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(54) **A SWING ARM FOR A TOY BUILDING SET.**

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US-A- 3 662 488
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Description

The invention concerns a swing arm for a toy building set and consisting of two parts, the first part of which being adapted to be connected with an object, and the second part being swingably journaled to a holder.

When playing, children often imitate things from real life. When playing with building toys they should have realistic possibilities of building things which have both appearance and operation like things they see in real life.

The present invention provides an element giving the children new possibilities of constructive and functional play.

US-A-3 662 488 discloses a toy vehicle with a telescopically extendable lift mechanism for a dump box mounted tiltably on the vehicle chassis. The lift mechanism is unreleasably mounted on the vehicle and comprises simple linear push rods only.

In the swing arm according to the invention as set out in claim 1, one of its parts has two angularly disposed arms, one of which cooperates with the second part and the other has means on its free end for releasable coupling to an object. The swing arm is thereby suited for use in a toy building set and the coupled object may e.g. be lifted above an edge onto a horizontal face on which the swing arm is hinged.

When, as stated in claim 3, the swing arm is constructed to be movable by cooperation between the holder and the first part of the swing arm, it is obtained in a simple manner that this cooperation can perform the telescopic movement as well as the pivotable movement. This cooperation may expediently take place by a cord drive, as stated in claim 5.

Claim 4 states that the movement of the swing arm takes place by cooperation between the holder and the second part of the arm. The movement is thus a pure pivotable movement.

Claims 5 - 7 separately provide advantageous ways of controlling the movements of the swing arm.

Finally, claim 8 provides for mutual action of forces between the two parts of the swing arm. The elastic force may here be a pull force or a compressive force.

The invention will be described more fully below with reference to the drawing, in which

fig. 1 shows a toy car with a swing arm according to the invention,

fig. 2 is a perspective view of a swing arm according to the invention,

fig. 3 shows a swing arm according to the invention with an embodiment of force transmission, and

fig. 4 shows a swing arm according to the invention with another embodiment of the force transmission.

Fig. 1 shows a swing arm with a first part 1 and a second part 2. The second part of the swing arm is swingably journaled at a hinge 6 to a chassis 3 of a toy car. A pulley 4 with a cord is provided on the chassis, said cord being connected at its outer end with the first part 1 of the swing arm. The first part 1 of the swing arm has a part 7, which is telescopically movable in the second part 2 of the swing arm, and a part 8 forming a right angle with the part 7 and being formed at its free end with a hook 9.

In fig. 3, a cord 31 is connected with the second part of the swing arm, and a tension spring 32 is provided between the cord 31 and the chassis 3. The cord 31 and the tension spring 32 may be replaced by an elastic rubber band. Further, a tension spring 33, which may also be replaced by an elastic rubber band, is provided between the first part 1 of the swing arm and its second part 2.

When the pulley 4 is turned so as to relax the cord 5, the spring 33 draws the part 7 into the part 2, and when the cord is relaxed additionally, the spring 32, via the cord 31, raises the swing arm which will pivot about the hinge 6. In practice, the swing arm can pivot about 180° about the hinge 6, so that the hook 9 assumes a position which is lower than the upper side of the chassis 3, in which position it may be coupled to an object standing on the base. As shown in fig. 1, the object may e.g. be a container 10 to be lifted onto the chassis 3 of the toy car.

When the pull in the cord 5 is again tensioned by means of the pulley 4, the swing arm is pivoted back, and the hook lifts and carries the container 10. After the swing arm has completed its pivotal movement, its first part 1 with the part 7, is pulled telescopically out of the second part 2 by a translatory movement.

It is thus possible to move the container a horizontal distance greater than twice the swing radius of the hook 9 about the hinge 6 in the retracted position of the swing arm. This entails in particular that the container 10 will not be lifted during its movement to the maximum height corresponding to the fully extended position of the swing arm, but only to a height corresponding to its retracted position.

Fig. 4 shows another embodiment of the force transmission between the chassis 3 of the toy car and the swing arm. A cord 41 is here passed through the upper part of the second part 2 of the swing arm and is connected with the part 7 of the first part 1 of the swing arm. Here, the force from a spring 42 is not transferred directly to the second part 2, but to the first part 1, and thus has the

same function as the parts 31, 32 and 33 in fig. 3.

The spring 33 in fig. 3 is here described as being a pull spring. For other uses than the one described here, a compression spring may be used instead of a pull spring.

The part 7 of the first part of the swing arm has a resilient hook 11 near its free end, said hook serving as a snap lock together with an edge 12 on the second part 2 of the swing arm when assembling the first part and the second part. When the parts have been assembled, the hook 11 and the edge 12 serve as end stops so that the two parts of the swing arm remain assembled.

In the shown embodiment the movement of the swing arm takes place by means of a cord drive and spring forces. Alternatively, these movements may be performed by means of stiff shafts, gear-wheels, chain drives or the like.

Claims

1. A swing arm for a toy building set, comprising a first part (1) adapted to be connected with an object (10), as well as a second part (2) swingably journaled to a holder (3), the first part (1) and the second part (2) being adapted to cooperate telescopically with each other, **characterized** in that the first part has two angularly disposed arms, one of which cooperates telescopically with the second part, and the other has means (9) on its free end for releasable coupling to said object (10).
2. A swing arm according to claim 1, **characterized** in that the means (9) for coupling with said object are hook-shaped.
3. A swing arm according to claims 1-2, **characterized** in that it is adapted to move the swing arm by cooperation between the holder (3) and the first part (1).
4. A swing arm according to claims 1-3, **characterized** in that it is adapted to move the swing arm by cooperation between the holder (3) and the second part (2).
5. A swing arm according to claims 3-4, **characterized** in that the cooperation takes place by a cord drive (5, 31, 41).
6. A swing arm according to claims 3-4, **characterized** in that the cooperation takes place by an elastic force (31, 41).
7. A swing arm according to claims 3-4, **characterized** in that the cooperation takes place by substantially stiff mechanical means.
8. A swing arm according to claims 1-7, **characterized** in that its first part and its second part are interconnected by means (33) which exert an elastic force.

Patentansprüche

1. Schwenkarm für einen Spielzeugbausatz, aufweisend einen ersten Teil (1), der zur Verbindung mit einem Gegenstand (10) geeignet ausgebildet ist, und einen zweiten Teil (2), der an einem Halteteil (3) schwenkbar gelagert ist, wobei der erste Teil (1) und der zweite Teil (2) so ausgebildet sind, daß sie miteinander teleskopierend zusammenarbeiten, dadurch gekennzeichnet, daß der erste Teil (2) zweiwinklig zueinander angeordnete Arme aufweist, deren einer teleskopierend mit dem zweiten Teil zusammenarbeitet und deren anderer an seinem freien Ende mit Mitteln (9) zur lösbaren Verbindung mit dem Gegenstand (10) ausgebildet ist.
2. Schwenkarm nach Anspruch 1, dadurch gekennzeichnet, daß die Mittel (9) zur Kupplung mit dem Gegenstand hakenförmig ausgebildet sind.
3. Schwenkarm nach den Ansprüchen 1 - 2, dadurch gekennzeichnet, daß er ausgebildet ist, um den Schwenkarm durch Zusammenwirkung zwischen dem Halteteil (3) und dem ersten Teil (1) zu bewegen.
4. Schwenkarm nach den Ansprüchen 1 - 3, dadurch gekennzeichnet, daß er ausgebildet ist, um den Schwenkarm durch Zusammenwirkung zwischen dem Halteteil (3) und dem zweiten Teil (2) zu bewegen.
5. Schwenkarm nach den Ansprüchen 3 - 4, dadurch gekennzeichnet, daß die Zusammenwirkung durch einen Schnur- oder Seilantrieb (5, 31, 41) realisiert ist.
6. Schwenkarm nach den Ansprüchen 3 - 4, dadurch gekennzeichnet, daß die Zusammenwirkung durch eine elastische Kraft (31, 41) realisiert ist.
7. Schwenkarm nach den Ansprüchen 3 - 4, dadurch gekennzeichnet, daß die Zusammenwirkung durch im wesentlich steife mechanische Mittel realisiert ist.
8. Schwenkarm nach den Ansprüchen 1 - 7, dadurch gekennzeichnet, daß sein erster Teil und sein zweiter Teil durch Mittel (33) miteinander

verbunden sind, die eine elastische Kraft ausüben.

Revendications

1. Un levier oscillant pour un jeu de construction, comprenant une première partie (1) adaptée à être jointe à un objet (10), ainsi qu'une seconde partie (2) montée de manière oscillante sur un support (3), la première partie (1) et la seconde partie (2) étant adaptées à coopérer de manière télescopique entre elles, **caractérisé** en ce que la première partie a deux leviers disposés de manière angulaire, l'un d'eux coopérant de manière télescopique avec la seconde partie, et l'autre a à son extrémité libre des moyens (9) pour le libre accouplement avec le dit objet (10). 5 10 15
2. Un levier oscillant selon la revendication 1, **caractérisé** en ce que les moyens (9) pour l'accouplement avec le dit objet sont en forme de crochet. 20
3. Un levier oscillant selon les revendications 1-2, **caractérisé** en ce qu'il est adapté à déplacer le levier oscillant par coopération entre le support (3) et la première partie (1). 25
4. Un levier oscillant selon les revendications 1-3, **caractérisé** en ce qu'il est adapté à déplacer le levier oscillant par coopération entre le support (3) et la seconde partie (2). 30
5. Un levier oscillant selon les revendications 3-4, **caractérisé** en ce que la coopération a lieu par une transmission par corde (5, 31, 41). 35
6. Un levier oscillant selon les revendication 3-4, **caractérisé** en ce que la coopération a lieu par une force élastique (31, 41). 40
7. Un levier oscillant selon les revendication 3-4, **caractérisé** en ce que la coopération a lieu par des moyens substantiellement mécaniques rigides. 45
8. Un levier oscillant selon les revendications 1-7, **caractérisé** en ce que sa première partie et sa seconde partie sont interconnectées par des moyens (33) qui font usage d'une force élastique. 50

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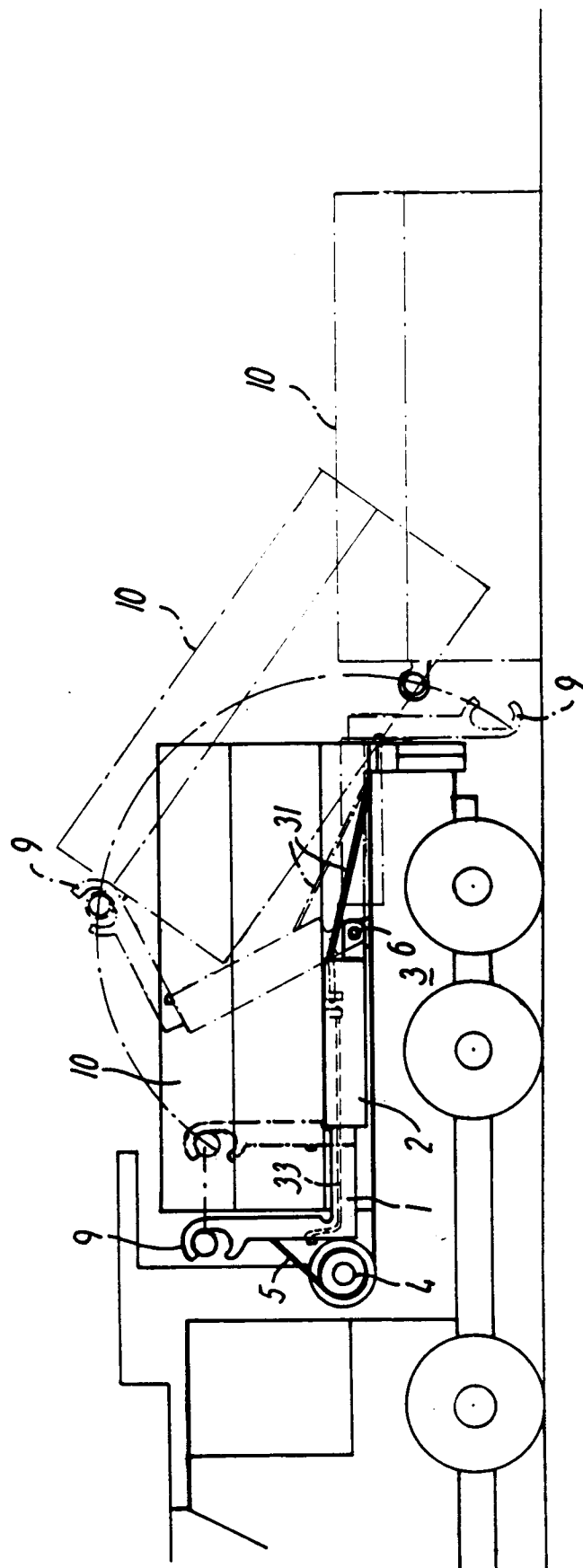


FIG. 1

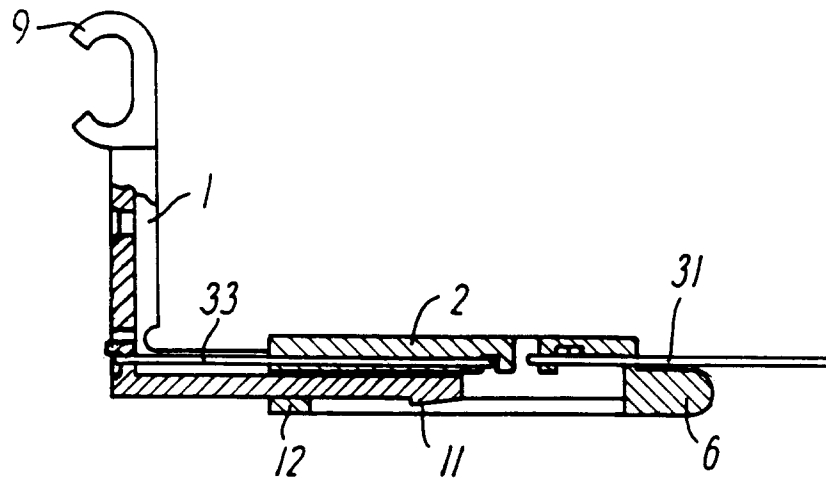


FIG. 3

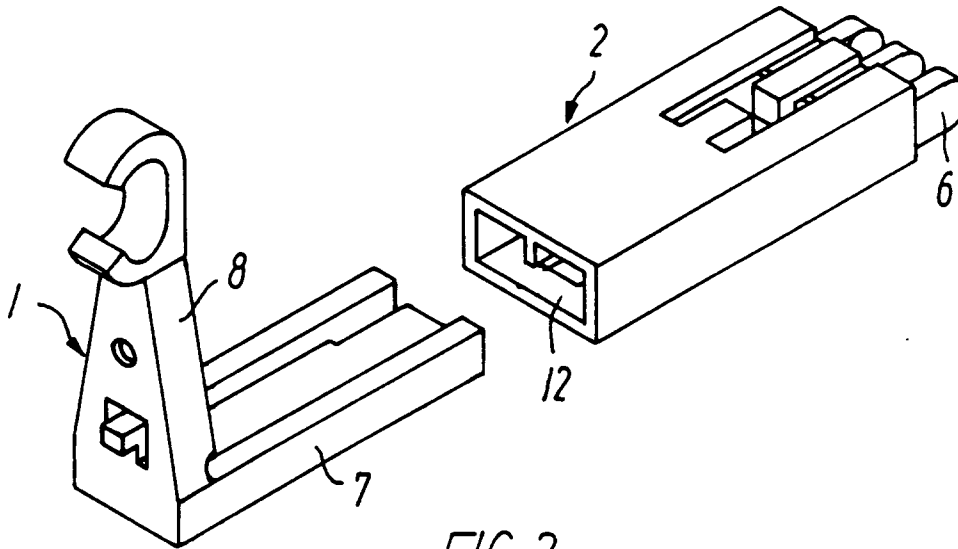


FIG. 2

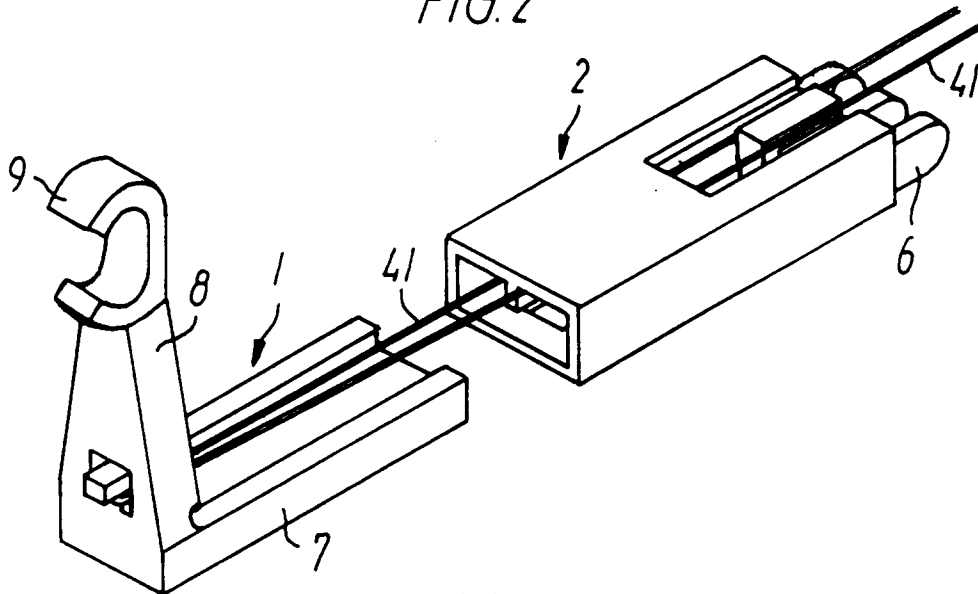


FIG. 4