No. 847,002. PATENTED MAR. 12, 1907.

P. HOOGERZEIL.

SEESAW.

APPLICATION FILED MAR. 5, 1906.

2 SHEETS—SHEET 1.

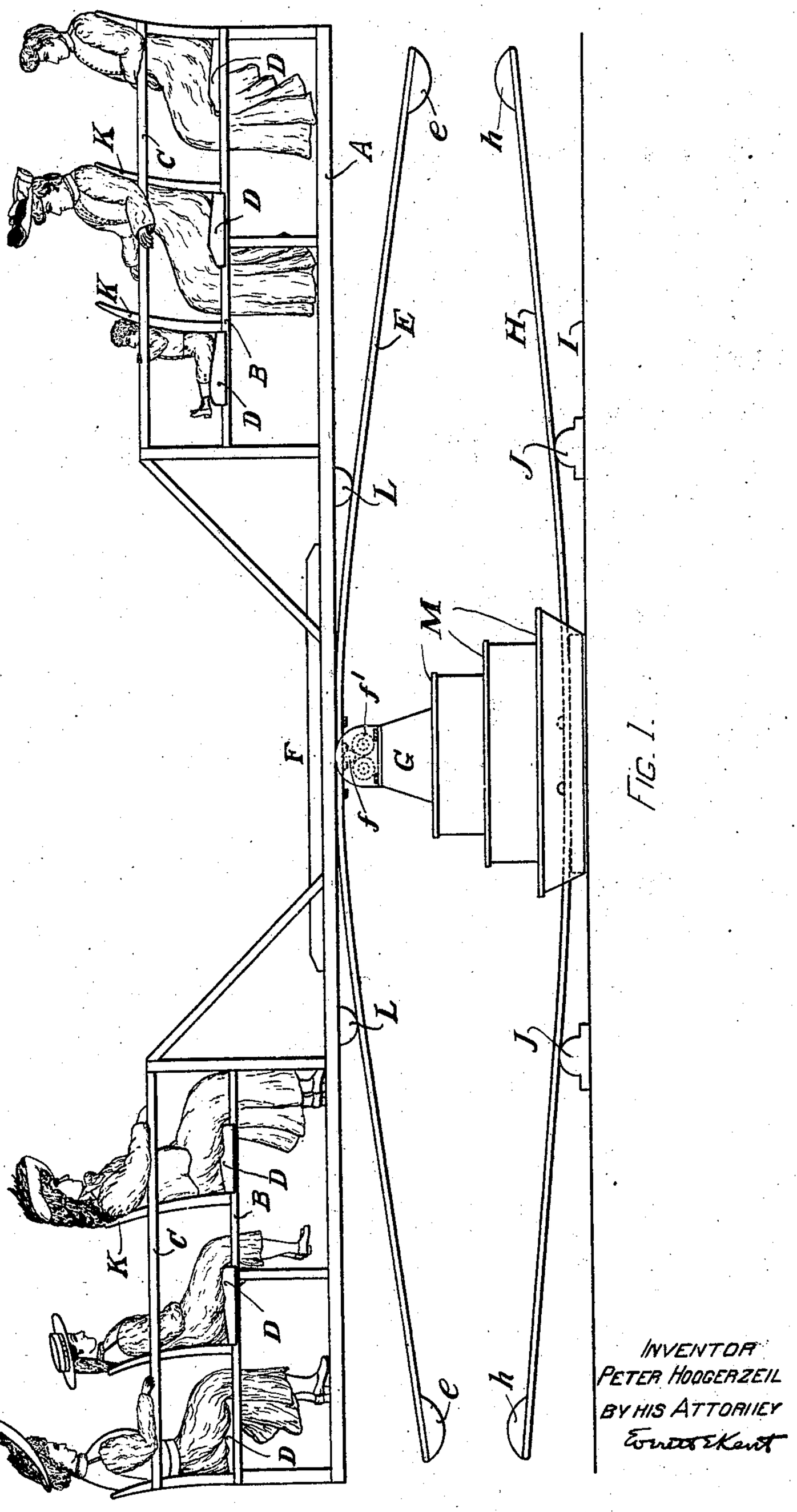

FIG. 1.

WITNESSES

A. T. Palmer

Jerome C. Smith

INVENTOR

PETER HOOGERZEIL

BY HIS ATTORNEY

Everett E Kent

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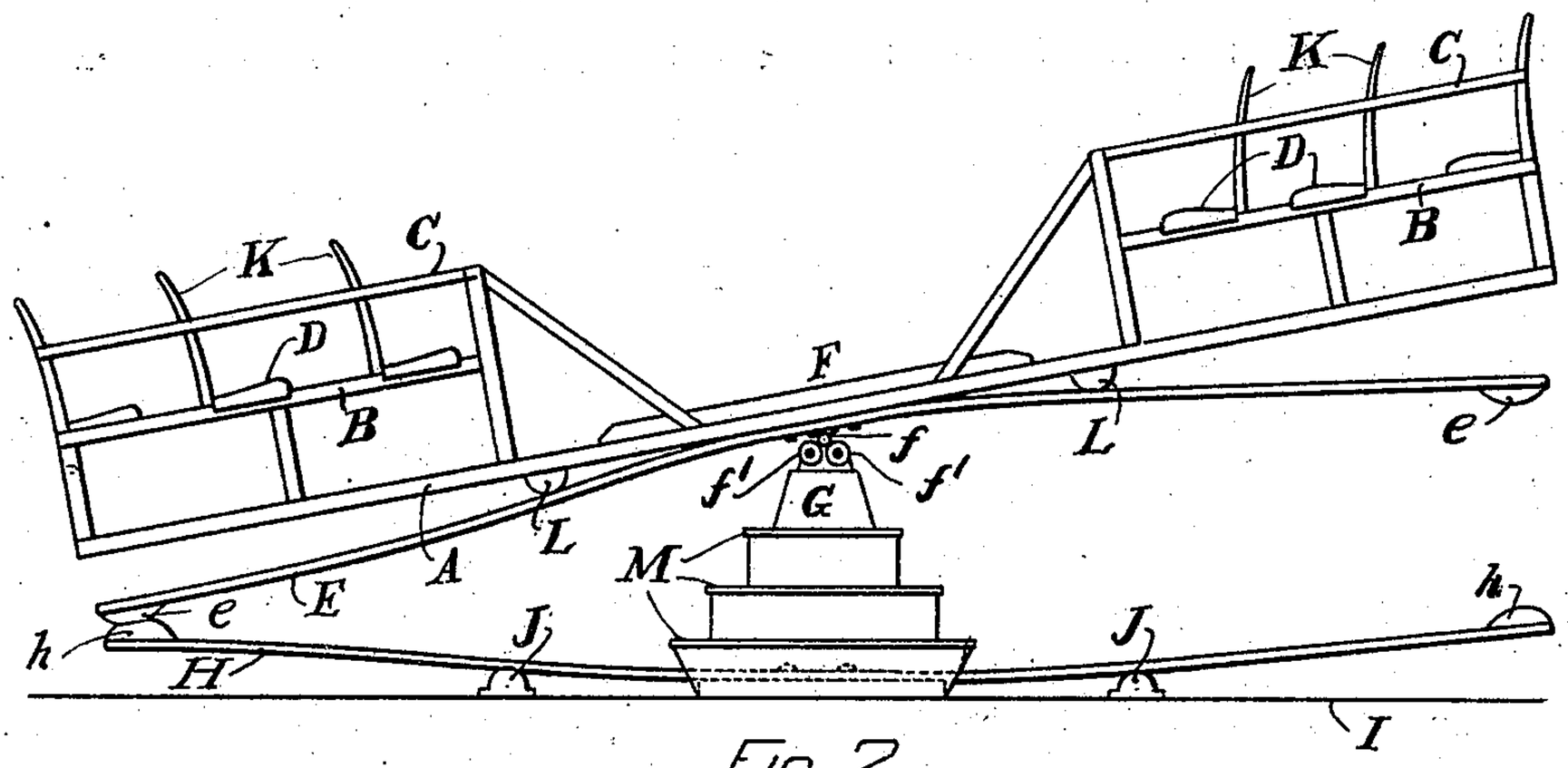

FIG. 2.

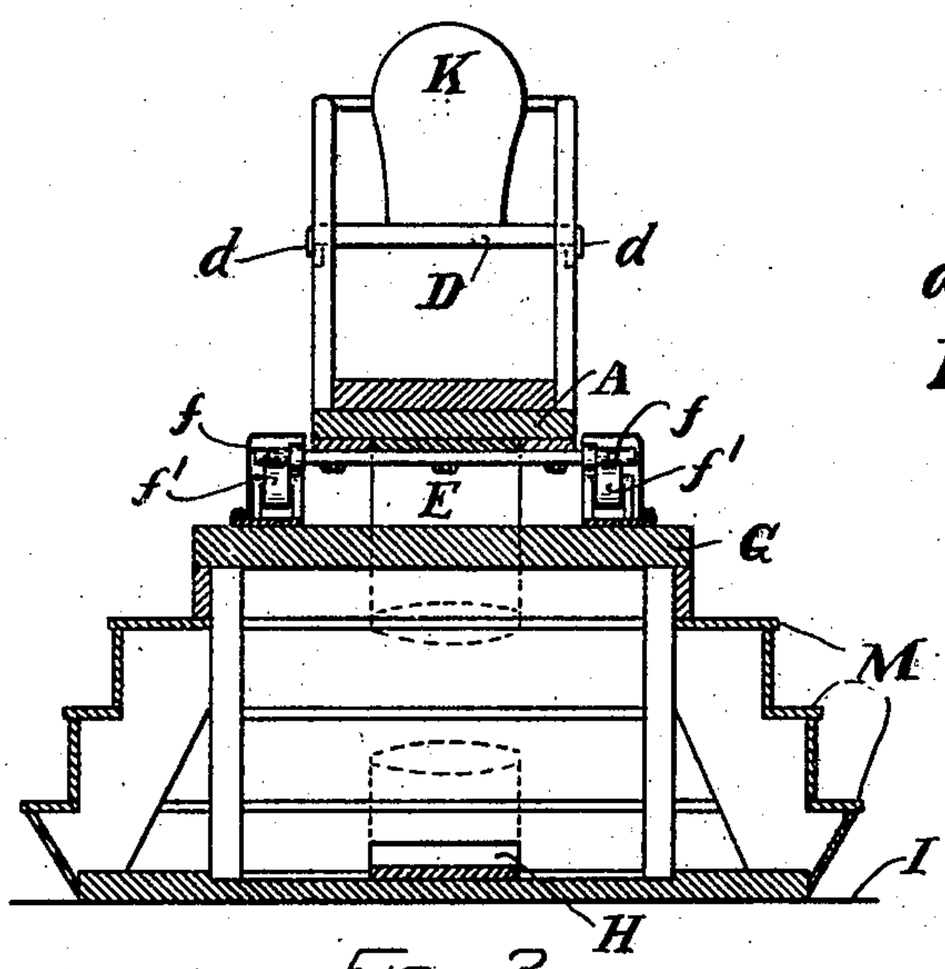

FIG. 3.

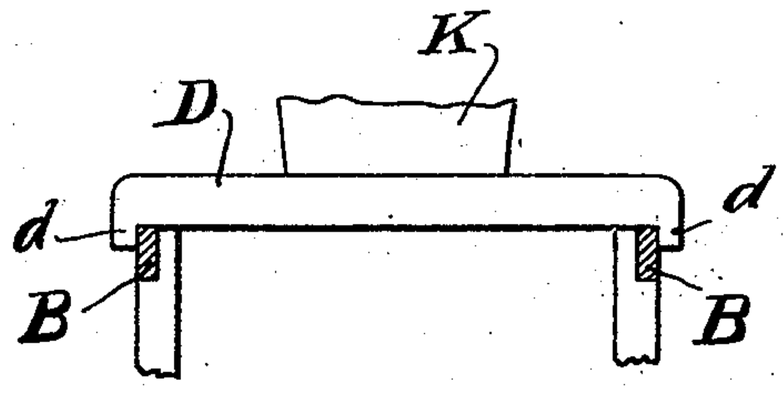

FIG. 4.

WITNESSES

A. T. Palmer

Jerome C. Smith

INVENTOR

PETER HOOGERZEIL

BY HIS ATTORNEY

Wells & Kent

UNITED STATES PATENT OFFICE.

PETER HOOGERZEIL, OF BEVERLY, MASSACHUSETTS.

SEESAW.

No. 847,002. Specification of Letters Patent. Patented March 12, 1907.

Application filed March 5, 1906. Serial No. 304,215.

To all whom it may concern:

Be it known that I, PETER HOOGERZEIL, of Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Seesaws, of which the following is a specification.

This invention relates to seesaws.

The objects of the invention are to provide a device of this sort more delicate in action than those previously known, one which, when set in action, will continue for a long time with little exertion of force; a device on which a number of persons may ride with adjustments to provide for balancing the instrument under differing weights. These objects are accomplished by the device illustrated in the accompanying drawings, in which—

Figure 1 represents in side elevation one form of the invention. Fig. 2 represents the same in action with the hood covering the pivot removed. Fig. 3 represents a vertical section through the center looking from one end. Fig. 4 is a detail representing in endwise view a section through the seat-rail.

Referring to the drawings, A represents a tilting board, having at each end a seat-rail B and a hand-rail C. On the seat-rail are any desired number of seats D, which may have backs K and which are adjustable in position by sliding thereon toward or from the pivot F of the board. The board is pivoted on a standard G, and the pivot preferably consists of antifriction-bearings, comprising a roll *f*, rolling upon two rolls *f'*, set in bearings on the standard. Springs E are fastened to the under side of the tilting board near the center and project endwise and downward, as shown in the drawings, ending in cushions or pads *e*. A reverse spring-board H, set near the floor and fastened in the center under the standard G, projects endwise and upward in each direction, ending in cushions or pads *h*. This may be arranged symmetrically with respect to the upper spring-board, as shown in the drawings, forming an arrangement somewhat like an elliptical spring, except that these ends are not normally in contact with each other.

It will be observed from the drawing that the upper spring is parallel to the tilting board at the place where it is fastened thereto at the center and that it springs away with a tangential curve in each direction.

On the ground or floor I, under the spring H, on each side and at some little distance from the center, are fulcrum-supports J. Similar fulcrums L may be placed on the under side of the tilting board adapted to bear against the upper spring E some little distance from the center thereof. These fulcrums are in the form of pillows or bolsters, which support their resistance-springs at the points where they are located, and they have the effect when the springs are in a state of rest of bending the springs toward each other, so that they are by these bolsters maintained normally in a state of tension. I prefer to arrange these bolsters or fulcrums J L adjustably in position, so that they may at will be removed nearer to the center or farther from it.

In the center, steps M are provided for persons to conveniently mount to the center of the tilting board. These steps may be circular or oval in form to permit of convenient access and arranged at both sides of the central standard G. Persons may thus mount to the center of the tilting board and then walk down the ends of the board to the seats D, which all may be provided with backs. If the backs of the front seats on each side be omitted, access to the rear seat is easier. The method of adjustment of the seats is shown clearly in Fig. 4, in which the board D is shown resting slidably on the seat-rails B. The seat-board has depending flanges *d*, which engage on the outside of each seat-rail, thus making it impossible for the seat to slide sidewise off of the seat-rail.

In operation the springs E and H coact in such a manner as to give a novel and peculiarly delightful sensation to those riding on the tilting board. In the course of the downward movement of one end of the tilting board its portion of the top spring E encounters the springs H, the pads at the ends of these two springs coming together and softening the impact. Immediately a back-spring action takes place, in which each spring begins to assume the form of a reverse curve and at the same time they each approach more closely to parallelism with the tilting board and with the floor, respectively. If the force be strong enough, this may continue until each spring is bent around its bolster and fulcrum, so as to touch the tilting board and floor, respectively; but enough force to accomplish this is rarely applied, and the increasing resistance of the springs brings the board to its limit of motion and starts it upon its return swing, where the

same process is repeated. By the aid of this spring combination and the elimination of friction at the pivot I have found that the board, if set in motion, will automatically continue for a considerable period of time, while very slight motion on the part of the occupants, such as a slight inclination of the body, is required to continue the motion indefinitely. The character of flexure of the springs and the character of sensations imparted to the occupants can be varied by varying the adjustment of the fulcrum-pillows J L toward or from the center.

When the device is to be used by several persons and frequent changes of adjustment are necessary, as at a public resort, such changes are conveniently accomplished by having the seats at each end adjustable relative to each other, whereby either one alone or several may be moved. A more easy and accurate counterbalancing of weights is obtainable by this possibility of mutual adjustment of seats than if the device were provided simply with means to adjust the entire bank of seats at each end.

I claim—

1. A seesaw, comprising a tilting board; springs set beneath it, projecting downward toward each end; springs set beneath it and projecting upward toward each end; said upper and lower springs being adapted to cooperate when the board is in motion.

2. A seesaw, comprising a pivoted tilting board, and a spring on the under side thereof having a single piece extending from end to end and fastened tangentially to the tilting board at the pivot.

3. A seesaw, comprising a tilting board and springs arranged longitudinally, fastened flatwise beneath its center and projecting therefrom with a tangential curve, in combination with pillows arranged as fulcrums bearing against the projecting portions.

4. A seesaw, comprising a tilting board and springs arranged longitudinally, fastened flatwise beneath its center and projecting therefrom with a tangential curve, in combination with pillows arranged adjustably in position as fulcrums bearing against the projecting portions.

5. A seesaw, comprising a tilting board; springs fastened centrally beneath it, one on the board pointing endwise and downward, the other on the floor pointing endwise and upward, said springs having their ends adapted to engage each other approximately under the ends of the tilting board.

6. A seesaw, comprising a pivoted tilting board; upper and lower springs set longitudinally thereunder, one on the board and the other on the floor, said springs being arranged to engage at their ends; and pads thereon at the points of engagement.

7. A seesaw, comprising a pivoted tilting board; and a plurality of sliding seats at each end of the board, said seats being independently adjustable toward and from the pivot.

8. A seesaw, comprising a pivoted tilting board; seat-supports thereon; and a plurality of sliding seats mutually adjustable on said supports at each end of the board; and hand-rails arranged above the seat-support at each side.

In testimony whereof I have affixed my signature in presence of two witnesses.

PETER HOOGERZEIL.

Witnesses:

ALBAN ANDRÉN,

HELEN A. WHITE.