March 9, 1943. S. L. LONG 2,313,158

TOY

Filed Nov. 11, 1942 2 Sheets-Sheet 1

Fig. 1

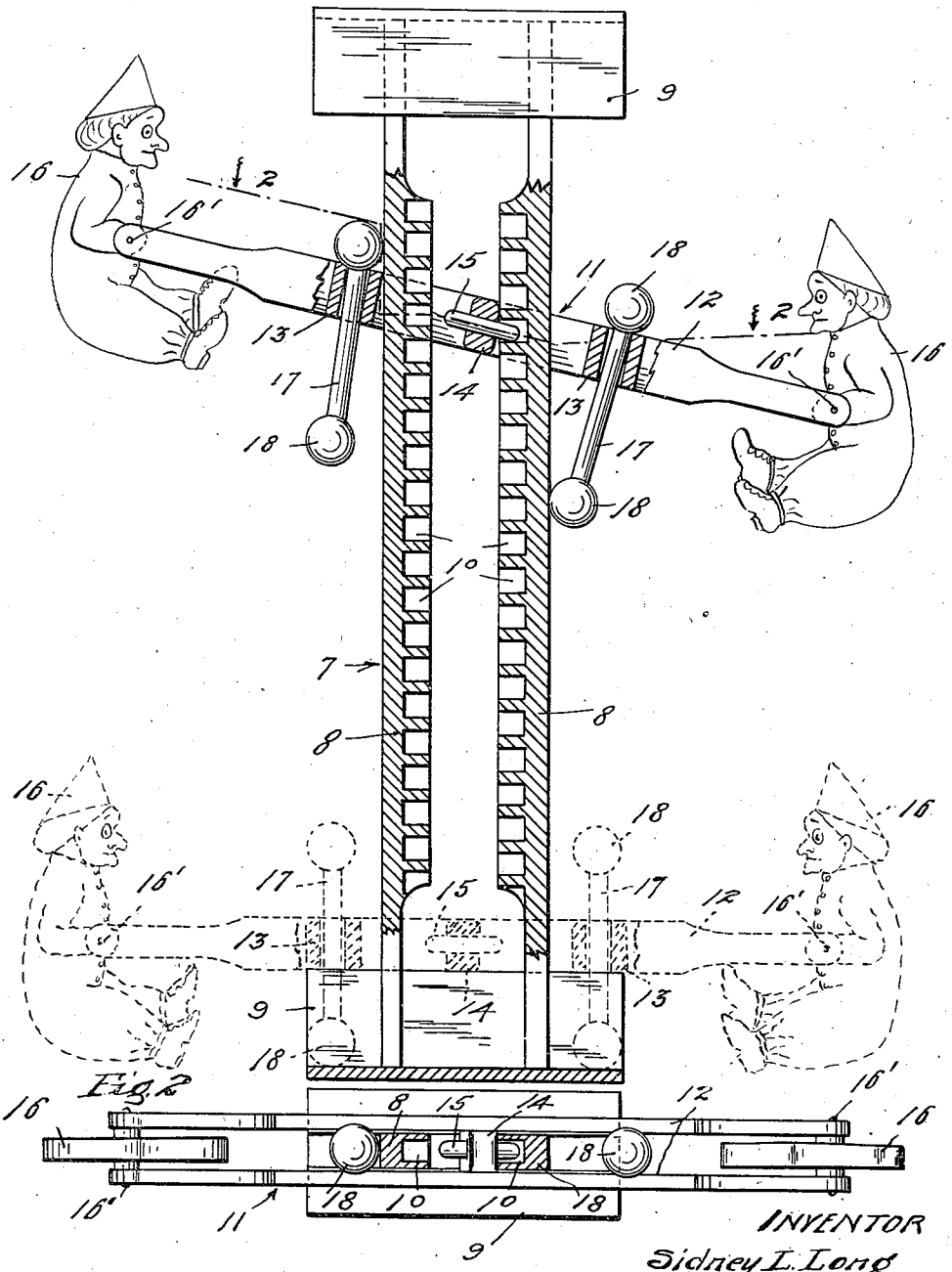


Fig. 2

INVENTOR

Sidney L. Long

By his Attorney

Harry D. Kilgore

March 9, 1943. S. L. LONG 2,313,158

TOY

Filed Nov. 11, 1942 2 Sheets-Sheet 2

Fig. 3

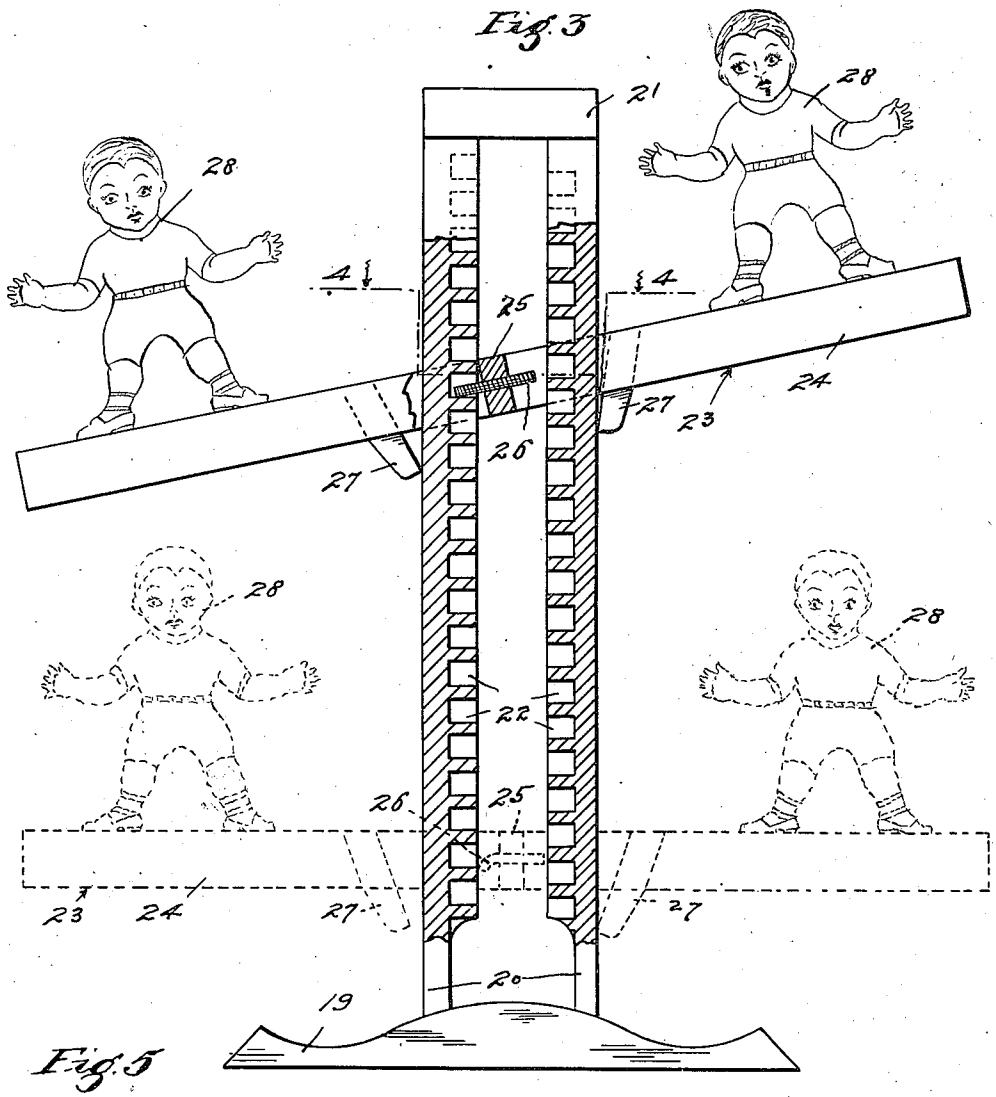


Fig. 5

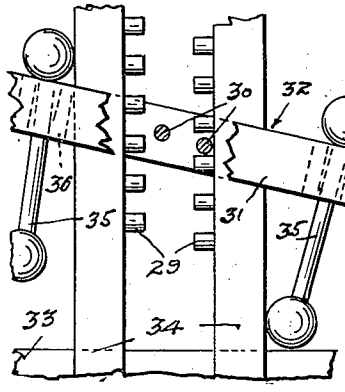


Fig. 4

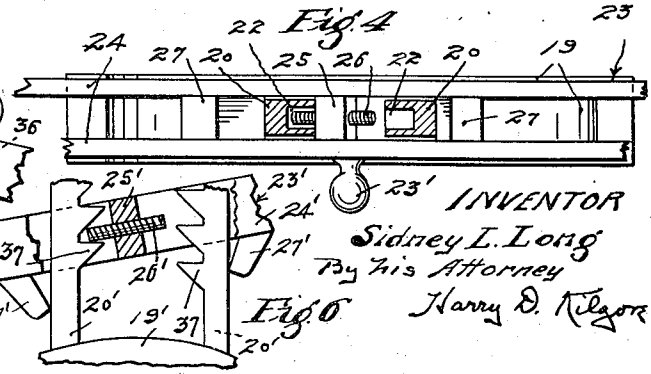


Fig. 6

INVENTOR
Sidney L. Long
By his Attorney
Harry D. Kilgore

Patented Mar. 9, 1943 2,313,158

UNITED STATES PATENT OFFICE

2,313,158

TOY

Sidney L. Long, Minneapolis, Minn.

Application November 11, 1942, Serial No. 465,281

20 Claims. (Cl. 46—130)

My present invention relates to a novel toy and, more particularly, to a toy of the see-saw type designed to descend from a raised position by a step-by-step movement during its reciprocatory movement.

An object of this invention is to provide automatic means for controlling the step-by-step descent of the see-saw.

Another object of the invention is to provide a reversely-acting toy having reversible automatic means for controlling the step-by-step descent of the see-saw device.

Still another object of the invention is to provide a toy having a yielding fulcrum with sufficient tension to support the see-saw device, but which will yield by applied manual force to permit said device to be raised.

A further object of the invention is to provide a see-saw device of novel construction.

Other objects of the invention will be apparent from the following description, reference being had to the accompanying drawings.

To the above end, generally stated, the invention consists of the novel devices and combination of devices hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view of the toy partly in front elevation and partly in section, some parts being shown in different positions by means of broken lines;

Fig. 2 is a view partly in plan and partly in horizontal section taken on the irregular line 2—2 of Fig. 1;

Fig. 3 is a view corresponding to Fig. 1 but showing a modified form of the toy;

Fig. 4 is a fragmentary view partly in plan and partly in section taken on the irregular line 4—4 of Fig. 3; and

Figs. 5 and 6 are fragmentary views showing other modifications of the toy.

Referring first to the toy shown in Figs. 1 and 2, the numeral 7 indicates a reversible frame comprising a pair of parallel, laterally spaced standards 8 having at each end a channel base member 9. Formed in the opposing sides of the standards 8 are two series of vertically spaced fulcrum bearings 10 in the form of bores, and which bearings of the two series are staggered.

A see-saw device 11 is mounted on the frame 7 for downward travel from an elevated position by the force of gravity. This see-saw device 11 comprises a pair of horizontally disposed bars 12 between which the standards 8 extend with working clearance therebetween. End and intermediate cross-tie members 13 and 14, respectively, rigidly connect the bars 12. Each standard 8 projects between one of the end members 13 and the intermediate member 14 having a working clearance sufficient to permit free reciprocating movement of the see-saw device 11 and to also permit a limited endwise shifting movement of said device during its reciprocating movement, for a purpose that will presently appear.

A fulcrum 15, in the form of a horizontally disposed pin, extends through a hole in the intermediate member 14 with its end portions extending outwardly of said member for alternate engagement with opposing bearings 10 of the two series. It may be here stated that the see-saw device 11 is balanced about the intermediate member 14 and hence the active end portions of the fulcrum 15 are off-center.

It will thus be seen that as the end portions of the fulcrum 15 successively engage alternate bearings 10 in the two series, the preponderance of weight of the see-saw device 11 is alternately shifted from one of its end portions to the other. The length of the fulcrum 15 is such that when the fulcrum 15 is in one of the bearings 10, the other end portion thereof is spaced from the bearings 10 in the other series, so that the raised end portion of the see-saw device 11 is free to swing downwardly due to its preponderance in weight and position the fulcrum 15 for engagement with a lower bearing in said other series. Obviously, the staggered bearings 10 and the cooperating fulcrum 15 lower the see-saw device, during its reciprocatory movement, by a step-by-step movement. The bearings 10 terminate short of each base 9 so that when the fulcrum 15 is withdrawn from the lowermost bearing 10, the see-saw device 11 will drop by the force of gravity onto the active base 9, as shown by broken lines in Fig. 1.

An inanimate figure 16 is pivoted, below the center of gravity, at 16' to and between the bars 12 at each end of the see-saw device 11 for complete rotary movement about the pivot 16'.

Automatic means is provided for alternately imparting an endwise shifting movement to the see-saw device 11 to withdraw its fulcrum 15 from an engaged bearing 10 in one of the series and projecting the same into a lower bearing 10 in the other series. This automatic means, as shown, is a pair of vertically disposed pins 17

which loosely extend through bores in the cross-tie bars 13 for endwise shifting movement. A ball or knob 18 on each end of each pin 17 limits the endwise movement of said pin in the respective bar 13. These balls 18 are arranged to alternately engage the backs of the standards 8 during the reciprocating movement of the see-saw device 11. During the downward movement of one end portion of the see-saw device 11, the lowermost ball 18 on the respective pin 17 engages the adjacent standard 8 with a lever action and moves said see-saw device 11 endwise and thereby withdraws its fulcrum 15 from an engaged bearing 10 in one series and projects the same into a lower bearing 10 in the opposite series. This action of the see-saw device 11 is alternately and successively repeated until the fulcrum 15 has been withdrawn from the lowermost bearing 10, and at which time the see-saw device 11 drops by the force of gravity onto the active base 9, as shown by broken lines in Fig. 1. Just after the fulcrum 15 is released from the lowermost bearing 10 and before the see-saw device comes to rest on the active base 9, the lowermost balls 18 engage the bottom of said base and stop further downward movement of the pins 17 and the continued downward movement of the see-saw device 11 will project the pins 17 upwardly through the cross-tie bars 13, as shown by broken lines in Fig. 1, and thereby start the reversing movement of the pins 17.

Obviously, the bearings 10 and co-operating fulcrum 15 give the see-saw device 11 a long and relatively slow downward travel during its reciprocating movement. At the completion of the operation of the see-saw device 11, the toy may be reversed end for end and the operation just described repeated. The simple operation of manually reversing the toy automatically sets the same into action. At the time the toy is reversed, the reversing movement of the pins 17, which have previously been partially reversed as previously described, will be completed by the force of gravity. As the figures 16 are pivoted to the see-saw device 11, below the center of gravity, the reversing of the toy will cause said figures to automatically swing about their pivots 16' and be reversed and face outwardly.

The partial reversing of the pins 17, at the completion of the descent of the see-saw device 11, is highly important as it always insures the complete reversing of said pin at the time said device starts its descent. The automatic endwise shifting movement of the see-saw device 11 by the pins 17, which is limited by the cross-tie member 14 alternately engaging the standards 8, gives a uniform and positive movement to said device and prevents the same from being interrupted during its descent. In fact, the toy will not operate successively without the automatic means for endwise shifting the see-saw device 11 during its descent.

Referring now to the modification of the toy shown in Figs. 3 and 4, which differs from the toy shown in Figs. 1 and 2 in that it is not reversible, and in order to permit the see-saw device to be raised after its descent, a yielding fulcrum is provided and the automatic means for endwise shifting said device is fixed. The numeral 19 indicates a base to which a pair of parallel standards 20 is rigidly secured at the lower end portions, and a cross-tie member 21 rigidly connects said standards at their upper ends. Fulcrum bearings 22, similar to the bearings 10 are formed in the opposing faces of the standards 20.

The see-saw device 23 comprises a pair of parallel horizontally disposed bars 24 connected between the standards 20 by a cross-tie member 25. A yielding fulcrum 26, in the form of a coiled spring, is mounted at its intermediate portion in the cross-tie member 25 with its end portions arranged to alternately and successively engage the bearings 22 in the two series during the descent of the see-saw device 23. The tension of the fulcrum 26 is sufficient to support the see-saw device 23 but by applied manual force, to permit the see-saw device to be raised, but will yield as shown by broken lines in Fig. 3, and said fulcrum move over the bearings 22 with a ratchet-like action.

The automatic means for endwise shifting the see-saw device 23 is a pair of finger-like members 27 that also act as cross-tie members for the bars 24. These members 27 are arranged to alternately engage the backs of the standards 20 below the center of gravity. The cross-tie member 25 limits the endwise shifting movement of the see-saw device 23. An inanimate figure 28 is mounted on each end portion of the see-saw device 23. Attached to the see-saw device 23 is a knob 23' for use when manually raising said device.

The toy shown in Fig. 5 is similar to the toy shown in Fig. 1, with the exception that the fulcrum bearings are pins 29 in place of depressions and the fulcrum 30 is a pair of transverse pins, which also act as cross-ties for the longitudinal bars 31 of the see-saw device 32. The base and standards are designated by the numerals 33 and 34, respectively, and the reversible pins and the cross-tie members, in which they are mounted, are designated by the numerals 35 and 36, respectively.

The parts of the toy shown in Fig. 6, that correspond to the parts of the toy shown in Fig. 3, are given the same reference numerals followed by a prime. In this toy, the fulcrum bearings 37 are in the form of teeth.

From what has been said, it will be understood that the toys described are capable of modifications as to details of construction and arrangement within the scope of the invention herein disclosed and claimed.

What I claim is:

1. A toy, comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and automatic means for moving the see-saw device during its travel to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing of the other series.

2. A toy, comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of reversely-acting members on the see-saw device constructed and arranged to successively engage the frame and move the see-saw device to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series.

3. A toy, comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of reversely-acting members on the see-saw device constructed and arranged to successively engage the frame below the center of gravity of said device and move the see-saw device to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series.

4. A toy, comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of reversely-acting members on the see-saw device constructed and arranged to successively engage the frame back of the two series of bearings and move the see-saw device to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series.

5. A toy comprising a reversible frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and reversible automatic means for moving the see-saw device during its travel to withdraw its fulcrum from an engaged bearing in one series and project the same onto a lower bearing of the other series.

6. A toy comprising a reversible frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and reversible automatic means for moving the see-saw device during its travel to withdraw its fulcrum from an engaged bearing in one series and project the same onto a lower bearing of the other series, said reversible automatic means being constructed and arranged to be reversed by the force of gravity at the time the frame is reversed.

7. A toy comprising a reversible frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and reversible automatic means for moving the see-saw device during its travel to withdraw its fulcrum from an engaged bearing in one series and project the same onto a lower bearing of the other series, said reversible automatic means being automatically reversed at the time the frame is reversed.

8. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of pins loosely mounted on the see-saw device for relative limited endwise sliding movement in the plane of the frame for alternate engagement at their lower ends with the frame, to move the see-saw device during its travel to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series.

9. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of pins loosely mounted on the see-saw device for relative limited endwise sliding movement in the plane of the frame for alternate engagement at their lower ends with the frame back of the two series of bearings below the center of gravity.

10. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, and a pair of pins loosely mounted on the see-saw device for relative limited endwise sliding movement in the plane of the frame for alternate engagement at their lower ends with the frame, to move the see-saw device during its travel to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series, said pins being automatically reversed by the force of gravity at the time the frame is reversed.

11. A toy comprising a reversible frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, reversible automatic means for moving the see-saw device during its travel to withdraw its fulcrum from an engaged bearing in one series and project the same onto a lower bearing of the other series, and positive means for imparting the initial reversing movement to the automatic means.

12. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings in the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, a pair of pins loosely mounted on the see-saw device for relative limited endwise sliding movement in the plane of the frame for alternate engagement at their lower ends with the frame, to move the see-saw device during its travel to withdraw its fulcrum from an engaged bearing of one series and project the same onto a lower bearing in the other series, and means for stopping the downward movement of the pins prior to that of the see-saw device to start the reversing movement of the pins.

13. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, said fulcrum being constructed and arranged to support the see-saw device from the frame and to yield by manual force to permit the see-saw device to be raised in the frame.

14. A toy comprising a frame having two se-

ries of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum for alternate engagement with the bearings of the two series, said fulcrum being constructed and arranged to support the see-saw device from the frame and to yield by manual force and move over the bearings with a ratchet-like action to permit the see-saw device to be raised in the frame.

15. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum in the form of a spring for alternate engagement with the bearings of the two series, said fulcrum having sufficient tension to support the see-saw from the frame but will yield by manual force to permit the see-saw device to be raised in the frame.

16. A toy comprising a frame having two series of parallel fulcrum bearings in opposing relation, the bearings of the two series being staggered, a see-saw device operated by the force of gravity to travel relative to the frame and having a fulcrum in the form of a coiled spring for alternate engagement with the bearings of the two series, said fulcrum having sufficient tension to support the see-saw from the frame but will yield by manual force to permit the see-saw device to be raised in the frame.

17. In a toy, the combination with a pair of parallel standards having on their opposing sides fulcrum bearings, of a see-saw device comprising a pair of longitudinal bars between which the standards project, and a fulcrum carried by said bars and extending between the standards for co-operation with the bearings.

18. In a toy, the combination with a pair of parallel standards having on their opposing sides fulcrum bearings, of a see-saw device comprising a pair of longitudinal bars between which the standards project, a cross-tie member extending between the standards and connecting said bars, and a fulcrum pin mounted at its intermediate portion on the cross-tie member with its end portions arranged for co-operation with the bearings.

19. In a toy, the combination with a pair of parallel standards having on their opposing sides fulcrum bearings, of a see-saw device comprising a pair of longitudinal bars between which the standards project, and a fulcrum in the form of a spring mounted at its intermediate portion on the cross-tie member with its end portions arranged for co-operation with the bearings.

20. In a toy, the combination with a pair of parallel standards having on their opposing sides fulcrum bearings, of a see-saw device comprising a pair of longitudinal bars between which the standards project, and a fulcrum in the form of a coiled spring mounted at its intermediate portion on the cross-tie member with its end portions arranged for co-operation with the bearings.

SIDNEY L. LONG.