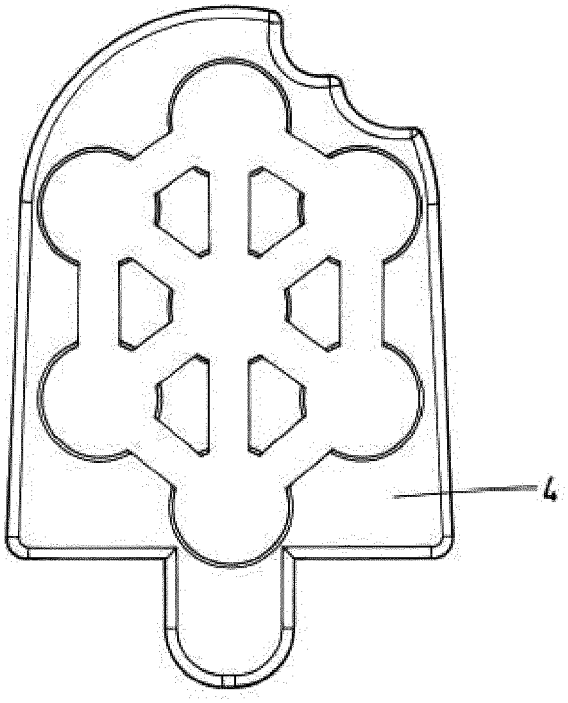

FIG. 3

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention is directed to a fidget device for use as a toy. More particularly, said fidget refers to a push pop fidget device for stress relief in adults and children, comprising a plurality of hollow bodies enclosing a slime composition. Upon pressing or pushing in said hollow bodies, the fidget device makes a satisfying soft popping sound, which provokes a stress relieving effect in the user.

BACKGROUND OF THE INVENTION

[0002] Fidgeting is the act of moving about restlessly in a way that is not (socially recognized as) essential to ongoing tasks or events. Fidgeting may involve playing with one's fingers, hair, or personal objects (e.g. glasses, pens or items of clothing). Fidgeting is commonly used as a label for unexplained or subconscious activities and postural movements that people perform while seated. A common act of fidgeting is to bounce one's leg repeatedly. Rings are another common focus of fidgeting; variations include ring spinning, twirling or rolling along a table. Classrooms are sites of fidgeting, and traditionally teachers and students have viewed fidgeting as a sign of diminished attention.

[0003] Fidgeting may be a result of nervousness, frustration, agitation, boredom, ADHD, excitement, or a combination of these.

[0004] When interested in a task, a seated person will suppress their fidgeting, a process described as Non-Instrumental Movement Inhibition (NIMI). Some education researchers consider fidgeting, along with noise-making, as clear signs of inattention or low lecture quality, although educators point out that active engagement can take place without constantly directing attention to the instructor (i.e. engagement and attention are related but not equivalent). Fidgeting is often a subconscious act and is increased during spontaneous mind-wandering. Some researchers have proposed that fidgeting is not only an indicator of diminishing attention, but is also a subconscious attempt to increase arousal in order to improve attention. While inattention is strongly associated with poor learning and poor information recall, some authors found that children that are allowed to fidget with their hands performed better in memory and learning tests. A study also found that children with ADHD performed better on some cognitive tasks when they are engaged in "more intense (spontaneous) physical activity", although no such correlation was seen in children without ADHD.

[0005] Fidgeting is also considered as a nervous habit, though it does have some underlying benefits. Different authors also consider fidgeting to be a response to anxiety or boredom. Anxious fidgeting occurs because the body has elevated levels of stress hormones, which are prepping the muscles for sudden exertion. All that energy has nowhere to go and jiggling legs or biting nails is a way to partially relieve that.

[0006] The responses of the human body to stress are well documented. Popping bubble wrap helps relax that muscle tension. It reduces stress and anxiety. In fact, studies have shown that, sometimes, the human brain receives feel-good chemicals like dopamine after popping bubble wrap. Further, stress relief toys and gadgets come in a variety of styles and are designed to calm the mind and nervous system by distracting from stressful situations. Usage of toys like slime and fidget-spinners has been a recent trend among the public to mitigate the harmful effects of stress on health. Many stress-reducing objects today involve fine motor movement, like fidget spinners, stress balls, slime, or meditation balls. These products provide a subtle way for people to let out pent up stress through movement.

[0007] In particular, fidget toys are tactile self-regulation toys like slime balls, spinner toys, and squishy cubes and balls. These increase sensory awareness of the fingers, help reduce stress and promote better concentration. Others, like, stress balls are small balls made of gel or soft clay that fit comfortably in the palm of the hand. Stress balls encourage good blood circulation, and as these are repetitively squeezed, stress, tension, and other negative emotions decrease or subside. Manipulating stress balls stimulates the brain to release feel-good endorphins, which are natural sedatives and pain relievers. Stress balls also stimulate nerves in the hand which connect to the brain's limbic region (the area of the brain associated with emotions), promoting feelings of calm and relaxation.

[0008] US202002381 refers to a helical fidget puzzle toy comprising: two or more individual pieces required to complete a puzzle in which some or all of the parts hold together when twisted in a helical fashion, said individual pieces are dedicated solids or shells that partially complete a three-dimensional model, said puzzle means a three- dimensional figure, model, or shape is formed when all the available pieces fit together in the proper orientation and sequence, said helical fashion means the parts must be twisted together in either a clockwise or counterclockwise direction.

[0009] US20150290492 describes a therapeutic device including first and second gloves each having a thumb portion and a plurality of finger portions configured to be worn on first and second hands, respectively; a plurality of magnets each being attached adjacent to a tip of the thumb portion and each of the plurality of finger portions of each of the first and second gloves; and wherein each one of the plurality of magnets is selectively oriented on a respective one of the finger and thumb portions, such that the thumb portion of each glove is attracted to each of the plurality of finger portions of the same glove, each of the plurality of finger portions of the first glove is attracted to each of the plurality of finger

portions of the second glove, and the thumb portion of the first glove is attracted to the thumb portion of the second glove.

[0010] Further prior art devices refer to devices for stress relief consisting of gas or air filled elements in the form of bubbles for popping.

[0011] US6634921 describes an amusement or stress reduction method and device adapted to dispense gas bags for popping. A strip of material is attached to one end of a tubular container and a plurality of gas bags are inserted serially into the container, causing the strip of material to loop under the plurality of gas bags in a U-shaped manner. The second end of the strip of material is located adjacent to the secured end at the container opening. A user pulls the free end of the strip to forcibly eject one or more gas bags from the container. The bags can then be popped by stomping or the like. Various configurations, markings, and constructions can be used with the gas bags, container, and strip.

[0012] US4848743 discloses a game or amusement device adapted to making a popping sound when compressed in certain areas. A series of bubble like pocket members are constructed so that when they are compressed by at least a child's body weight they will break and make a popping sound. The series of bubble like pocket members are arranged in a manner that they can be supported on a supporting surface and indicia placed are over said pocket members to indicate to a player a predetermined pattern for breaking the pocket members. In one embodiment the indicia comprises markings which delineate a roadway composed of obstacles with directional arrows.

[0013] US5865664 discloses a mat toy is provided that has many soft microbubbles extending upward from its upper surface. Gas is sealed within each bubble. When jumped upon by a child, a bubble becomes compressed and bursts with a popping sound enjoyed by children. The soft upper layer is adherent to a stiff bottom layer. This provides sufficient rigidity that the mat lies flat when jumped upon and cannot wrap around and suffocate a child. The bottom surface is further provided with a high friction, slip or skid-resistant surface so that the mat will not slide out from under the jumping child to avoid injury. The upper layers may be light transmissible and indicia such as a colored cartoon animal may be provided at a lower layer that is visible to the child for enhanced appeal. An intermediate cushioning layer such as a closed cell foam may alternatively be provided. US5484318 describes a stress reduction kit including a container having a hollow interior and an opening for allowing access to the interior; a lid securable over the opening of the container; a set of sheets of bubble-type packing material, each sheet having a plurality of hand-burstable air-filled bubbles formed thereon, the sheets of the set positionable in stacked relation to define a deck and with the deck snugly positionable within the interior of the container with the lid closeable thereover, the set of sheets including a plurality of subsets of sheets and with the subsets of sheets each having different characteristic colors; a color-coded instruction sheet affixed to the cover with the instruction sheet associating a color of a subset of sheets with a description of a type of stress, whereby a user determines the type of stress currently being experienced and notes the associated color, selects a sheet with the same color as the noted color, and then bursts the bubbles on the sheet for relieving the stress.

[0014] While these prior art inventions address the problem of providing a popping fidget toy, all these prior art devices achieve the desired popping sound by means of pushing gas or air from elements in the form of bubbles containing the same. Sometimes by using once these devices, the air or gas filled elements are broken, so that these elements cannot be pushed a second time to obtain the desired sound. In general, these devices can be played only once and are not designed for a subsequent use. Others may need those elements to be refilled with gas or air for subsequent uses. Thus, there still exist the need in the art to provide a popping fidget device with improved characteristics as well as providing an improved stress relieving effect.

[0015] The present invention is therefore faced with the problem of providing an improved stress relieving device, which can be used repeatedly, thus offering unlimited popping and providing an improved popping sound, perceived by the user as a water squeezing sound, which produces an improved relaxing effect. As will we shown in the present specification, the improved relaxing effect will be tested for the same individual using the fidget device of the present invention when compared to other conventional fidget devices available from the state of the art.

BRIEF DESCRIPTION OF THE INVENTION

[0016] The following disclosure is presented to provide an illustration of the general principles of the present invention and is not meant to limit, in any way, the inventive concepts contained herein.

[0017] All terms defined herein should be afforded their broadest possible interpretation, including any implied meanings.

[0018] It should be stated that, as recited herein, the singular forms "a", "an", and "the" include the plural referents unless otherwise stated. Additionally, the terms "comprises" and "comprising" when used herein specify that certain features are present in that embodiment, however, this phrase should not be interpreted to preclude the presence or addition of additional steps, operations, features and/or components.

[0019] A push pop fidget", is a device also known as "pop it fidget toy", "push pop bubble sensory fidget toy", "push pop bubble fidget" or just, "fidget pop" and refers essentially to a plastic or rubber-based body which includes bubble-like elements that can be pushed in or compressed to produce a popping sound. Such popping sound exerting relaxing effects to the user.

[0020] "Push in" as used in the present invention has the meaning of applying slight to moderate pressure with a body part, for example the fingers, to squeeze or compress the hollow bodies when filled with a slime composition.

[0021] "Hollow body" as used in the present invention refers to a 3D shape element or body, which is hollow and suitable for containing a fluid, such as a liquid, semi-solid or solid composition, as well as gas or air.

[0022] It is therefore an object of the present invention a push pop fidget device for stress relief comprising: at least one first hollow body (1) and at least one second hollow body (2), both hollow bodies (1,2) being interconnected forming a passageway (3) from the first to the second hollow body, wherein said at least one first hollow body (1) comprises a slime composition, and said at least one second hollow body (2) is configured to receive the slime composition from the first hollow body (1) through the passageway (3), upon pushing in the first hollow body (1).

[0023] It is a further object of the invention a push pop fidget device comprising a plurality of first hollow bodies (1) comprising a slime composition and at least one second hollow body (2) configured to receive the slime composition, wherein said second hollow body (2) configured to receive the slime composition is interconnected to at least one of the plurality of hollow bodies (1) through a passageway (3).

[0024] It is also an object of the present invention a push pop fidget device according to preceding paragraphs comprising at least one first hollow body (1) comprising a slime composition and a plurality of second hollow bodies (2) configured to receive the slime composition, wherein said first hollow body (1) comprising a slime composition is interconnected to at least one of the plurality of hollow bodies (2) through a passageway (3).

[0025] It is also an object of the present invention a push pop fidget device according to preceding paragraphs, comprising a plurality of first and second hollow bodies (1,2), wherein one, two or more of the first hollow bodies (1) containing the slime composition is interconnected to one, two or more of the second hollow bodies (2) configured to receive the slime composition, forming each an independent passageway (3).

[0026] It is also an object of the present invention a push pop fidget device according to preceding paragraphs wherein the first and second hollow bodies (1,2) are integrated into a sheet (4).

[0027] It is also an object of the present invention a push pop fidget device according to preceding paragraphs, wherein the first and second hollow bodies (1,2) and the aheet (4) are made of a plastic material selected from: polymer material selected from: Acrylonitrile Butadiene Styrene (ABS), High Impact Polystyrene (HIPS), Polypropylene (PP), Styrene homopolymer (GPPS), Polyvinyl chloride (PVC), Polysiloxane, thermoplastic rubbers (TPR), thermoplastic elastomer materials (TPE), such as, Styrene block copolymer (SBC), Styrene-butadiene-styrene block copolymer (SBS), Styrene-isoprene-styrene block copolymer (SIS), Styrene-ethylene-butylene-styrene block copolymer (SEBS), Styrene-ethylene-ethylene-butylene-styrene block copolymer (SEEPS), Styrene-ethylene-propylene-styrene block copolymer (SEPS), Styrene-ethylene-propylene-styrene block copolymer, cross-linkable, (SEPS-V) and Thermoplastic styrene block copolymer (TPS), such as: Thermoplastic polyurethane elastomer (TPU), Thermoplastic copolyester elastomer (TPC), Thermoplastic polyether block amides (TPA), and Thermoplastic polyolefin (TPO), including mixtures thereof.

[0028] It is also an object of the present invention a push pop fidget device according to preceding paragraph, wherein the first and second hollow bodies (1,2) and the sheet (4) are made of Polysiloxane.

[0029] A further object of the present invention is a push pop fidget device according to preceding paragraphs, wherein the first and second hollow bodies (1,2) are present in the form of a 3D shape body selected from the group comprising: a sphere, hemisphere, pyramid, cube, cylinder, cone, triangular prism, cuboid, hexagonal prism, diamond or an amorphous shape.

[0030] It is also an object of the present invention a push pop fidget device according to the preceding paragraph, wherein at least one of the first and second hollow bodies (1,2) is in the form of a sphere, an hemisphere or a cylinder.

[0031] It is also an object of the present invention a push pop fidget device according to preceding paragraphs, wherein the slime composition present in the at least one of the first hollow body (1) occupies at least 75% of the volume of said hollow body (1).

[0032] A further object of the invention is a push pop fidget device according to preceding paragraphs, wherein the slime composition filled in the hollow bodies occupies at least 70% of the total volume of the first and second hollow bodies (1,2) forming part of the fidget device.

[0033] It is also an object of the present invention a push pop fidget device according to preceding paragraphs, wherein the slime composition is free of borax and comprises (in % by weight with respect to the total weight of the composition:

No.	Substances	% weight
1	Guar Hydroxypropyltrimonium Chloride	2.0 to 2.3
2	Glycerol	9.0 to 9.5
3	Sodium acetate	1.0 to 1.3
4	Sodium phosphate monobasic mohydrate	0.9 to 1.10

(continued)

No.	Substances	% weight
5	Sodium dehydroacetate	0.10 to 0.15
6	Additives: Pigments, glitter powders	1.0 to 1.3
7	Iodopropynil Butylcarbamate	0.005 to 0.007
8	Pentylene Glycerol	0.2 to 0.3
9	Preservative: Phenoxyethanol, Caprylyl Glycol	1.0 to 1.1
10	Aqua	up to 100

[0034] It is also an object of the present invention a push pop fidget device according to preceding paragraph, wherein the slime composition further comprises additives, selected from: pigments, and/or glitter powders based on poly butylene terephthalate, poly methyl methacrylate or polyethylene terephthalate.

[0035] And finally it is also an object of the present invention a hand-held toy, finger spinner, key-chain, bracelet and sticker comprising a push pop fidget device according to any of the preceding paragraphs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036]

Figure 1A - 1F are simplified diagrams of different embodiments illustrating first hollow body (1), second hollow body (2) and passageway (3) of a fidget device according to the present invention.
Figure 2A - 2C are simplified drawings of the structure of different embodiments according to the present invention.
Figure 3 shows sheet (4) in a simplified diagram of a fidget device of the invention.
Figure 4 shows a finger spinner incorporating a push pop fidget of the present invention.
Figure 5 shows a bracelet incorporating a push pop fidget of the present invention.
Figure 6 shows a key chain incorporating a push pop device of the present invention.
Figure 7 shows a sticker incorporating a push pop device of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0037] The present invention is directed to a fidget device for use as a toy. More particularly, said fidget refers to a push pop fidget device for use as an amusement and for stress relief in adults and children, comprising a plurality of hollow bodies enclosing or comprising a slime composition. Upon pressing, squeezing, compressing or pushing in said hollow bodies, the fidget devices makes a satisfying soft popping sound, perceived by the user as a water squeezing sound, which provokes a stress relieving effect.

[0038] In particular, the present's invention push pop fidget device for amusement and/or stress relief in adults and children comprises at least one first hollow body (1) and at least one second hollow body (2), which are interconnected to each other through a passageway (3) from the first to the second hollow bodies, wherein said at least one first hollow body (1) comprises a slime composition, and said at least one second hollow body (2) is configured to receive the slime composition from the first hollow body (1) through the passageway (3), upon pushing in, squeezing or compressing the said at least first hollow body (1). Upon pushing in the first hollow body (1) comprising the slime composition, this slime passes through the passageway (3) to a second hollow body (2). Now the second hollow body (2) which is filled with the slime composition can be pushed in to provide the desired pop sound. In that way, the push pop fidget device according to the present invention provides unlimited popping and the desired relaxing effect.

[0039] The first hollow body (1) which is pushed in comprises a slime composition, wherein said slime composition fills or occupies, at least 75%, preferably at least 85%, more preferably from 90-95% of the volume of said first hollow body (1). In general, the slime composition filled in the hollow bodies occupies at least 70%, more preferably from 80 - 90% of the total volume of the first and second hollow bodies (1,2) forming part of the fidget device.

[0040] In order to make the slime composition move from one first hollow body (1) to at least one second hollow body (2) when the said first hollow body (1) containing the slime is pushed in, or pressed, the at least one first and second hollow bodies (1, 2) need to be interconnected forming a passageway (3) from the first to the second hollow body.

[0041] As can be seen in Figures 1A - 1F and Figures 2A - 2C, the passageway (3) is thus configured as an opening between the first hollow body (1) and the second hollow body (2) and serves as a path for the slime composition, from the first to the second hollow body.

[0042] In one embodiment of the present invention, (see Figure 2A) the fidget device can contain a plurality, (2,3,4,5,6,7,8,9,10,11,12,13,.....etc) of second hollow bodies (2) configured to receive the slime composition per a single first hollow body comprising a slime composition. In that case the first hollow body containing the slime composition can be interconnected to one, two or more of the second hollow bodies configured to receive the slime composition by means of each an independent passageway (3) from the first hollow body (1) to the said one, two or more of the second hollow bodies (2).

[0043] In a further embodiment of the present invention, (see Figure 2B) The fidget device according to the present invention can also contain a plurality (2,3,4,5,6,7,8,9,10,11,12,13,.....etc) of first hollow bodies (1) containing a slime composition and a plurality (2,3,4,5,6,7,8,9,10,11,12,13,.....etc) of second hollow bodies (2) configured to receive the slime composition. In that case, one, two or more of the first hollow body/ies containing the slime composition can be interconnected to one, two or more of the second adjacent hollow bodies configured to receive the slime composition. In that case the one, two or more of first hollow body containing the slime composition can be interconnected to one, two or more of the second hollow bodies configured to receive the slime composition by means of each an independent passageway (3) from the one, two or more first hollow body (1) to the said one, two or more of the second hollow bodies (2).

[0044] In still a further embodiment of the present invention, (see Figure 2C) the fidget device according to the present invention can also contain a plurality (2,3,4,5,6,7,8,9,10,11,12,13,.....etc) of first hollow bodies containing a slime composition and one second hollow body (2) configured to receive the slime composition. In that case, the one, two or more of first hollow body containing the slime composition can be interconnected to the one second hollow body configured to receive the slime composition by means of each an independent passageway (3) from the one, two or more first hollow body (1) to the said one second hollow bodies (2).

[0045] What is essential for a proper functioning and use of the device is that at least a first hollow body (1) comprising a slime composition is interconnected through a passageway (3) to at least one second hollow body (2) configured to receive the said slime composition, when the first hollow body (1) containing the slime composition is pushed in.(See Figures 1- 3, in particular, Fig. 1A, 1B, 1C)).

[0046] Furthermore, the present invention provides for a pop fidget device, wherein the first and second hollow bodies (1, 2), as well as the plurality of first and second hollow bodies (1, 2) are integrated into a sheet (4) (see Figure 3) which can adopt different forms and shapes. These forms and shapes can be selected among, any defined, undefined, amorphous form such as, for example, signs, letters, numbers, any form of an object, for example, a star, a lollipop, heart, and any form of an animal, such as, turtle, unicorn, etc.

[0047] Said sheet (4) and first and second hollow bodies (1,2) are made of a thermoplastic polymer or blends thereof, thermoplastic rubbers and blends thereof, thermoplastic elastomers and blends thereof as well as of any natural or synthetic rubber material or blends thereof.

[0048] Advantageously, the first and second hollow bodies (1,2) as well as the sheet (4) are made of a polymer material selected from: Acrylonitrile Butadiene Styrene (ABS), High Impact Polystyrene (HIPS), Polypropylene (PP), Styrene homopolymer (GPPS), Polyvinyl chloride (PVC), Polysiloxane, Thermoplastic rubbers (TPR), Thermoplastic elastomer materials (TPE), such as, Styrene block copolymer (SBC), Styrene-butadiene-styrene block copolymer (SBS), Styrene-isoprene-styrene block copolymer (SIS), Styrene-ethylene-butylene-styrene block copolymer (SEBS), Styrene-ethylene-ethylene-butylene-styrene block copolymer (SEEPS), Styrene-ethylene-propylene-styrene block copolymer (SEPS), Styrene-ethylene-propylene-styrene block copolymer, cross-linkable, (SEPS-V) and Thermoplastic styrene block copolymer (TPS), such as: Thermoplastic polyurethane elastomer (TPU), Thermoplastic copolyester elastomer (TPC), Thermoplastic polyether block amides (TPA), and Thermoplastic polyolefin (TPO), including mixtures thereof.

[0049] More advantageously, in a fidget device according to the present invention, the hollow bodies (1,2) as well as the sheet (4) are made of Polysiloxane polymers, due to the improved flexibility and elasticity given by these materials.

[0050] Furthermore, the hollow bodies (1, 2) are present in any size and can be present in any form and/or 3D shape body. Advantageously the 3D shape of the first and second hollow bodies (1, 2) can be selected from the group comprising: a sphere, hemisphere, pyramid, cube, cylinder, cone, triangular prism, cuboid, hexagonal prism, diamond or any amorphous shape.

[0051] More advantageously, the first and second hollow bodies (1, 2) of the push pop fidget device of the present invention are in the form of a sphere, an hemisphere or a cylinder.

[0052] According to the present invention, the fidget device contains at least one or more, preferably, a plurality of first hollow bodies (1) containing a slime composition.

[0053] In general, slime compositions are gel based play compositions, composed of a crosslinked polymer which are typically made by combining polyvinyl alcohol solutions or guar gum with borate ions. These compositions are in the form of liquids and have a variable viscosity. The molecular structure of slime is the factor responsible for its interesting behavior.

[0054] The slime forming part of the present invention's device is typically borax free and is composed of tangled, long-chain polymer molecules. These polymer molecules can be thought of as spaghetti strands. When put together on a plate, the strands are mixed together making a tangled mess. If the strands are rubbed together, they line up and

become smoother. This motion gives the mass its slimy, slippery feel.

[0055] The most common ingredients used in the production of a slime composition used in the present invention are water, polymeric materials, gelling agents, colorants, fillers, and preservatives.

[0056] The most abundant material in slime is water, typically making up over 70% of the formula. Generally, specially treated deionized water is used. Water is a diluent that gives the slime its liquid consistency.

[0057] In particular embodiments of the present invention, the slime composition further comprises additives, such as pigments, and/or glitter powders based on poly butylene terephthalate, poly methyl methacrylate or polyethylene terephthalate, which impart regular, metallic, glitter, glow-in-the dark, color-change characteristics to the slime contained in the hollow bodies,

[0058] Examples of slime compositions used in the present invention are borax free formulations in the form of a gel-like compositions where the polymeric material and thickener present in the composition is preferably, guar gum or derivatives thereof selected from: hydroxypropyl guar (HPG), carboxymethyl guar (CMG) and carboxymethyl hydroxypropyl guar (Carboxymethyl 2-Hydroxypropyl Ether) (CMHPG). Preferred polymeric material used is Guar Hydroxypropyltrimonium chloride, available from, for example, from Ashland Global Holdings Inc.

[0059] Preferred slime compositions used in the context of the present invention have the following general formulation shown in Table 1 below:

Table 1: Preferred slime compositions general formula

No.	Substances	% weight
1	Guar Hydroxypropyltrimonium Chloride	2.0 to 2.3
2	Glycerol	9.0 to 9.5
3	Sodium acetate	1.0 to 1.3
4	Sodium phosphate monobasic mohydrate	0.9 to 1.10
5	Sodium dehydroacetate	0.10 to 0.15
6	Additives: Pigments, glitter powders	1.0 to 1.3
7	Iodopropynil Butylcarbamate	0.005 to 0.007
8	Pentylene Glycerol	0.2 to 0.3
9	Preservative: Phenoxyethanol, Caprylyl Glycol	1.0 to 1.1
10	Aqua	up to 100

[0060] Most preferred slime compositions to be used according to the present invention are the following F1 - F6 slime formulations of Table 2, (amounts shown in % by weight with respect to the total weight of the composition):

Table 2: Preferred slime compositions

No.	Ingredients		INCI / CAS No.	F1 Glitter P 305 Blue	F2 Glitter P 3375 Green	F3 Metalic P 101 Yellow	F4 Metalic P 913 Pink	F5 Metalic P 928 Purple	F6 Metalic Silver
1	Guar Hydroxypropyltrimonium chloride		65497-29-2	2,300	2,300	2,300	2,300	2,300	2,300
2	Glycerol		56-81-5	9,500	9,500	9,500	9,500	9,500	9,500
3	Sodium acetate ($C_2H_3O_2Na$)		127-09-3	1,300	1,300	1,300	1,300	1,300	1,300
4	Sodium phosphate monobasic monohydrate ($NaH_2PO_4 \cdot H_2O$)		10049-21-5	1,100	1,100	1,100	1,100	1,100	1,100
5	Sodium dehydro	acetate	4418-26-2	0.150	0,150	0.150	0,150	0,150	0,150
6	Rainbow series glitter powder	Poly(butylene Terephthalate)	26062-94-2	1,040	1,040				
		Poly(menthyl Methacrylate)	9011-14-7	0,130	0,130				
		Polyrthylene Terephthalate	25038-59-9	0,130	0,130				
7	F D & C BLUE 1 POWDER		3844-45-9	0,070	0,050			0.050	
8	F D & C YELLOW 5 POWDER		1934-21-0		0,030	0.070			
9	D & C RED 28		18472-87-2				0,070	0.030	
10	PEARL PIGMENT - Reflex Sparkle White N-801E	Mica	12001-26-2			0,375	0,375	0,375	0,900
		Tin Oxide	18282-10-5			0,005	0,005	0.005	0,012
		Titanium Dioxide	13463-67-7			0,120	0,120	0,120	0,288
11	Iodropropynyl Butylcarbamate		55406-53-6	0,007	0,007	0,007	0,007	0,007	0,007
12	Pentylene Glycol		5343-92-0	0.300	0,300	0,300	0,300	0.300	0,300
13	Phenoxyethanol		122-99-6	0,612	0,612	0,612	0,612	0,612	0,612
	Caprylyly Glycol		1117-86-8	0.488	0.488	0.488	0,488	0.488	0,488
	Aqua		7732-18-5	82.873	82,863	83,673	83,673	83.663	83.043
			Sub-total:	100,000	100,000	100,000	100,000	100,000	100,000

[0061] Lastly, the push pop fidget device of the present invention can form part or be integrated in different objects, such as toys and/or accessories.

[0062] One embodiment of the present invention refers to a fidget device called finger spinner, which essentially consists of a body having a central body portion and a plurality of arms. As shown in Fig 4, each of the arms projects outwardly from the central body portion to present a distal end. The fidget spinner includes in the distal ends of their arms the plurality of hollow bodies (1, 2) which are interconnected forming at least one passageway (3) from one to an adjacent hollow body and wherein at least one of the hollow bodies (1,2) comprises a slime composition, and at least one of the hollow bodies (1,2) is configured to receive the slime composition displaced through the at least one passageway when the hollow bodies enclosing a slime composition are pushed in.

[0063] As seen in the Fig. 4, the hollow bodies configured to receive the slime composition are not visible for the user in the finger spinner, but only those hollow bodies containing the slime composition positioned at the distal ends of the spinner arms are visible. In that case those hollow bodies configured to receive the slime composition are integrated internally.

[0064] In a further embodiment of the present invention, the push pop fidget device of the present invention can be integrated into a bracelet, as shown in Fig. 5 , or a key-chain as shown in Fig. 6 or a sticker, as shown in Fig. 7.

[0065] The fidget device according to the present invention is made by rubber or thermoplastic polymer molding techniques commonly used and well known for a person skilled in the art, such as compression molding and/or injection molding. The process comprises the steps of providing two or more layers of molded hollow bodies (1,2) and passageways (3) according to the different embodiments explained above or hollow bodies (1,2) and passageways (3) integrated into a sheet (4) according to the embodiments referred above, filling the first hollow bodies (1) with a slime composition and sealing the two or more layers of molded hollow bodies (1,2) by means of welding or applying a commonly used polymer adhesive. Alternatively, the slime composition may be filled inside the molded structure once the two or more layers are sealed together. In that case, one or two outlets in the structure allow such step.

[0066] The fidget device according to the present invention is used to help children and adults alleviate and relief stress or excess energy, calm anxiety and outlet of energy and better cope with nervousness, boredom, or a disorder (e.g., ADHD, autism, etc.) by unlimited pushing in, pressing or squeezing the hollow bodies comprising a slime composition of the fidget device. By pushing in repeatedly the said hollow body/ies comprising a slime type composition, a relaxing sound is obtained.

[0067] Hereinafter, the present invention will be described in more detail with reference to specific examples. However, these examples are only for illustrating the present invention in more detail, the scope of the present invention is therefore not limited by these examples.

EXAMPLES

Example 1: Stress releasing effect test

[0068] For the purpose of determining the improved stress releasing effects of the fidget device of the present invention the following comparative experiment was carried out, between a device according to the present invention and two commonly known fidget devices of the state of the art.

[0069] For the purpose of the assay, a fidget device made of Polysiloxane was manufactured by compression molding as explained in preceding paragraphs. The obtained device has the structure shown in Figure 3 and contains slime composition F1 of Table 2. Such device according to the present invention is named "Pop Slime" in the following assay. Furthermore, a conventional fidget device named "Pop it" consisting essentially in a silicone-based tray of half-sphere "bubbles" that are pushed in resulting in a popping sound and a conventional "Slime" which consist essentially in a playing dough having a gel-like structure having a high degree of elasticity and flexibility, were provided.

[0070] Based on the findings that physiological conditions such as for example increased heart rate (pulse) is directly connected to a stress condition in an individual, the following assay shows that using the fidget device according to the present invention provides an improved effect calculated in terms of the reduction in heart beats per minute reached after using the device of the present invention during a time period of one minute. From the above it can be concluded that the device according to the present invention exerts an improved relaxing effect when compared to other commercially available fidget devices, in particular, a conventional slime product or a conventional pop it device.

[0071] In total, 14 subjects were recruited for this experiment. Their gender and age are shown in the following Table 4. Their heart rate was measured before assay start and confirmed to be within the normal ranges.

[0072] Thereafter, participants were placed in a stress condition by being required to follow a stress protocol involving a cognitive task. Participants under age 7 had to complete several two digit math subtraction exercises during a time interval of 15 minutes. Participants with age 8 or above, were requested to count backward from 1022 with a gap of 13 and, if they made a mistake, they had to restart the count. The time allocated for this task was 1 min. After having followed the stress protocol, the participants were tested to show that their heart rate had increased from their normal condition.

To this effect, the heart rate of the participants was monitored with the functionalities provided by a smart watch.

[0073] Thereafter, participants were invited to use the fidget device according to the present invention during a period of 1 minute. Thereafter, their heart rate was monitored again. The same procedure was followed by testing the conventional slime product and the said conventional pop it device.

[0074] Results are shown in the Table 3 below:

Table 3: Results experimental assay

Participant			**Before stimulation (1)**	**After stimulation (2)**	**Product**	**After 1 minute play (3)**	**BPM reduction after 1 min play (2)-(3)**
No.	Gender	Age	BPM (Beats per minute)	BPM (Beats per minute)		BPM (Beats per minute)	BPM (Beats per minute)
				104	Pop Slime (Invention)	98	**6**
1	F	13	94	105	Pop-it	103	2
				105	Slime	104	1
				105	Pop Slime (Invention)	92	**13**
2	M	9	95	102	Pop-it	92	10
				103	Slime	93	10
				95	Pop Slime (Invention)	86	**9**
3	F	11	89	98	Pop-it	90	8
				95	Slime	90	5
				87	Pop Slime (Invention)	80	**7**
4	F	11	80	86	Pop-it	88	-2
				83	Slime	85	-2
				105	Pop Slime (Invention)	94	11
5	M	5	95	103	Pop-it	95	8
				102	Slime	97	5
				88	Pop Slime (Invention)	78	10
6	F	11	80	86	Pop-it	79	7
				84	Slime	75	9
				103	Pop Slime (Invention)	95	**8**
7	M	9	95	102	Pop-it	98	4
				100	Slime	95	5
				100	Pop Slime (Invention)	92	**8**
8	M	8	93	98	Pop-it	95	3
				101	Slime	97	4

(continued)

Participant			Before stimulation (1)	After stimulation (2)	Product	After 1 minute play (3)	BPM reduction after 1 min play (2)-(3)
No.	Gender	Age	BPM (Beats per minute)	BPM (Beats per minute)		BPM (Beats per minute)	BPM (Beats per minute)
				95	Pop Slime (Invention)	86	9
9	M	10	88	93	Pop-it	90	3
				95	Slime	91	4
				110	Pop Slime (Invention)	96	**14**
10	M	13	95	105	Pop-it	95	10
				108	Slime	98	10
				116	Pop Slime (Invention)	108	**8**
11	F	9	108	110	Pop-it	107	3
				109	Slime	111	8
				93	Pop Slime (Invention)	90	**3**
12	M	11	88	94	Pop-it	95	-1
				94	Slime	95	-1
				105	Pop Slime (Invention)	98	7
13	F	6	98	100	Pop-it	100	0
				103	Slime	98	5
				89	Pop Slime (Invention)	80	**9**
14	F	14	77	90	Pop-it	88	2
				95	Slime	88	7

[0075] As can be seen from the results shown in Table 4, for each participant, playing the pop slime device of the present invention results in a significant improvement in BPM reduction when compared to playing with the conventional fidget devices, namely the Pop it and the slime product.

Claims

1. A push pop fidget device for stress relief comprising:

at least one first hollow body (1) and at least one second hollow body (2), both hollow bodies (1,2) being interconnected forming a passageway (3) from the first to the second hollow body, wherein
said at least one first hollow body (1) comprises a slime composition, and
said at least one second hollow body (2) is configured to receive the slime composition from the first hollow body (1) through the passageway (3), upon pushing in the first hollow body (1).

2. A push pop fidget device according to claim 1, comprising a plurality of first hollow bodies (1) comprising a slime

composition and at least one second hollow body (2) configured to receive the slime composition, wherein said second hollow body (2) configured to receive the slime composition is interconnected to at least one of the plurality of hollow bodies (1) through a passageway (3).

3. A push pop fidget device according to claim 1, comprising at least one first hollow body (1) comprising a slime composition and a plurality of second hollow bodies (2) configured to receive the slime composition, wherein said first hollow body (1) comprising a slime composition is interconnected to at least one of the plurality of hollow bodies (2) through a passageway (3).

4. A push pop fidget device according to claim 1, comprising a plurality of first and second hollow bodies (1,2), wherein one, two or more of the first hollow bodies (1) containing the slime composition is interconnected to one, two or more of the second hollow bodies (2) configured to receive the slime composition, forming each an independent passageway (3).

5. A pushed pop fidget device according to any of claims 1 to 4 wherein the first and second hollow bodies (1,2) are integrated into a sheet (4).

6. A push pop fidget device according to any preceding claim, wherein the first and second hollow bodies (1,2) and the sheet (4) are made of a plastic material selected from: polymer material selected from: Acrylonitrile Butadiene Styrene (ABS), High Impact Polystyrene (HIPS), Polypropylene (PP), Styrene homopolymer (GPPS), Polyvinyl chloride (PVC), Polysiloxane, thermoplastic rubbers (TPR), thermoplastic elastomer materials (TPE), such as, Styrene block copolymer (SBC), Styrene-butadiene-styrene block copolymer (SBS), Styrene-isoprene-styrene block copolymer (SIS), Styrene-ethylene-butylene-styrene block copolymer (SEBS), Styrene-ethylene-ethylene-butylene-styrene block copolymer (SEEPS), Styrene-ethylene-propylene-styrene block copolymer (SEPS), Styrene-ethylene-propylene-styrene block copolymer, cross-linkable, (SEPS-V) and Thermoplastic styrene block copolymer (TPS), such as: Thermoplastic polyurethane elastomer (TPU), Thermoplastic copolyester elastomer (TPC), Thermoplastic polyether block amides (TPA), and Thermoplastic polyolefin (TPO), including mixtures thereof.

7. A push pop fidget device according to claim 6, wherein the first and second hollow bodies (1,2) and the sheet (4) are made of Polysiloxane.

8. A push pop fidget device according to any of the preceding claims, wherein the first and second hollow bodies (1,2) are present in the form of a 3D shape body selected from the group comprising: a sphere, hemisphere, pyramid, cube, cylinder, cone, triangular prism, cuboid, hexagonal prism, diamond or an amorphous shape.

9. A push pop fidget device according to claim 8, wherein at least one of the first and second hollow bodies (1,2) is in the form of a sphere, an hemisphere or a cylinder.

10. A push pop fidget device according to any of the preceding claims, wherein the slime composition present in the at least one of the first hollow body (1) occupies at least 75% of the volume of said hollow body (1).

11. A push pop fidget device according to any of the preceding claims, wherein the slime composition filled in the hollow bodies occupies at least 70% of the total volume of the first and second hollow bodies (1,2) forming part of the fidget device.

12. A push pop fidget device according to any of the preceding claims, wherein the slime composition is free of borax and comprises (in % by weight with respect to the total weight of the composition:

No.	Substances	% weight
1	Guar Hydroxypropyltrimonium Chloride	2.0 to 2.3
2	Glycerol	9.0 to 9.5
3	Sodium acetate	1.0 to 1.3
4	Sodium phosphate monobasic mohydrate	0.9 to 1.10
5	Sodium dehydroacetate	0.10 to 0.15

(continued)

No.	Substances	% weight
6	Additives	1.0 to 1.3
7	Iodopropynil Butylcarbamate	0.005 to 0.007
8	Pentylene Glycerol	0.2 to 0.3
9	Preservative: Phenoxyethanol, Caprylyl Glycol	1.0 to 1.1
10	Aqua	up to 100

13. A push pop fidget device according to claim 12, wherein the additives are selected from: pigments, and/or glitter powders based on poly butylene terephthalate, poly methyl methacrylate or polyethylene terephthalate.

14. Hand-held toy, finger spinner, key-chain, bracelet and sticker comprising a push pop fidget device according to any of the preceding claims.

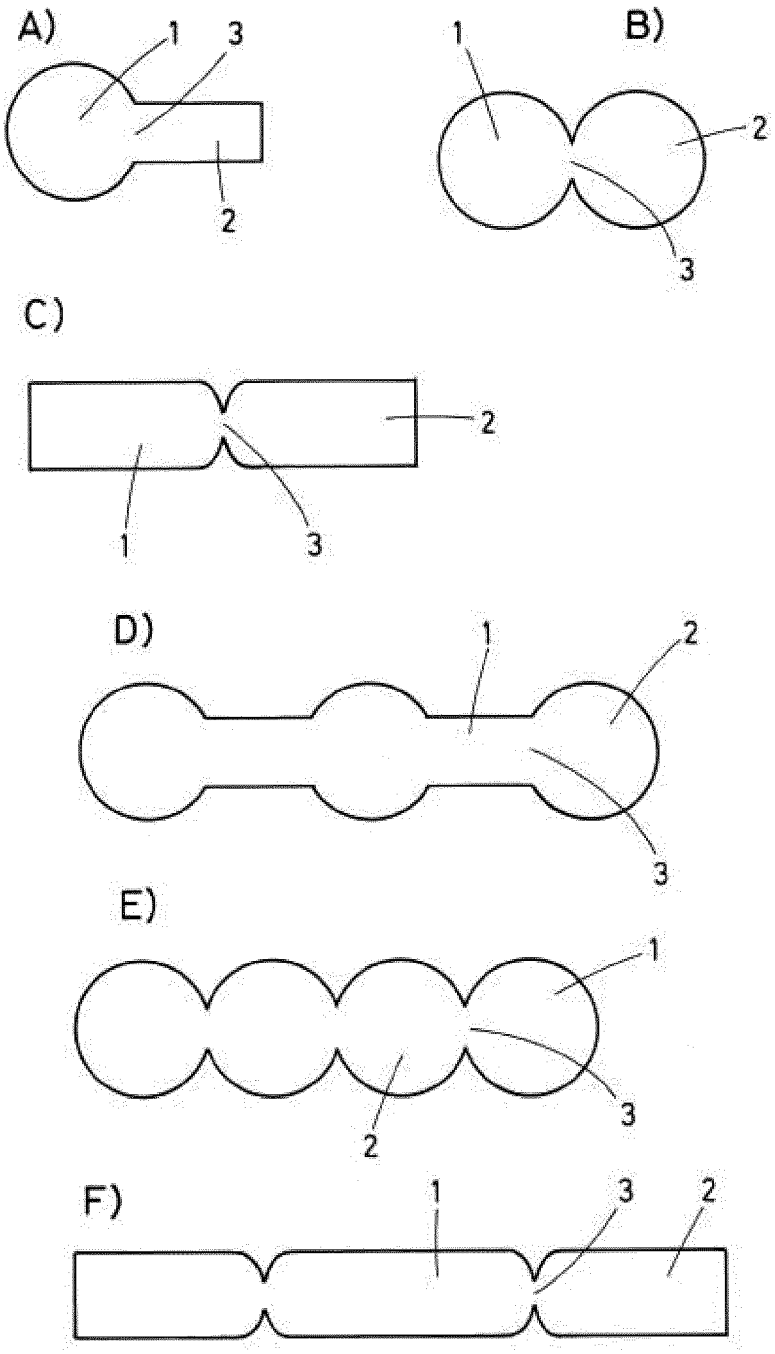

FIG. 1

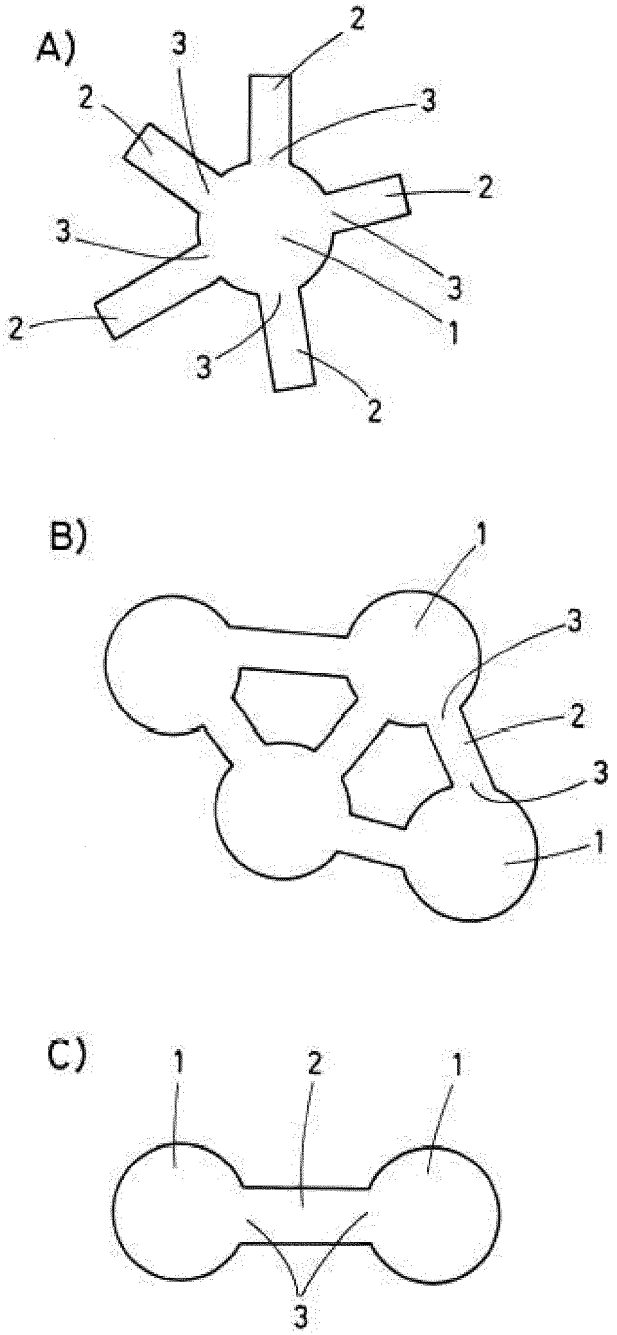

FIG. 2

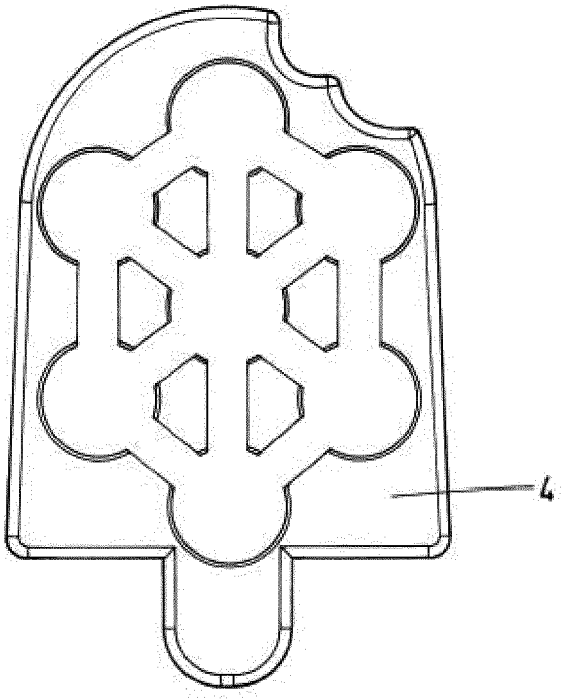

FIG. 3

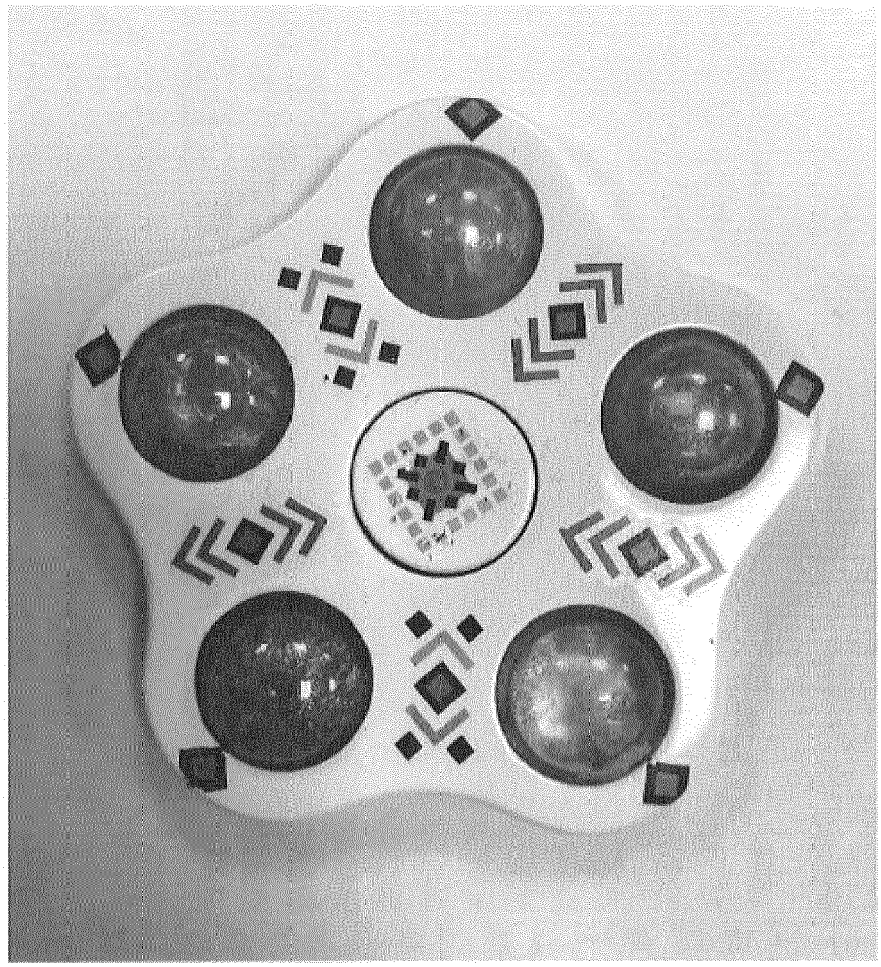

FIG. 4

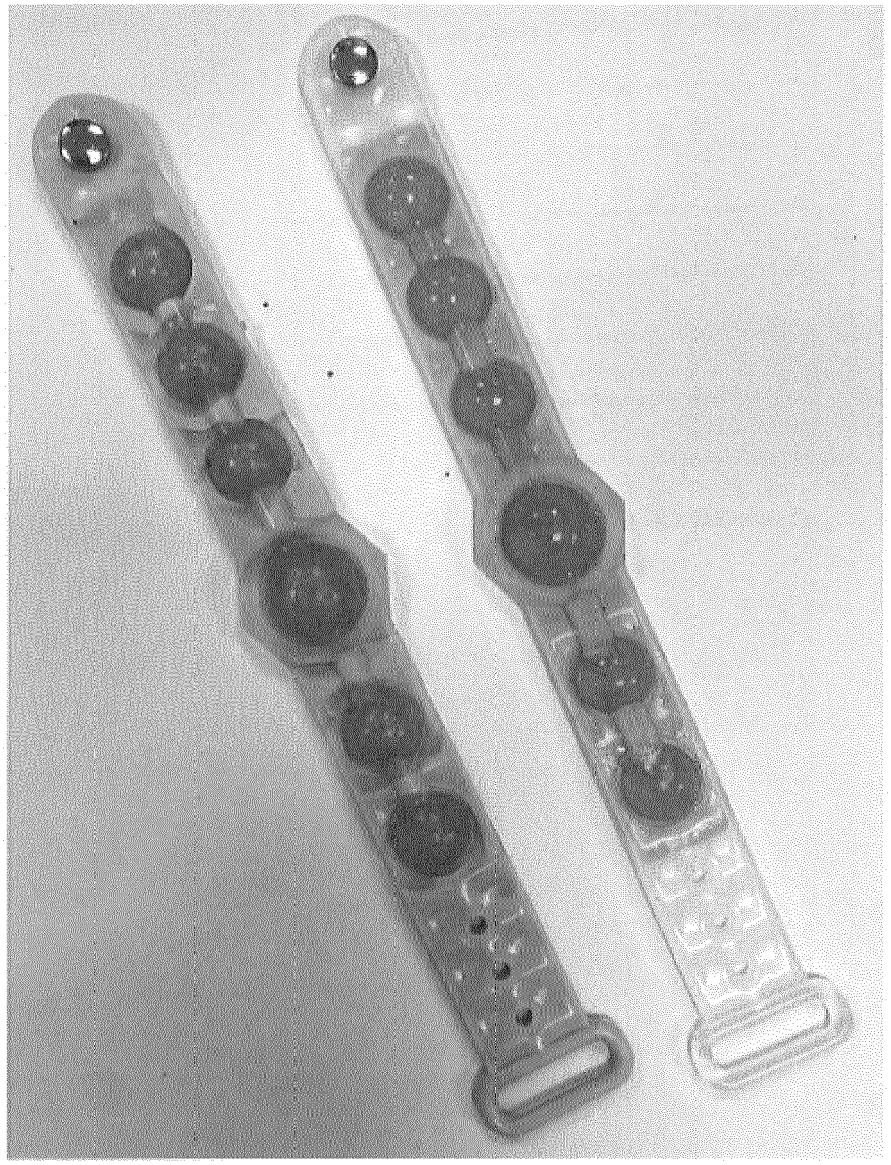

FIG. 5

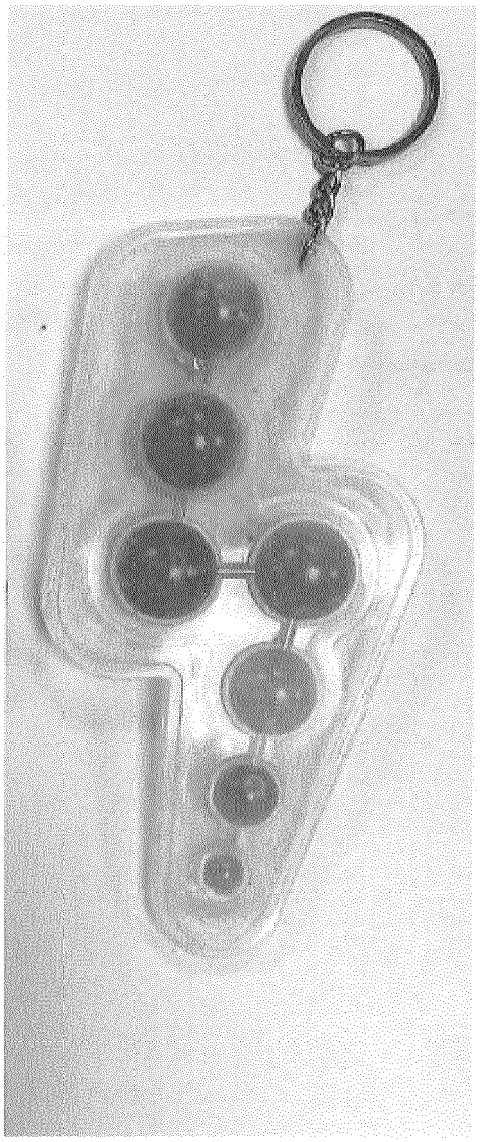

FIG. 6

FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 21 20 2913

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 601 923 A (ROSENBERG BRUCE L) 31 August 1971 (1971-08-31)	1,5-14	INV. A63H37/00
A	* column 1, line 70 - column 5, line 4; figures *	2-4	
A	US 4 040 619 A (LANDI JAMES V) 9 August 1977 (1977-08-09) * column 1, line 41 - column 2, line 22; figures *	1-14	
A	DE 20 2011 109684 U1 (NEUBAUER NORBERT [DE]) 5 April 2012 (2012-04-05) * paragraph [0013] - paragraph [0017]; figures *	1-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	29 March 2022	Lucas, Peter

CATEGORY OF CITED DOCUMENTS

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29-03-2022

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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