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(54) **INTERACTIVE TOY**
INTERAKTIVES SPIELZEUG
JOUET INTERACTIF

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Description

RELATED APPLICATIONS

[0001] This application claims the benefit of priority of Chinese Application No. 202120553565.8, filed on March 17, 2021, and granted on September 29, 2021.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of toys, especially to an interactive toy.

BACKGROUND

[0003] The technologies in the field of toys field have been upgraded quickly with the developments in networks and other new technologies. New toy products and ways of interaction have been developed, and people pay more attention to their interaction experience. Interactive toys refer to toys that can respond to human actions (such as voice, body movements, etc.).

[0004] Currently, the most common interactive toys on the market are for preschool education. However, these toys do not have desirable interactivity. Both the card-type expansion mode and the click-type selection menu only allow a unidirectional control mode for children, and result in simple feedback. The interaction design of toys should be based on the fact that children's learning is based on direct experience, and their cognition of things is perceptual, concrete and visual in order to provide children opportunities to touch, feel, and experience. Interactive toys would be an important way for children to learn and experience.

[0005] US 10 807 011 B2 discloses a toy assembly which includes a housing and an inner object inside the housing. The inner object includes a breakout mechanism that is operable to break the housing to expose the inner object. The breakout mechanism drives a portion of the inner object outwards towards an extended position relative to a remainder of the inner object. The breakout mechanism urges the portion of the inner object towards the extended position through a biasing member, thereby limiting a force applied by the portion of the inner object based on the biasing member, so as to reduce a risk of a poking injury to a user of the toy assembly.

SUMMARY

[0006] The present invention provides an interactive toy according to claim 1.

[0007] The present invention further provides an interaction method of playing an interactive toy according to claim 11.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] To clearly illustrate the technical solutions and

advantages of the present disclosure, the following is a brief introduction to some exemplary embodiments of the present disclosure. It is obvious that the following descriptions of the attached drawings are only for some exemplary embodiments of the present disclosure. Other drawings can be obtained by a person skilled in the art based on these drawings without creative efforts.

FIG. 1 is a schematic diagram of the structure of an interactive toy according to some exemplary embodiments of the present disclosure; and

FIG. 2 is a schematic diagram of the structure of a toy body of an interactive toy according to some exemplary embodiments of the present disclosure.

DETAILED DESCRIPTION

[0009] The technical solutions in some exemplary embodiments of the present disclosure will be described with reference to the accompany drawings. Obviously, the described exemplary embodiments are only a part of the embodiments of the present disclosure. Based on these exemplary embodiments of the present disclosure, all other embodiments obtained by a person of ordinary skill in the art without creative efforts fall within the scope of the present disclosure.

[0010] It should be noted that the terms "first", "second", etc. in the present disclosure are used to distinguish similar objects and do not indicate a particular order or sequence. It is to be understood that the data so used are exchangeable under appropriate circumstances so that the exemplary embodiments described herein may be implemented in sequences other than those illustrated or described herein.. In addition, the terms "comprise" and "include" and any variations thereof, are intended to cover non-exclusive inclusions, e.g., a process, method, system, product, or server that is described as including a series of steps or units may not be limited to those steps or units listed, rather, it may include other steps or units that are not explicitly listed, as well as those inherent to the process, method, system, product, or server.

[0011] Referring to FIG. 1, which is a structural schematic diagram of an interactive toy provided by some exemplary embodiments of the present disclosure, a toy may include a toy body 10 including at least one sensor 12, and a toy environmental body 14. The toy body is arranged in the toy environmental body 14. The at least one sensor 12 may collect at least one toy environmental physical factor. The toy body 10 may be controlled based on the at least one toy environmental physical factor collected by the at least one sensor 12, and the toy environmental body 14 changes in response to a change of the toy body 10 as controlled.

[0012] In some exemplary embodiments of the present disclosure, the toy body includes, but is not limited to, a puppet, a doll, an ornament, a building block, a handicraft, a model (e.g., an animal model such as dinosaur or a bird), and a picture(s) of the toy body may or may not be

shown on the toy box. The sensor 12 may be a vibration sensor, a light sensor, a temperature sensor, a resistive sensor, an inductive sensor, a capacitive sensor, a piezoelectric sensor, a magneto-electric sensor, an ultrasonic sensor, a thermal sensor, a humidity sensor, a gas sensor, a vacuum sensor, a biosensor, or the like.

[0013] The toy environmental body 14 may be made of particles, powder, paper, liquid, gas, foam or sticky substances, such as bonded sand, soil, powder, etc., cassia seeds or beans, foam particles, PPE (polypropylene) particles, slime, and the like. In the case where the toy environmental body is made of a viscous and/or sticky substance, it may be removed from the toy body without a digging tool. For example, children may remove the sticky substance by hands. In some exemplary embodiments of the present disclosure, the specific shape of the toy environmental body is not limited, which may be in a regular shape (such as sphere, cylinder, quadrangular prism, hexagonal prism, etc.), or an irregular shape (such as a pear, a mountain, an egg, etc.). Alternatively, it may be in a shape naturally formed within a container, a random shape, or a box (the box may be made of plastic, paper, or the like).

[0014] The physical factor of the toy environmental body may be a physical factor of the environment that can be collected by the at least one sensor. The at least one sensor 12 may collect the physical factor of the toy environment in real time, at a preset frequency, or in response to a change of the environment. The toy environmental physical factor may include, but is not limited to, force, displacement, light, temperature, humidity, electromagnet, resistance, inductance, capacitance, sound waves, ultrasonic waves, pressure, gas species information, biological determination information (for determining whether it is a biological substance, or determining the species of the biological substance), vibration, etc. The physical factor may be a specific value, or a range.

[0015] Referring to FIG. 2, which is a schematic diagram of the structure of a toy body of an interactive toy according to some exemplary embodiments of the present disclosure, the toy body of the interactive toy 10 may include at least one of a first sensor 20, or a second sensor 22, and may further include other sensors (not shown). Therefore, the collecting of the at least one toy environmental physical factor by the at least one sensor may include: the first sensor 20 collecting a vibration signal, and/or the second sensor collecting a light signal, and/or a third sensor collecting temperature information, and/or a fourth sensor collecting resistance change information, and/or a fifth sensor collecting inductance change information, and/or a sixth sensor collecting capacitance change information, and/or a seventh sensor collecting piezoelectric information, and/or an eighth sensor collecting electromagnetic induction information, and/or a ninth sensor collecting ultrasonic information, and/or a tenth sensor collecting thermal information, and/or an eleventh sensor collecting humidity information, and/or a twelfth sensor collecting gas concentration

and/or composition information, and/or a thirteenth sensor collecting air pressure information, and/or a fourteenth sensor collecting the biological substance information. Correspondingly, the toy body may be controlled based on the at least one toy environmental physical factor collected by the at least one sensor, which may include: controlling the toy body 10 based on the vibration information, and/or the light information, and/or the temperature information, and/or the resistance change information, and/or the inductance change information, and/or the capacitance change information, and/or the piezoelectric information, and/or the electromagnetic induction information, and/or the ultrasonic information, and/or the thermal information, and/or the humidity information, and/or the gas concentration and/or composition information, and/or the air pressure information, and/or the biological substance information, collected by respective sensors.

[0016] The toy body 10 may include, but is not limited to, at least one of the following effect elements: a vibration motor 24, a light source 25, a buzzer 26, and a speaker 27, and may further include other devices that may cause changes of the toy body 10. The toy body 10 may further include a circuit 28, which may be printed on a printed circuit board. Correspondingly, the toy body may be controlled based on the at least one toy environmental physical factor collected by the at least one sensor, which may include: the vibration information, and/or the light information, and/or the temperature information, and/or the resistance change information, and/or the inductance change information, and/or the capacitance change information, and/or the piezoelectric information, and/or the electromagnetic induction information, and/or the ultrasonic information, and/or the heat information, and/or the humidity information, and/or the gas concentration and/or composition information, and/or the air pressure information, and/or the biology substance information may be transmitted to the circuit 28; the circuit 28 controls the at least one vibration motor 24, and/or at least one light source 25, and/or at least one buzzer 26, and/or at least one speaker 27 to work based on the vibration information, and/or the light information, and/or the temperature information, and/or the resistance change information, and/or the inductance change information, and/or the capacitance change information, and/or the piezoelectric information, and/or the electromagnetic induction information, and/or the ultrasonic information, and/or the heat information, and/or the humidity information, and/or the gas concentration and/or composition information, and/or the air pressure information, and/or the biology substance information. The effect element operation may include, but is not limited to, one or more of the following: the vibration motor vibrating, the light source emitting lights, the buzzer and/or speaker issuing sounds.

[0017] In some exemplary embodiments, the toy body may be a dinosaur model, the at least one sensor of may be a vibration sensor. The dinosaur model may be pro-

vided with a vibration motor. The vibration sensor may collect vibration information, and the vibration motor may be controlled to vibrate based on the vibration information collected by the vibration sensor. When the toy environmental body is a block material formed by gypsum and/or sand; the vibration information may be generated by shaking or breaking of the block material. When the sensor is a light sensor, the dinosaur model may be provided with a light source; the light sensor collects luminosity (light brightness) information; the light source of the dinosaur model may be controlled to emit light based on the luminosity information collected by the light sensor. In some exemplary embodiments, the vibration motor, the light source, the buzzer, and/or the speaker may be respectively controlled by the printed circuit board according to signals from different sensors, thereby improving control accuracy and enriching playing details.

[0018] The first sensor and the second sensor may be one sensor or multiple sensors. The terms "first" and "second" are used herein to distinguish various sensors. In addition, in actual applications, the toy body may be controlled to perform one or more of the vibrating, light emitting, and sounding operations. Moreover, these operations or some of them may be performed in a predetermined order.

[0019] In some exemplary embodiments, the toy environmental body may change in response to a change of the toy body as controlled. This may include: the toy environmental body 14 (not shown in FIG. 2) responding to a physical change of the toy body 10 caused by a vibration control. The physical change may be a spatial movement, such as moving, swaying, shaking, etc. (when the toy environmental body is a block material formed by gypsum or sand, etc.), or may flow naturally under gravity, etc. (when the toy environmental body is a material of cassia sand, sand, etc.).

[0020] The number of the vibration motor 24, the light source 25, the buzzer 26, and the speaker 27 may be one or more. Those elements may be arranged in right positions as needed, so that the vibration motor 24, the light source 25, the buzzer 26, and/or the speaker 27 may be triggered to vibrate, emit light, and/or sounds in response to the vibration signal and/or the light signal collected by the respective sensors, so as to achieve an effect of vibration, light emitting or sounding of a part or the entire toy body. Specifically, for example, the toy body may be dinosaur model, and a vibration motor may be provided on a front paw(s) of the dinosaur model, so that it may be triggered to achieve an effect of the dinosaur model waving its front paw(s). A speaker may be provided in the mouth of the dinosaur model, which may be triggered to achieve an effect of the dinosaur roaring or greeting.

[0021] In some exemplary embodiments, the toy may further include at least one switch device in a circuit to control the toy to remain in a power-off state, until it is triggered to enter/turn to a power-on state. This may be implemented by removing the switch device from the cir-

cuit, or adjusting it to a switch-on state. There may be one or more switch devices to control the on/off state in different ways.

[0022] In some exemplary embodiments, the toy may further include a tool for separating the toy environmental body from the toy body. The tool may be a hand, a hand-shaped tool, or other tool that may facilitate separation of the toy environmental body from the toy body. The toy may further include at least one toy body digging tool, and/or a peripheral tool of the toy. The toy body digging tool includes, but is not limited to, a toy hammer, and/or toy brush, etc. The toy body digging tool may be used to separate the toy environmental body from the toy body, and may also be used as a decoration of the toy body. The peripheral tool may include, but is not limited to, paint, apron/covering (to prevent contamination), goggles, magnifying glasses, etc. The toy body may be decorated by painting the toy body with the toy brush having the paint. The peripheral tool may play a protective role, and improve the sense of participation and the fun to play the toy.

[0023] The present disclosure provides an interactive toy, by placing a doll, etc., in a specific environment, a specific response from the doll may be triggered when physical environment of the toy is changed. Accordingly, the specific environment is changed. It provides children with the opportunities to operate, feel and experience the toy by hands, and improves the fun of the toy.

[0024] Some examples of practical applications of the interactive toy according to the present disclosure will be described below.

[0025] For example, the toy body may be a plastic panda doll with a vibration sensor inside the panda doll. The panda doll may be hidden in the cassia sand in advance. A child may tap the sand, and the vibration sensor in the panda doll may sense the tapping operation, and the panda doll is triggered to vibrate, so that the panda doll is exposed from the sand due to the vibration. Thus the child finds the panda doll. The toy may be played at home or in a children's entertainment venue. That is, it may be played by children with or without adults.

[0026] In another example, the toy body may be a model of a dinosaur (including dinosaur fossils), and the dinosaur model may be installed with a vibration sensor and a light sensor. Two light sources may be installed in dinosaur eyes, and an additional light source may be installed on the forehead or in the mouth of the dinosaur. The toy environmental body may be a block material formed by gypsum or sand. The dinosaur model may be placed in the block material formed by gypsum or sand. Prior to playing with the toy, a plastic tag for maintaining the toy in a power-off state exposed from the block material is removed. Next, when the block material is played, the vibration sensor senses vibration information and the toy body is triggered to vibrate, which cause the vibration of the block material around the toy body. This may cause a feeling that the animal inside the block material is still alive, and the child may be curious to find what animal it

is. Thus, the child may continue to remove the block material with a special archaeological tool(s) such as a toy hammer. In this process, when the eyes of the dinosaur model are exposed, that is, when the light sensor detects the ambient light (lamp light, sunlight, etc.), the light source may be triggered to emit light, thus giving children the feeling that the eyes of the dinosaur are open, increasing the fun of the toy. Finally, the toy hammer may be inserted into the toy environmental body as a decoration (the toy environmental body is broken plaster or scattered sand), which may be placed next to the dinosaur fossils. In addition, the toy may also include paint, aprons, sponges, goggles, magnifying glasses, stickers (stickers with labels or patterns that may be attached to the toy hammer, toy body, etc. as decorations) etc. to increase the fun of the toy.

[0027] The toys described above need the coordination and participation of the children's hands, eyes, and brain, resulting in exercises in both touch sense and vision sense. The interactivity and fun of the toys are improved.

[0028] Some exemplary embodiments of the present disclosure have been described above, and the foregoing description is exemplary, not exhaustive. The present disclosure is not limited to the theses exemplary embodiments. Without departing from the scope of the invention which is defined by the appended claims, many modifications and changes may be apparent to a person of ordinary skill in the art. The terminology used herein has been selected to best explain the principles, practical applications, or improvements of the present disclosure, or to enable ordinary person skilled in the art to understand the various exemplary embodiments disclosed herein.

Claims

1. An interactive toy, comprising:

a toy environmental body (14); and
a toy body (10) for being placed in the environmental body, including at least one sensor (12) to collect at least one toy environmental physical factor, wherein
the toy body (10) is controlled to change based on the at least one toy environmental physical factor, and
the toy environmental body (14) is configured to change in response to the change of the toy body (10),
characterized in that
the at least one sensor (12) includes a vibration sensor, the vibration sensor is configured to collect vibration information generated by shaking or breaking of the toy environmental body (14), and
the toy body (10) includes at least one of the following effect elements: a vibration motor (24),

a light source (25), a buzzer (26), and a speaker (27);

in response to the vibration information collected by the vibration sensor, the vibration motor (24), the light source (25), the buzzer (26), and/or the speaker (27) is configured to be triggered to vibrate, emit light, and/or sound.

2. The interactive toy according to claim 1, wherein

the at least one sensor (12) further includes at least one of a light sensor, a temperature sensor, a resistive sensor, an inductive sensor, a capacitive sensor, a piezoelectric sensor, a magneto-electric sensor, an ultrasonic sensor, a thermal sensor, a moisture sensor, a gas sensor, a vacuum sensor, or a biosensor; and
the at least one toy environmental physical factor includes at least one of pressure information, a displacement, a luminosity, or a temperature.

3. The interactive toy according to claim 2, wherein the at least one sensor includes: a first sensor configured to collect vibration information;

a second sensor configured to collect light information;
a third sensor configured to collect temperature information;
a fourth sensor configured to collect resistance change information;
a fifth sensor configured to collect inductance change information;
a sixth sensor configured to collect capacitance change information;
a seventh sensor configured to collect piezoelectric information;
an eighth sensor configured to collect electromagnetic induction information; a ninth sensor configured to collect ultrasonic information;
a tenth sensor configured to collect thermal information;
an eleventh sensor configured to collect humidity information;
a twelfth sensor configured to collect at least one of gas concentration information, or gas composition information;
a thirteen sensor configured to collect air pressure information; or
a fourteenth sensor configured to collect biological substance information.

4. The interactive toy according to claim 3, wherein

the toy body (10) further includes a circuit (28), wherein
the at least one sensor (12) transmits the at least one toy environmental physical factor to the cir-

- cuit (28), and
the circuit controls (28) the effect element to operate based on the at least one toy environmental physical factor.
- 5
5. The interactive toy according to claim 4, wherein
- the toy further includes at least one switch device disposed in the circuit to control the interactive toy remaining in a power-off state; and
10 removing the switch device from the circuit triggers the interactive toy to turn to a power-on state.
6. The interactive toy according to claim 1, wherein the
15 toy environmental body (14) is made at least one of particles, powder, paper, liquid, gas, foam, or a sticky substance.
7. The interactive toy according to claim 1, wherein
20 the interactive toy further includes at least one of a toy body digging tool, or a toy peripheral tool; the toy body digging tool includes at least one of a toy hammer, or a toy brush; and
25 the toy peripheral tool includes a paint to paint the toy body.
8. The interactive toy according to claim 1, wherein,
30 the toy body is an animal model;
and
the animal model includes a vibration motor (24) configured to vibrate based on the vibration information collected by the vibration sensor (12).
35
9. The interactive toy according to claim 8, wherein
40 the toy environmental body (14) is a block material formed by at least one of gypsum, or sand.
10. The interactive toy according to claim 9, wherein
45 the at least one sensor (12) further includes a light sensor configured to collect luminosity information;
the animal model includes a light source; and
the light source is controlled to emit light based on the luminosity information.
11. An interaction method of playing an interactive toy,
50 comprising:
- providing a toy environmental body (14), and a
toy body (10) for being placed in the environmental body and including at least one sensor
55 (12) and including at least one of the following effect elements: a vibration motor (24), a light source (25), a buzzer (26), and a speaker (27);
- collecting, by the at least one sensor (12), at
least one toy environmental physical factor,
wherein the at least one sensor (12) includes a
vibration sensor, the vibration sensor collects vibration information generated by shaking or
breaking of the toy environmental body (14);
controlling the toy body to change based on the
at least one toy environmental physical factor,
wherein in response to the vibration information
collected by the vibration sensor, the vibration
motor (24), the light source (25), the buzzer (26),
and/or the speaker (27) is triggered to vibrate,
emit light, and/or sound; and
changing the toy environmental body in response to the change of the toy body.
12. The method according to claim 11, wherein
- the at least one sensor (12) further includes at
least one of a light sensor, a temperature sensor,
a resistive sensor, an inductive sensor, a capacitive sensor, a piezoelectric sensor, a magnetoelectric sensor, an ultrasonic sensor, a thermal sensor, a moisture sensor, a gas sensor, a vacuum sensor, or a biosensor; and
the at least one toy environmental physical factor includes at least one of pressure information, a displacement, a luminosity, or a temperature.
13. The method according to claim 12, wherein the at
least one sensor includes:
a first sensor configured to collect vibration information;
a second sensor configured to collect light information;
a third sensor configured to collect temperature information;
a fourth sensor configured to collect resistance change information;
a fifth sensor configured to collect inductance change information;
a sixth sensor configured to collect capacitance change information;
a seventh sensor configured to collect piezoelectric information;
an eighth sensor configured to collect electromagnetic induction information;
a ninth sensor configured to collect ultrasonic information;
a tenth sensor configured to collect thermal information;
an eleventh sensor configured to collect humidity information;
a twelfth sensor configured to collect at least one of gas concentration information, or gas composition information;
a thirteen sensor configured to collect air pres-

sure information; or
a fourteenth sensor configured to collect biological substance information.

14. The method according to claim 13, wherein

the toy body (10) further includes a circuit (28), wherein
the at least one sensor (12) transmits the at least one toy environmental physical factor to the circuit (28), and
the circuit (28) controls the effect element to operate based on the at least one toy environmental physical factor.

15. The method according to claim 11, wherein the toy environmental body (14) is made at least one of particles, powder, paper, liquid, gas, foam, or a sticky substance.

Patentansprüche

1. Interaktives Spielzeug, umfassend:

einen Spielzeug-Umgebungskörper (14); und
einen Spielzeugkörper (10) zum Platzieren im Umgebungskörper, der mindestens einen Sensor (12) zum Erfassen mindestens eines physikalischen Spielzeug-Umgebungsfaktors beinhaltet, wobei
der Spielzeugkörper (10) gesteuert wird, um sich basierend auf dem mindestens einen physikalischen Spielzeug-Umgebungsfaktor zu ändern, und
der Spielzeug-Umgebungskörper (14) dazu konfiguriert ist, sich als Reaktion auf die Änderung des Spielzeugkörpers (10) zu ändern,
dadurch gekennzeichnet, dass
der mindestens eine Sensor (12) einen Vibrationssensor beinhaltet, wobei der Vibrationssensor dazu konfiguriert ist, Vibrationsinformationen zu erfassen, die durch Schütteln oder Brechen des Spielzeug-Umgebungskörpers (14) erzeugt werden, und
der Spielzeugkörper (10) mindestens eines der folgenden Effektelemente beinhaltet: einen Vibrationsmotor (24), eine Lichtquelle (25), einen Summer (26) und einen Lautsprecher (27);
als Reaktion auf die vom Vibrationssensor erfassten Vibrationsinformationen der Vibrationsmotor (24), die Lichtquelle (25), der Summer (26) und/oder der Lautsprecher (27) dazu konfiguriert sind, zum Vibrieren, zum Aussenden von Licht und/oder zum Aussenden von Ton aktiviert zu werden.

2. Interaktives Spielzeug nach Anspruch 1, wobei

der mindestens eine Sensor (12) ferner mindestens einen von einem Lichtsensor, einem Temperatursensor, einem Widerstandssensor, einem induktiven Sensor, einem kapazitiven Sensor, einem piezoelektrischen Sensor, einem magnetoelektrischen Sensor, einem Ultraschallsensor, einem thermischen Sensor, einem Feuchtigkeitssensor, einem Gassensor, einem Vakuumsensor oder einem Biosensor beinhaltet; und
der mindestens eine physikalische Spielzeug-Umgebungsfaktor mindestens eine von Druckinformationen, einer Verlagerung, einer Helligkeit oder einer Temperatur beinhaltet.

3. Interaktives Spielzeug nach Anspruch 2, wobei der mindestens eine Sensor beinhaltet:
einen ersten Sensor, der dazu konfiguriert ist, Vibrationsinformationen zu erfassen;

einen zweiten Sensor, der dazu konfiguriert ist, Lichtinformationen zu erfassen;
einen dritten Sensor, der dazu konfiguriert ist, Temperaturinformationen zu erfassen;
einen vierten Sensor, der dazu konfiguriert ist, Informationen zu Widerstandsänderungen zu erfassen;
einen fünften Sensor, der dazu konfiguriert ist, Informationen zu Induktivitätsänderungen zu erfassen;
einen sechsten Sensor, der dazu konfiguriert ist, Informationen zur Kapazitätsänderungen zu erfassen;
einen siebten Sensor, der dazu konfiguriert ist, piezoelektrische Informationen zu erfassen;
einen achten Sensor, der dazu konfiguriert ist, Informationen zur elektromagnetischen Induktion zu erfassen;
einen neunten Sensor, der dazu konfiguriert ist, Ultraschallinformationen zu erfassen;
einen zehnten Sensor, der dazu konfiguriert ist, thermische Informationen zu erfassen;
einen elften Sensor, der dazu konfiguriert ist, Feuchtigkeitsinformationen zu erfassen;
einen zwölften Sensor, der dazu konfiguriert ist, mindestens eine von Gaskonzentrationsinformationen oder Gaszusammensetzungsinformationen zu erfassen;
einen dreizehnten Sensor, der dazu konfiguriert ist, Luftdruckinformationen zu erfassen; oder
einen vierzehnten Sensor, der dazu konfiguriert ist, Informationen über biologische Substanzen zu erfassen.

4. Interaktives Spielzeug nach Anspruch 3, wobei

der Spielzeugkörper (10) ferner eine Schaltung (28) beinhaltet, wobei

- der mindestens eine Sensor (12) den mindestens einen physikalischen Spielzeug-Umfangsfaktor an die Schaltung (28) überträgt, und
die Schaltung das Effektelement so steuert (28), dass es basierend auf dem mindestens einen physikalischen Spielzeug-Umfangsfaktor arbeitet.
- 5.** Interaktives Spielzeug nach Anspruch 4, wobei
- das Spielzeug ferner mindestens eine in der Schaltung angeordnete Schaltvorrichtung beinhaltet, um das interaktive Spielzeug zu steuern, das in einem ausgeschalteten Zustand verbleibt; und
das Entfernen der Schaltvorrichtung aus der Schaltung das interaktive Spielzeug in einen Einschaltzustand aktiviert.
- 6.** Interaktives Spielzeug nach Anspruch 1, wobei der Spielzeug-Umfangskörper (14) aus mindestens einem von Partikeln, Pulver, Papier, Flüssigkeit, Gas, Schaum oder einer klebrigen Substanz besteht.
- 7.** Interaktives Spielzeug nach Anspruch 1, wobei
- das interaktive Spielzeug ferner mindestens eines von einem Spielzeugkörper-Grabwerkzeug oder einem Spielzeug-Peripheriewerkzeug beinhaltet;
das Spielzeugkörper-Grabwerkzeug mindestens einen von einem Spielzeughammer oder einer Spielzeughürste beinhaltet; und
das Spielzeug-Peripheriewerkzeug eine Farbe zum Bemalen des Spielzeugkörpers beinhaltet.
- 8.** Interaktives Spielzeug nach Anspruch 1, wobei
- der Spielzeugkörper ein Tiermodell ist; und
das Tiermodell einen Vibrationsmotor (24) beinhaltet, der dazu konfiguriert ist, basierend auf vom Vibrationssensor (12) erfassten Vibrationsinformationen zu vibrieren.
- 9.** Interaktives Spielzeug nach Anspruch 8, wobei der Spielzeug-Umfangskörper (14) ein Blockmaterial ist, das mindestens aus einem von Gips oder Sand gebildet ist.
- 10.** Interaktives Spielzeug nach Anspruch 9, wobei
- der mindestens eine Sensor (12) ferner einen Lichtsensor beinhaltet, der dazu konfiguriert ist, Helligkeitsinformationen zu erfassen; und
das Tiermodell eine Lichtquelle beinhaltet; und
- die Lichtquelle basierend auf den Helligkeitsinformationen so gesteuert wird, dass sie Licht aussendet.
- 11.** Interaktionsverfahren zum Spielen eines interaktiven Spielzeugs, umfassend:
- Bereitstellen eines Spielzeug-Umfangskörpers (14) und eines Spielzeugkörpers (10) zum Platzieren in dem Umfangskörper, der mindestens einen Sensor (12) beinhaltet und mindestens eines der folgenden Effektelemente beinhaltet: einen Vibrationsmotor (24), eine Lichtquelle (25), einen Summer (26) und einen Lautsprecher (27);
Erfassen von mindestens einem physikalischen Spielzeug-Umfangsfaktor durch den mindestens einen Sensor (12), wobei der mindestens eine Sensor (12) einen Vibrationssensor beinhaltet, wobei der Vibrationssensor Vibrationsinformationen erfasst, die durch Schütteln oder Brechen des Spielzeug-Umfangskörpers (14) erzeugt werden;
Steuern des Spielzeugkörpers, um sich basierend auf dem mindestens einen physikalischen Spielzeug-Umfangsfaktor zu ändern, wobei als Reaktion auf die vom Vibrationssensor erfassten Vibrationsinformationen der Vibrationsmotor (24), die Lichtquelle (25), der Summer (26) und/oder der Lautsprecher (27) zum Vibrieren, zum Aussenden von Licht und/oder zum Aussenden von Ton aktiviert werden; und
Ändern des Spielzeug-Umfangskörpers als Reaktion auf die Änderung des Spielzeugkörpers.
- 12.** Verfahren nach Anspruch 11, wobei
- der mindestens eine Sensor (12) ferner mindestens einen von einem Lichtsensor, einem Temperatursensor, einem Widerstandssensor, einem induktiven Sensor, einem kapazitiven Sensor, einem piezoelektrischen Sensor, einem magnetoelektrischen Sensor, einem Ultraschallsensor, einem thermischen Sensor, einem Feuchtigkeitssensor, einem Gassensor, einem Vakuumsensor oder einem Biosensor beinhaltet; und
der mindestens eine physikalische Spielzeug-Umfangsfaktor mindestens eine von Druckinformationen, einer Verlagerung, einer Helligkeit oder einer Temperatur beinhaltet.
- 13.** Verfahren nach Anspruch 12, wobei der mindestens eine Sensor beinhaltet:
- einen ersten Sensor, der dazu konfiguriert ist,

- Vibrationsinformationen zu erfassen;
einen zweiten Sensor, der dazu konfiguriert ist,
Lichtinformationen zu erfassen;
einen dritten Sensor, der dazu konfiguriert ist,
Temperaturinformationen zu erfassen; 5
einen vierten Sensor, der dazu konfiguriert ist
Informationen zu Widerstandsänderungen zu
erfassen;
einen fünften Sensor, der dazu konfiguriert ist, 10
Informationen zu Induktivitätsänderungen zu er-
fassen;
einen sechsten Sensor, der dazu konfiguriert ist
Informationen zur Kapazitätsänderungen zu er-
fassen;
einen siebten Sensor, der dazu konfiguriert ist, 15
piezoelektrische Informationen zu erfassen;
einen achten Sensor, der dazu konfiguriert ist,
Informationen zur elektromagnetischen Indukti-
on zu erfassen;
einen neunten Sensor, der dazu konfiguriert ist 20
Ultraschallinformationen zu erfassen;
einen zehnten Sensor, der dazu konfiguriert ist,
thermische Informationen zu erfassen;
einen elften Sensor, der dazu konfiguriert ist, 25
Feuchtigkeitsinformationen zu erfassen;
einen zwölften Sensor, der dazu konfiguriert ist,
mindestens eine von Gaskonzentrationsinfor-
mationen oder Gaszusammensetzungsinfor-
mationen zu erfassen;
einen dreizehnten Sensor, der dazu konfiguriert 30
ist, Luftdruckinformationen zu erfassen; oder ei-
nen vierzehnten Sensor, der dazu konfiguriert
ist, Informationen über biologische Substanzen
zu erfassen. 35
- 14.** Verfahren nach Anspruch 13, wobei
- der Spielzeugkörper (10) ferner eine Schaltung
(28) beinhaltet, wobei
der mindestens eine Sensor (12) den mindes- 40
tens einen physikalischen Spielzeug-Umge-
bungsfaktor an die Schaltung (28) überträgt,
und
die Schaltung (28) das Effektelement so steuert,
dass es basierend auf dem mindestens einen 45
physikalischen Spielzeug-Umgebungsfaktor ar-
beitet.
- 15.** Verfahren nach Anspruch 11, wobei der Spielzeug-
Umgebungskörper (14) aus mindestens einem von 50
Partikeln, Pulver, Papier, Flüssigkeit, Gas, Schaum
oder einer klebrigen Substanz besteht.
- Revendications** 55
- 1.** Jouet interactif, comprenant :
- un corps environnemental de jouet (14) ; et
un corps de jouet (10) destiné à être placé dans
le corps environnemental, comprenant au moins
un capteur (12) pour collecter au moins un fac-
teur physique environnemental du jouet, dans
lequel
le corps de jouet (10) est commandé pour chan-
ger sur la base de l'au moins un facteur physique
environnemental du jouet, et
le corps environnemental de jouet (14) est con-
figuré pour changer en réponse au changement
du corps de jouet (10),
caractérisé en ce que
l'au moins un capteur (12) comprend un capteur
de vibration, le capteur de vibration est configuré
pour collecter des informations de vibration gé-
nérées par le secouage ou la rupture du corps
environnemental de jouet (14), et
le corps de jouet (10) comprend au moins l'un
des éléments d'effet suivants : un moteur de vi-
bration (24), une source de lumière (25), un buz-
zer (26) et un haut-parleur (27) ;
en réponse aux informations de vibration collec-
tées par le capteur de vibration, le moteur de
vibration (24), la source de lumière (25), le buz-
zer (26) et/ou le haut-parleur (27) sont configu-
rés pour être déclenchés pour vibrer, émettre
de la lumière, et/ou du son.
- 2.** Jouet interactif selon la revendication 1, dans lequel
- l'au moins un capteur (12) comprend en outre
au moins l'un parmi un capteur de lumière, un
capteur de température, un capteur résistif, un
capteur inductif, un capteur capacitif, un capteur
piézoélectrique, un capteur magnétoélectrique,
un capteur à ultrasons, un capteur thermique,
un capteur d'humidité, un capteur de gaz, un
capteur de vide ou un biocapteur ; et
l'au moins un facteur physique environnemental
du jouet comprend au moins l'un parmi une in-
formation de pression, un déplacement, une lu-
minosité ou une température.
- 3.** Jouet interactif selon la revendication 2, dans lequel
l'au moins un capteur comprend : un premier capteur
configuré pour collecter des informations de
vibration ;
- un deuxième capteur configuré pour collecter
des informations de lumière ;
un troisième capteur configuré pour collecter
des informations de température ;
un quatrième capteur configuré pour collecter
des informations de changement de résistance ;
un cinquième capteur configuré pour collecter
des informations de changement d'inductance ;
un sixième capteur configuré pour collecter des

- informations de changement de capacité ;
 un septième capteur configuré pour collecter des informations piézoélectriques ;
 un huitième capteur configuré pour collecter des informations d'induction électromagnétique ;
 un neuvième capteur configuré pour collecter des informations ultrasonores ;
 un dixième capteur configuré pour collecter des informations thermiques ;
 un onzième capteur configuré pour collecter des informations d'humidité ;
 un douzième capteur configuré pour collecter au moins l'une parmi des informations sur la concentration de gaz ou des informations sur la composition du gaz ;
 un treizième capteur configuré pour collecter des informations sur la pression atmosphérique ; ou
 un quatorzième capteur configuré pour collecter des informations sur une substance biologique.
4. Jouet interactif selon la revendication 3, dans lequel
- le corps de jouet (10) comprend en outre un circuit (28), dans lequel
 l'au moins un capteur (12) transmet l'au moins un facteur physique environnemental du jouet au circuit (28), et
 le circuit commande (28) le fonctionnement de l'élément à effet sur la base de l'au moins un facteur physique environnemental du jouet.
5. Jouet interactif selon la revendication 4, dans lequel
- le jouet comprend en outre au moins un dispositif de commutation disposé dans le circuit pour commander le jouet interactif restant dans un état hors tension ; et
 le retrait du dispositif de commutation du circuit déclenche le passage du jouet interactif à un état de mise sous tension.
6. Jouet interactif selon la revendication 1, dans lequel le corps environnemental de jouet (14) est constitué d'au moins un élément parmi des particules, une poudre, du papier, un liquide, un gaz, une mousse ou une substance collante.
7. Jouet interactif selon la revendication 1, dans lequel
- le jouet interactif comprend en outre au moins l'un parmi un outil pour creuser le corps de jouet ou d'un outil périphérique de jouet ;
 l'outil pour creuser le corps de jouet comprend au moins l'un d'un marteau jouet ou d'une brosse jouet ; et
 l'outil périphérique de jouet comprend une peinture pour peindre le corps de jouet.
8. Jouet interactif selon la revendication 1, dans lequel :
- le corps de jouet est un modèle animal ;
 et
 le modèle animal comprend un moteur de vibration (24) configuré pour vibrer sur la base des informations de vibration collectées par le capteur de vibrations (12).
9. Jouet interactif selon la revendication 8, dans lequel le corps environnemental de jouet (14) est un matériau en bloc formé d'au moins l'un du gypse ou du sable.
10. Jouet interactif selon la revendication 9, dans lequel
- l'au moins un capteur (12) comprend en outre un capteur de lumière configuré pour collecter des informations de luminosité ;
 le modèle animal comprend une source de lumière ; et
 la source de lumière est commandée pour émettre de la lumière sur la base des informations de luminosité.
11. Procédé d'interaction pour jouer à un jouet interactif, comprenant :
- la fourniture d'un corps environnemental de jouet (14), et d'un corps de jouet (10) destiné à être placé dans le corps environnemental et comprenant au moins un capteur (12) et comprenant au moins l'un des éléments d'effet suivants : un moteur de vibration (24), une source de lumière (25), un buzzer (26) et un haut-parleur (27) ;
 la collecte, par l'au moins un capteur (12), d'au moins un facteur physique environnemental du jouet, dans lequel l'au moins un capteur (12) comprenant un capteur de vibration, le capteur de vibration collecte des informations de vibration générées par le secouage ou la rupture du corps environnemental du jouet (14) ;
 la commande au corps de jouet de changer sur la base de l'au moins un facteur physique environnemental du jouet, dans lequel en réponse aux informations de vibration collectées par le capteur de vibration, le moteur de vibration (24), la source de lumière (25), le buzzer (26) et/ou le haut-parleur (27) sont déclenchés pour vibrer, émettre de la lumière, et/ou du son ; et
 le changement du corps environnemental du jouet en réponse au changement du corps du jouet.
12. Procédé selon la revendication 11, dans lequel
- l'au moins un capteur (12) comprend en outre

au moins l'un parmi un capteur de lumière, un capteur de température, un capteur résistif, un capteur inductif, un capteur capacitif, un capteur piézoélectrique, un capteur magnétoélectrique, un capteur à ultrasons, un capteur thermique, un capteur d'humidité, un capteur de gaz, un capteur de vide ou un biocapteur ; et l'au moins un facteur physique environnemental du jouet comprend au moins l'un parmi une information de pression, un déplacement, une luminosité ou une température.

13. Procédé selon la revendication 12, dans lequel l'au moins un capteur comprend :

un premier capteur configuré pour collecter des informations de vibration ;
 un deuxième capteur configuré pour collecter des informations de lumière ;
 un troisième capteur configuré pour collecter des informations de température ;
 un quatrième capteur configuré pour collecter des informations de changement de résistance ;
 un cinquième capteur configuré pour collecter des informations de changement d'inductance ;
 un sixième capteur configuré pour collecter des informations de changement de capacité ;
 un septième capteur configuré pour collecter des informations piézoélectriques ;
 un huitième capteur configuré pour collecter des informations d'induction électromagnétique ;
 un neuvième capteur configuré pour collecter des informations ultrasonores ;
 un dixième capteur configuré pour collecter des informations thermiques ;
 un onzième capteur configuré pour collecter des informations d'humidité ;
 un douzième capteur configuré pour collecter au moins l'une parmi des informations sur la concentration de gaz ou des informations sur la composition du gaz ;
 un treizième capteur configuré pour collecter des informations de pression atmosphérique ;
 ou
 un quatorzième capteur configuré pour collecter des informations sur une substance biologique.

14. Procédé selon la revendication 13, dans lequel

le corps de jouet (10) comprend en outre un circuit (28), dans lequel l'au moins un capteur (12) transmet l'au moins un facteur physique environnemental du jouet au circuit (28), et le circuit (28) commande le fonctionnement de l'élément à effet sur la base de l'au moins un facteur physique environnemental du jouet.

15. Procédé selon la revendication 11, dans lequel le corps environnemental de jouet (14) est constitué d'au moins un élément parmi des particules, une poudre, du papier, un liquide, un gaz, une mousse ou une substance collante.

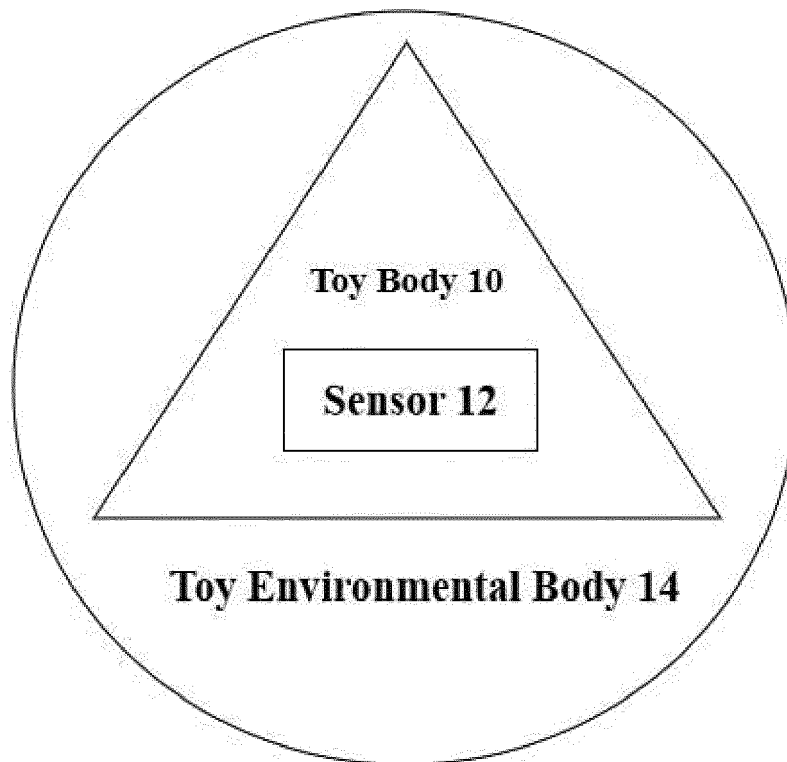


FIG. 1

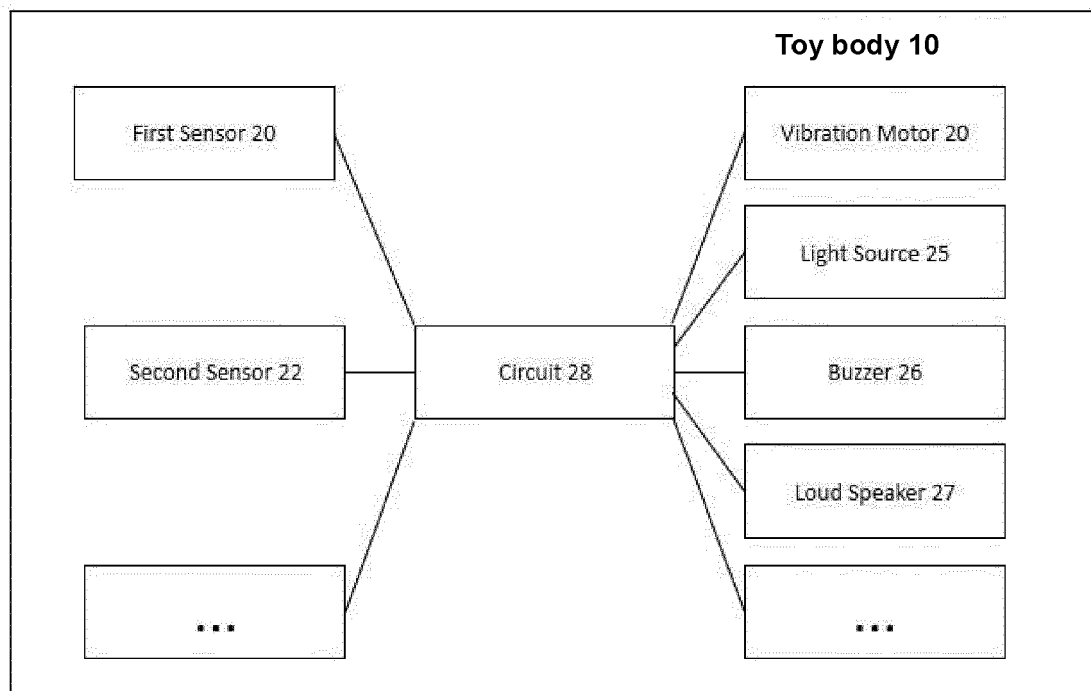


FIG. 2

REFERENCES CITED IN THE DESCRIPTION

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