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🔄 Toy unit.

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Description

Background of the Invention

Field of the Invention

The present invention relates to a toy unit comprising a movable toy such as a vehicle, an air plane, a top or the like driven by a power generating means.

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Description of the Prior Art

There has conventionally been an example of a bicycle with a rear wheel driven by a track belt (Japanese Utility Model No. 58-86192).

The example is a motor-bike 01 with a doll 02 riding on it as shown in Fig. 23, and its rear wheel 01b serves also as a fly wheel and has a pinion as an integral portion thereof.

When a separate rack belt 03 is inserted along a side frame 04 as shown in Fig. 23, teeth of the rack belt 03 is held in mesh with teeth of the pinion.

When the rack belt 03 is pulled strongly after it has been inserted into the side frame 04 until the rear end of the rack belt 3 reaches the side frame 04, the rear wheel 1b, serving also as the fly wheel, rotates at a high speed. Thus, when the motor-bike 01 is placed on a floor, it is traveled by the rotation of the rear wheel 1b.

Further, with the example, the rack belt 03 is curved to a ring shape after it has been inserted into the side frame 04 to lock the end portion to an extreme end so that the motor-bike 01 can be hangingly held.

In the case of the aforesaid prior art, since one of hands pressingly holds the motor-bike 01 itself and the other hand pulls the rack belt 03 vigorously, an excessive force is applied to a body of the motor-bike 01.

Therefore, excessive stress may be exerted on a part of the motor-bike 01 depending on a place where the motor-bike is held or a direction in which the rack belt 03 is pulled, which causes damage of the motor-bike 01.

The motor-bike 01 is place on the floor after the rear wheel 01b has been rotated; however, the motor-bike 01 may not travel stably and fall down at once or lose a rotational force of the rear wheel 01 at a time with only a short distance of traveling, when a posture of the motor-bike 01 to be placed on the floor and a timing to release the hand are not good.

In addition, although the motor-bike 01 is conveniently carried by that the rack-belt 03 is made to a ring shape after it has been inserted into the side frame 04, there has often been possibility that the motor-bike 01 strikes against an object or is caught by it because it is in an exposed state.

FR-A-2549382 discloses a toy vehicle having an electric motor for driving the rear wheels of the vehicle. The motor is driven by batteries provided in a stand. The motor is supported on a pivoting cradle and is moveable into a launch position from which the vehicle is released.

US-A-4,087,935 discloses a toy vehicle having an inertia motor operably connected to a drive gear, the periphery of which extends partially below the surface of the vehicle. A housing is provided with a rack which can be depressed to operate a pinion carrying an enlarged diameter drum having one end of a strap secured thereto for winding around the drum. The housing has a support for the vehicle, the support having a rotably mounted hollow shaft having a power gear for engaging the drive gear. The power gear has a coil spring wound about a rod and the outer end of the shaft is shaped to provide a small diameter drum having the other end of the strap secured to it. The vehicle is restrained so that depression of the rack causes the power gear to engage the drive gear, the motor to be energised and the vehicle to be caused to leave the housing.

It is an object of the present invention made in consideration of the aforesaid problems to provide a toy unit comprising a movable toy on which no excessive force is exerted to permit it to make a stable movement at all times and which is engaged with a flat case to form a card shape and convenient for carrying.

In other words, the toy unit according to the present invention comprises: a moveable toy; a generally rectangular case thin relative to its length and breadth and having a cavity shaped to removeably receive and retain the toy substantially within the volume of the case; a power generating means for applying power to the toy; and a support within the case for supporting the toy for propulsion.

The toy unit according to the present invention is characterised in that the cavity conforms generally to the configuration of the toy; in that the toy is manually propelled by the power generating means which comprises a rack which, in use, cooperates with a pinion on the toy; in that the rack comprises a handle and an elongate rack belt contiguous with the handle, the case having an edge portion shaped to receive, when the rack is not in use, the rack handle and an internal channel to receive the rack belt; and in that the said shaped edge portion of the case is adapted to provide the support.

Since the toy case is provided with the support means, and the moveable toy is supported by the support means and powered by the power generat-

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ing means to start movement, effective power is applied to the moveable toy and then there is no possibility that the moveable toy is damaged by an unnatural force exerted thereon.

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Since the moveable toy starts movement from a state that it is supported by the toy case, it can move stably at all times.

Further, since the movable toy is engaged with the toy case to form a card shape as a whole, it is conveniently carried and since there are no projections thereon, it is solidly protected without being caught by an object.

Brief Description of the Drawings

Fig. 1 is an overall perspective view of a toy motor-bike of a first embodiment according to the present invention;

Fig. 2 is a diagram of the outside surface of an upper case of a card case for the toy motorbike.

Fig. 3 is a diagram of the inside surface of the upper case;

Fig. 4 is a diagram of the outside surface of a lower case of the card case;

Fig. 5 is a diagram of the inside surface of the lower case;

Fig. 6 is a top view of the toy motor-bike;

Fig. 7 is a side view of the toy motor-bike;

Fig. 8 is an exploded perspective view of the card case;

Fig. 9 is a perspective view illustrative of a state of the toy motor-bike supported by the card case with a power rack inserted therethrough;

Fig. 10 is a side view of the state, partly in cross section.

Fig. 11 is a front view of the state, partly in cross section;

Detailed Description of the Preferred Embodiments

A first embodiment according to the present invention will be described below with reference to Fig. 1 - Fig. 11.

The first embodiment provides a toy motorbike unit comprising a motor-bike as a movable toy. Fig. 1 is a perspective view illustrative of the state of the toy motor-bike 2 set into a card case 1 as a card-shaped toy case with a power rack 3 as a power generating device engaged therewith.

The card case 1 is as large as a name card having a size of 6 cm long, 9 cm wide and 1.2 cm thick, which is of a size and configuration to be fitly housed in a palm. The card case 1 is such that the toy motor-bike 2 and the power rack 3 is completely accommodated in it the with no parts projecting therefrom to facilitate carrying.

The toy motor-bike 2 set into the card case 1 can

be easily removed and the power rack 3 can also be removed easily by being pulled out in the direction indicated by an arrow (refer to two-dotand-dash line in Fig. 1).

The card case 1 comprises an upper case and a lower case divided into two portions. Figs. 2 and 3 show diagrams of the outside surface and the inside surface of the the upper case 10 and Figs 4 and 5 show diagrams of the outside surface and the inside surface of the lower case 18.

The upper case 10 is of a box shape having a tapered side wall 12 along the four sides of an upper wall 11 and a large partition 13 substantially profiling the toy motor-bike and standing in the upper wall 11 at the center thereof.

The side walls 12 are depressed inwardly to have a shape along a holding portion 3a of the power rack 3 at the upper right corner of the upper case 10, a substantially U-shaped support wall 14 is defined below the depressed portion and one side thereof is opened.

A cutout 15 is defined at a portion a little inward of the opening of the support wall 14.

As shown in Fig. 3, two guide walls 16 are defined around the partition 14 on the inside surface of the upper case 10. The guide walls 16 are disposed from the support wall 14 around the partition 13 along three tapered side walls 12 with its corner portion curved to an arc shape.

Four cylindrical screw holes 17 are defined through three corners and the support wall 14 in the inside wall.

On the other hand, the lower case 18 has a tapered side wall 20 defined along the four sides of a bottom wall 19 and a U-shaped support wall 21 defined at the corner corresponding to the support wall 14 of the upper case 10 as shown in Fig. 11, the support wall 21 being a little expanded from a surface and confronting with the support wall 14. The lower case 18 also has a cutout 22 directed from a location a little nearer to an opening as compared with the location of the support wall 21 to which the cutout 15 defined in the support wall 14 corresponds toward the opening.

A hole 23 is defined through the bottom wall 19 at a location a little dislocated to a lower left direction from the center of the bottom wall 19.

A projection 24 is defined on the inside wall of the lower case 18 in correspondence with the two guide walls 16 of the upper case 10 in such a manner that it is interposed therebetween and a pair of holding pieces 25 stand at the center of the inside surface in substantial confrontation.

Round holes 26 are defined in correspondence with the screw holes 17.

As shown in Figs 6 and 7, the toy motor-bike 2 has a front wheel 31 and a rear wheel 32 pivotally supported at the front and the back of a flat body

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30, a pinion gear 33 is integrally disposed at the right side surface of the rear wheel 32 and a shaft passing through the rear wheel 32 and the pinion gear 33 is supported by bearing members 34 at opposite sides.

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In addition, a vertical width of the bearing members 34 in Fig. 7 is substantially equal to the width between the support walls 14 and 21 in confrontation of the upper case 10 and the lower case 18 when the upper case 10 is placed over the lower case 18, as shown in Fig. 11.

A support bar 36 projecting inwardly is disposed at the rear end of the inside surface of a side frame 35 for supporting the bearing member 34 on the right side to support the power rack 3 to be meshed with the pinion 33.

Right and left handles 37 supported by the body at their base ends can be opened and closed as shown in Fig. 6.

As shown in Fig. 1, the rack 3 comprises the flat and rectangular holding portion 3a with a round hole defined at the center and a long rack belt 3b extending from the holding portion 3a, the rack belt 3b being flexible and having teeth defined on its one side.

Fig. 8 is an exploded perspective view of the card case comprising the aforesaid members, wherein when the upper case 10 is placed over the lower case 18 and screws are passed through the round holes 26 and the screw holes 17 from the lower side for threading, the lower projection 24 is engaged a little between the two upper guide walls 16 to form a guide pipe as well as the partition 13 of the upper case 10 and the bottom wall 19 of the lower case 18 form an engaging section into which the toy motor-bike 2 is set. The holding pieces 25 stand in the engaging portion in the state that they are set into the cutouts 13a of the partition 13.

The upper and lower substantially U-shaped support walls 14, 21 confronting each other form a setting portion with one side opened and the upper portion of the upper support wall 14 is cut out to permit the holding portion 3a of the rack 3 to be set thereinto.

Therefore, the toy motor-bike 2 is set into the engaging section surrounded by the partition 13 and the body 30 is gripped by a pair of the holding pieces.

When the rack belt 3b of the rack 3 is inserted into the guide pipe formed by the guide walls 16 and the projection 24 from the side of the support wall 14, the rack belt 3b goes on along the guide pipe, and when the holding portion 3a is engaged with the cutout on the support 14 finally, a piece of card is formed as shown in Fig. 1.

The toy motor-bike 2 can be taken out from the card case 1 by pushing out the toy motor-bike 2 with a finger applied to the hole 23 defined through

the bottom wall 19 of the lower case 18, and the power rack 3 can be pulled out as it is by holding the holding portion 3a in the direction shown by the arrow, as shown in Fig. 1.

As shown in Fig. 9, when the toy motor-bike 2 thus taken out is placed vertically on the card case 1 and the rear wheel 32 is inserted into the support walls 14, 21 through their openings, the bearing members 34 on the right and left sides of the rear wheel 32 are inserted between the upper and lower support walls 14, 21 so that the body 30 is supported by the card case 1 through the bearing members 34 (refer to Fig. 11).

When the extreme end of the rack belt 3b of the power rack 3 is inserted and passed through the cutout 15 defined to the support wall 14 and the cutout 22 defined to the support wall 21 from the upper side, a flat side of the rack belt 3b is supported by the support bar 36 projecting from the side frame 35 of the toy motor-bike 2 and the teeth of the rack formed on the other side of the rack belt 3b is meshed with the pinion gear 33 integrally disposed at the rear wheel (refer to Figs. 9 - 11).

Thus, the power rack 3 is inserted in the vicinity of the holding portion 3a, the card case 1 is held by one hand and the rear wheel 32 is approached to a floor to complete the preparation for a start. Next, when the grip portion 3a of the power rack 3 is held by another hand and pulled vigorously obliquely upwardly, the rear wheel 32 serving also as a fly wheel is rotated at a high speed through the rack and the pinion gear 33.

When the rear wheel 32 is brought into contact with the floor surface at a suitable timing, the toy motor-bike 2 starts traveling.

With such a toy motor-bike 2, power is applied thereto by pulling the power rack 3 in the state that the toy motor-bike 2 is held by the card case 1 without being held directly and the card case 1 is held by one hand so that the power is effectively applied to the motor-bike 2 and no unnatural power is applied thereto to prevent damage.

Further, since the toy motor-bike 2 is made to start in the state that it is held by the card case 1, it can start stably at all times and its traveling direction can be set fairly accurately.

Furthermore, since the card case 1 accommodating the toy motor-bike 2 and the power rack 3 makes a card shape, which is convenient for carrying and since there are almost no projected portions on the card case 1, it is not caught by an object and even if the card case 1 dropped, it protects the toy motor-bike 2 from being damaged.

According to the present invention, since power is applied to a movable toy in the state that it is supported in a toy case, the toy can make stable movement at all times and no unnatural force is

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applied to the movable toy itself so that there is no possibility that the movable toy is damaged.

Since the movable toy starts movement from the state that it is supported by a support means of a toy case, it can move stable at all times, anyone can handle the toy easily and it is not necessary to learn how to operate it for playing a game.

Since the movable toy is engaged with a toy case to be made to a card shape as a whole, it fits to a palm and is very convenient for carrying.

Since the movable toy is engaged with the toy case to be protected securely when it is carried, the movable toy is prevented from being damaged when it strikes against an object or it is dropped. In addition, since there is no projection on the card case, it is not damaged by being caught by an object.

Claims

- 1. A toy unit comprising: a moveable toy (2); a generally rectangular case (1) thin relative to its length and breadth and having a cavity shaped to removeably receive and retain the tov substantially within the volume of the case: 25 a power generating means (3) for applying power to the toy; a support (14,21) within the case for supporting the toy for propulsion characterised in that: the cavity conforms generally to the configuration of the toy; in that the 30 toy is manually propelled by the power generating means which comprises a rack (3) which, in use, cooperates with a pinion (33) on the toy; in that the rack (3) comprises a handle (3a) and an elongate rack belt (3b) contiguous 35 with the handle, the case having an edge portion (14) shaped to receive, when the rack is not in use, the rack handle (3a) and an internal channel (16) to receive the rack belt; and in that the said shaped edge portion (14) of the 40 case (1) is adapted to provide the support (14,21).
- 2. A toy unit according to claim 1 in which the said edge portion (14) of the case shaped to receive the rack handle (3a) is at the corner of the rectangle.
- **3.** A toy unit according to claim 1 or 2 in which a component of the toy (2) can be moved between an operating position and a packing position, the thickness of the toy in the packing position being reduced compared to that in the operating position so that the toy, when in the cavity in the case (1), is flush with or below the ssurface of the case.

4. A toy unit according to claim 3 in which the toy is a motor-bike (2) comprising, as said component, a set of handlebars (37) which are moveable between the operating position and the packing position.

Patentansprüche

- Spielzeug-Einheit, mit einem bewegbaren 1. Spielzeug (2), einem im wesentlichen rechtekkigen Kasten (1), der in bezug auf seine Länge und Breite flach ist und einen Hohlraum aufweist, der so gestaltet ist, daß er das Spielzeug im Kastenvolumen wegnehmbar aufnimmt und festhält, einer Antrieberzeugungsvorrichtung (3) für das Antreiben des Spielzeugs, einer Unterlage (14, 21) im Kasten zum Abstützen des Spielzeugs beim Antreiben, dadurch gekennzeichnet, daß der Hohlraum speziell an die Konfiguration des Spielzeugs angepaßt ist, das Spielzeug manuell angetrieben wird durch die Antrieberzeugungsvorrichtung, die eine Zahnstange (3) umfaßt, welche im Betrieb mit einem Zahnritzel (33) am Spielzeug zusammenwirkt, die Zahnstange (3) eine Handhabe (3a) und einen sich an die Handhabe anschließenden Zahnriemen (3b) von überwiegender Längserstreckung umfaßt, der Kasten einen Randabschnitt (14), der so gestaltet ist, daß er bei Nichtgebrauch der Zahnstange die zahnstangenhandhabe (3a) aufnimmt, und einen inneren Kanal (16) zur Aufnahme des Zahnriemens aufweist, und daß der in seiner Form angepaßte Randabschnitt (14) des Kastens (1) als die Unterlage (14,21) zu dienen vermag.
 - Spielzeug-Einheit nach Anspruch 1, bei der der genannte, für die Aufnahme der Zahnstangenhandhabe (3a) gestaltete Randabschnitt (14) sich an der Ecke des Rechtecks befindet.
 - 3. Spielzeug-Einheit nach Anspruch 1 oder 2, bei der ein Bauteil des Spielzeugs (2) zwischen einer Spiel- und einer Packstellung verstellt werden kann, wobei die Dicke des Spielzeugs in der Packstellung gegenüber der in der Spielstellung verringert ist, so daß das Spielzeug, wenn im Hohlraum im Kasten (1) befindlich, mit der Oberfläche des Kastens bündig ist oder unter ihr liegt.
 - Spielzeug-Einheit nach Anspruch 3, bei der das Spielzeug ein Motorrad (2) ist mit, als dem genannten Bauteil, einem Satz Lenkstangen (37), der zwischen der Spielstellung und der Packstellung verstellbar ist.

Revendications

- 1. Ensemble formant jouet comportant : un jouet mobile (2), un boîtier généralement rectangulaire (1) relativement mince par rapport à sa 5 longueur et sa largeur et ayant une cavité formée pour recevoir et retenir de manière amovible le jouet à peu près à l'intérieur du volume du boîtier, des moyens formant générateur de puissance (3) pour fournir une puis-10 sance au jouet ; un support (14, 21) situé dans le boîtier pour recevoir le jouet en vue de sa propulsion caractérisé en ce que : la cavité épouse sensiblement la forme du jouet ; en ce que le jouet est propulsé de manière manuelle 15 par les moyens formant générateur de puissance qui comportent une crémaillère (3) qui, en utilisation, coopère avec un pignon (33) situé sur le jouet ; en ce que la crémaillère (3) comporte une poignée (3a) et une bande for-20 mant crémaillère allongée (3b) contiguë à la poignée, le boîtier ayant une partie formant bord (14) conformée pour recevoir, lorsque la crémaillère n'est pas utilisée, la poignée de crémaillère (3a), et un canal intérieur (16) pour 25 recevoir la bande formant crémaillère ; et en ce que ladite partie formant bord (14) du boîtier (1) est adaptée pour fournir le support (14, 21).
- Ensemble formant jouet selon la revendication

 dans lequel ladite partie formant bord (14)
 du boîtier formée pour recevoir la poignée de
 crémaillère (3a) est située dans un angle du
 rectangle.
- Ensemble formant jouet selon la revendication

 u 2, dans lequel un composant du jouet (2)
 peut être déplacé entre une position de fonctionnement et une position de rangement,
 l'épaisseur du jouet dans la position de rangement étant réduite par comparaison avec celle
 de la position de fonctionnement de telle sorte
 que le jouet, lorsqu'il est situé dans la cavité
 située dans le boîtier (1), affleure la surface du
 boîtier ou est situé en-dessous de la surface
 du boîtier.
- Ensemble formant jouet selon le revendication
 dans lequel le jouet est une motocyclette (2)
 comportant, en tant que dit composant, un jeu
 de poignées de direction (37) qui sont mobiles
 entre la position de fonctionnement et la position de rangement.

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FIG.I





FIG.4



FIG.5





FIG.6

FIG.7

















FIG.II