

E. P. LEHMANN.
SUSPENDING TOYS.

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1,041,639.

Patented Oct. 15, 1912.

Fig. 1.

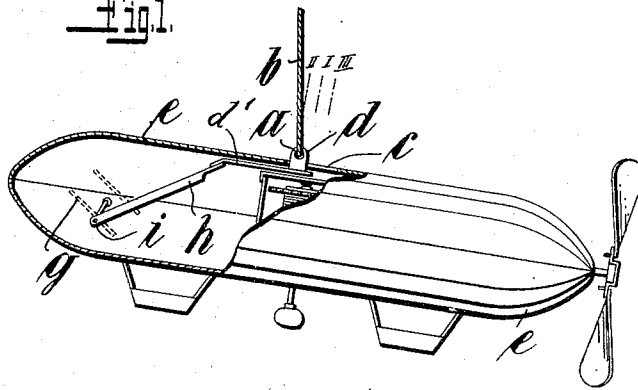


Fig. 2.

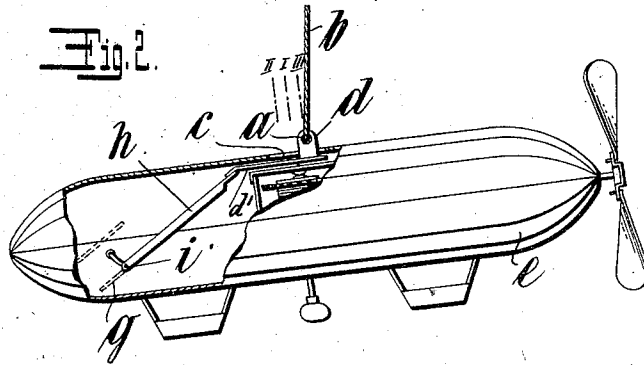
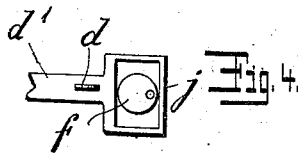
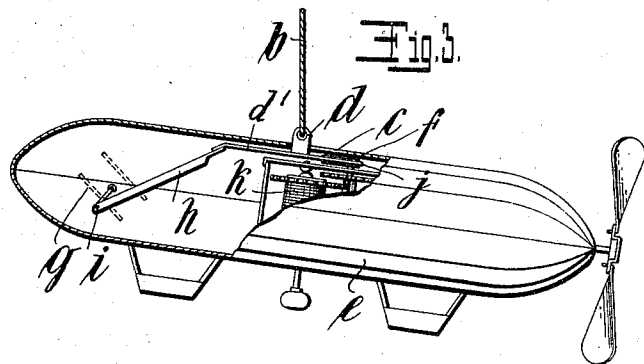


Fig. 3.



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UNITED STATES PATENT OFFICE.

ERNST PAUL LEHMANN, OF BRANDENBURG-ON-THE-HAVEL, GERMANY.

SUSPENDING TOYS.

1,041,639.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ERNST PAUL LEHMANN, a subject of the King of Prussia, residing at Brandenburg-on-the-Havel, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Suspending Toys, of which the following is a specification.

My invention relates to an improved device for adjustably suspending toys, such as toy-airships, toy aeroplanes and the like, which, while suspended by a cord or thread, are driven in a well-known manner by a spring-actuated driving gear.

The object of this invention is to adjust the position of the toy at a desired angular inclination with relation to the horizontal line, or to make it keep the horizontal position. Thus, by making the forward end of the toy assume an upward or downward inclination of more or less steepness, the toy, while proceeding through the air, will appear to take an ascending or descending path of motion, while, in reality, the path of motion only depends on the length of the cord between the point of suspension and the toy attached to said cord or thread.

The change in the angular position of the toy is obtained by an adjustable sliding piece located on or in the toy, to which sliding piece the suspension cord or thread is connected. When the said sliding piece is keeping its normal or intermediate position, the toy will equally retain its normal or horizontal position, and when the said sliding piece is shifted forward or backward from the intermediate position, the point of equilibrium will be changed and the toy will take an inclined position with its front or rear ends elevated according to the extent to which the slide is shifted in one direction or the other.

If it is desired, the said sliding piece may be so connected to the driving gear of the toy as to obtain the shifting motion of the said slide at regular intervals; in this case the toy, while driven on by its propellers, will alternately point its forward end upward and downward and the ship, if such be the toy, will appear to pitch while proceeding onward.

Toy air-ships or toy-aeroplanes are usually provided with steering faces or blades, to make the toy resemble in its outer appearance a real air ship or aeroplane. In displacing the point of equilibrium of the

toy by mechanically connecting the sliding piece to the driving gear, means may also be provided to change the position of the steering blades in accordance with the apparent upward or downward direction of the path of motion.

In the accompanying drawings I have illustrated my invention as applied to a toy-airship suspended by a suitable suspension device, such as a cord or thread.

Figure 1 shows the toy-airship, partly in longitudinal section and partly in side-elevation, with its front end slightly directed upward. Fig. 2 is a corresponding illustration with the front end of the air-ship in a downward position. Fig. 3 is a sectional elevation of the air-ship similar to Fig. 1, but showing how the driving gear of the toy may be connected to the sliding piece for automatically changing the point of equilibrium at intervals. Fig. 4 is a detail showing the eccentric actuated by the driving gear to reciprocate the sliding-piece.

In Figs. 1, 2, and 3, *e*, is the toy, illustrated, for instance in the shape of an air-ship made of sheet-metal celluloid or other ductile material. *b* is a suspension device such as a cord or thread, fixed at its upper end to any suitable stationary or movable suspension point. *d*, is a lug or pin projecting from the body *e*, of the toy, and the said cord *b*, is connected to said lug *d*, thereby holding the toy suspended, the normal position of the lug *d*, being so calculated as to hold the toy in a state of equilibrium, *i. e.*, in a horizontal position. The said lug *d*, projects through a slot *c*, in the body or shell of the toy, and is adapted to be shifted within said slot in one or the other direction from the central or normal position, which is indicated by a dot-and-dash line I, while the two extreme positions of the cord relative to the slot *c*, are indicated by similar lines II, and III. The said lug *d*, is integral with or secured to a bar or rod *d'* located within the body *e*, of the toy to prevent its being drawn forth from the slot *c*.

It will be easily seen, that, by shifting the lug *d*, toward the front end of the slot *c*, as shown in Fig. 1, the point of equilibrium will be changed and the axis of the body will be inclined, the front end pointing upward and the rear end pointing downward, the amount of the incline being in due proportion to the shifting of the said lug. Again, by shifting the lug *d*, toward the

rear end of the slot *c*, the point of equilibrium will be so changed to make the front end of the body *e*, point downward and the rear end point up, as shown in Fig. 2.

- 5 The inside sliding piece *d*¹ formed or connected to the lug *d*, may be extended toward the front, and the said extension *h*, or rod connected to the slide-piece *d*¹, engages a crank *i*, of the shaft traversing the body *e*, 10 the outside ends of which shaft carry on both sides of the body *e*, steering blades *g*, indicated by dotted lines. It will be easily understood, that by shifting the lug *d*, in the forward direction, the rod or extension *h*, 15 engaging the crank *i*, will give the crank-shaft a partial turn in one direction, and by shifting the lug *d*, to the opposite end of the slot *c*, the crank *i*, and crank-shaft will receive a partial turn in the other direction; the steering faces *g*, accordingly, 20 will be raised or lowered corresponding to the apparent rising or descending tendency of the toy's motion. Any other steering blades or faces applied to the body *e*, may be caused to change their position by being 25 connected in a similar manner to the sliding-piece *d*¹ or its connections.

According to Figs. 3, and 4, the sliding piece *d*¹ formed or connected to the sliding 30 lug *d*, has a recessed portion *j*, and within said recess an eccentric *f*, is adapted to work, said eccentric being mounted on one of the revolving shafts of the train of wheels to which motion is imparted by the driving 35 spring *k*. By this means the lug *d*, will be reciprocated in regular intervals, and the body *e*, of the toy will be made to alternately assume a rising and a descending position.

- 40 Of course the means for imparting a reciprocating motion from the driving gear of the toy to the sliding lug *d*, may be varied at will, the eccentric *f*, being only shown as one of the many known means of converting rotary motion into a straight reciprocating motion. 45

It will equally be well understood, that by varying the length of the extension piece or rod *h*, or by varying the length of the

crank *i*, the throw imparted to the steering 50 blades *g*, carried by the shaft of crank *i*, may be varied as desired.

I claim as my invention:

1. In a toy, the combination, with a body 55 portion, and a suspension device, of a member movably connected to the body portion and attached to the suspension device, steering blades adjustably mounted on the toy, and means for transmitting motion from 60 said movable member to said steering blades.

2. In a toy, the combination, with a body 65 portion, a suspension device, and a member attached to said suspension device and movably connected to the body portion, of a driving mechanism carried by the toy and 70 arranged to move said movable member, whereby the relation between the point of suspension and the center of gravity of the toy is shifted.

3. In a toy, the combination, with a body 75 portion, and a reciprocatory member carried by said body portion, of a suspension device attached to said reciprocatory member, and means carried by the toy for reciprocating said reciprocatory member.

4. In a toy, the combination, with a body 80 portion, a reciprocatory member connected to the body portion, a suspension device attached to said reciprocatory member, and steering mechanism carried by the toy, of 85 a driving mechanism carried by the toy and arranged to move the reciprocatory member and said steering mechanism.

5. In a toy, the combination, with a body 90 portion, of a reciprocatory member connected to the body portion, a suspension device attached to said reciprocatory member, steering mechanism and propelling mechanism carried by the toy, and means for 95 simultaneously operating the propelling mechanism and moving the reciprocatory member and the steering mechanism.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST PAUL LEHMANN.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.