

(No Model.)

2 Sheets—Sheet 1.

I. S. BUNKER.
SWING.

No. 461,541.

Patented Oct. 20, 1891.

FIG. 1.

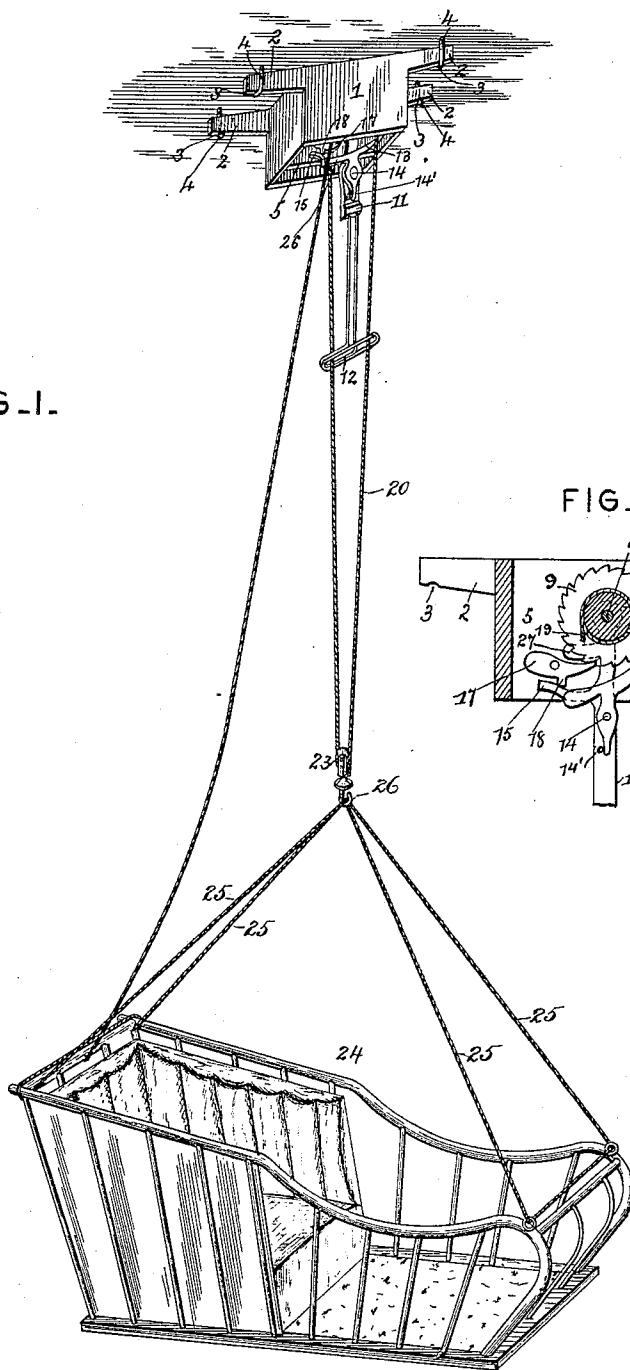
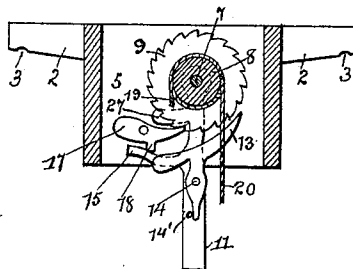


FIG. 5.



Witnesses

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Inventor

Ira S. Bunker

By this Attorneys,

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Cash & Co.

(No Model.)

2 Sheets—Sheet 2.

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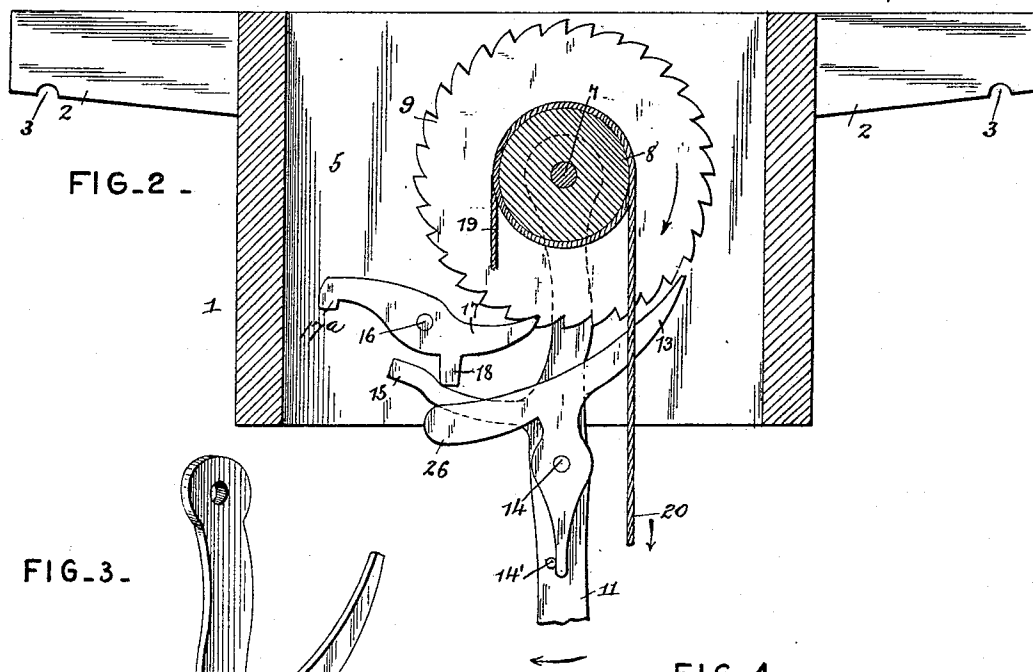
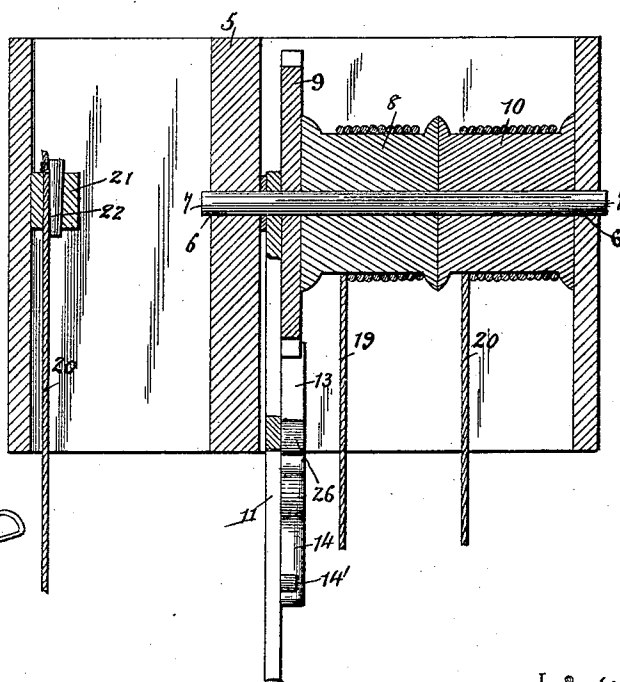
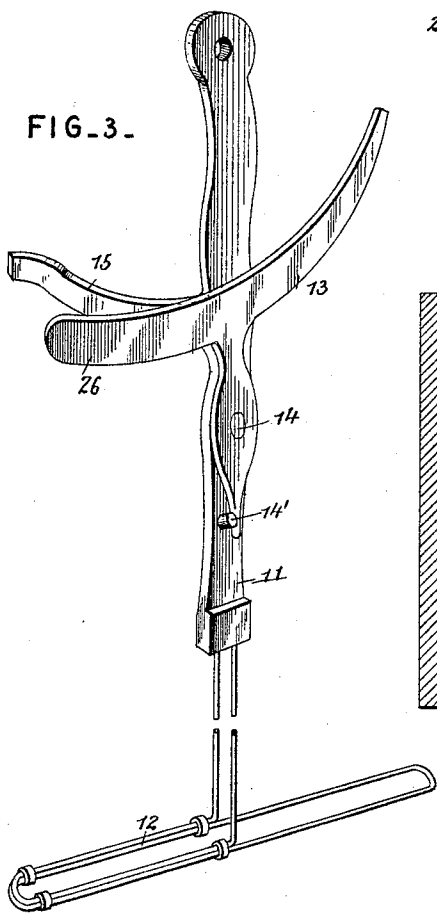


FIG. 3.

FIG. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

IRA S. BUNKER, OF NEVADA, MISSOURI.

SWING.

SPECIFICATION forming part of Letters Patent No. 461,541, dated October 20, 1891.

Application filed August 23, 1890. Serial No. 362,810. (No model.)

To all whom it may concern:

Be it known that I, IRA S. BUNKER, a citizen of the United States, residing at Nevada, in the county of Vernon and State of Missouri, have invented a new and useful Swing, of which the following is a specification.

This invention has relation to swings; and the objects in view are to provide a swing, the operating mechanism of which is of cheap and simple construction, may be easily and conveniently wound or set, and which will operate without losing any motion in its escapement.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective of a swing constructed in accordance with my invention. Fig. 2 is a longitudinal vertical section of the motor enlarged. Fig. 3 is a detail in perspective of the swing-arm and the rocking-pawl thereof. Fig. 4 is a transverse vertical section of the motor. Fig. 5 is a view similar to Fig. 2 of a modified construction.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the motor box or case, open at the top and bottom, and at the top provided with an opposite pair of parallel projecting arms 2, terminating at their under sides and near their ends in notches 3, which are engaged by an opposite pair of screw eyes or hooks 4, inserted into convenient joists and through the ceiling of a room or porch or in an especially-made frame, whereby said box or case is held securely in position. By giving the screws a half a turn the box or case may be readily removed from the ceiling. If desired, however, other means of fastening may be provided which will permit of a ready removal of the box or casing or which will serve to permanently secure the same.

The box or casing 1 is longitudinally subdivided by a partition 5, and in said partition and one of the side walls of the box there is formed bearings 6, in which is journaled a transverse shaft 7 for rotation. Mounted upon the said shaft is a ratchet-wheel 9, and at one side of the wheel is a pair of winding-drums 8 and 10. The drums and ratchet-wheel are fast upon the shaft, and between the ratchet-wheel

and the central partition there is loosely journaled and loosely hung upon the shaft 7 a swing-arm 11, which at its lower end is provided with a T-shaped depending guide 12. A T-shaped balance-pawl 13 is pivoted, as at 14, upon the swinging arm, and has its movement in one direction limited by a stop 14' on the arm, the front end of the pawl being adapted to engage the teeth of the ratchet. A slight distance above the point upon the arm 11 at which the pawl 13 is pivoted said arm is provided with a rearwardly-disposed cam or projection 15, the rear upper face of which is slightly raised above the general plane thereof, as shown. Above the cam 15 and adjacent to the periphery of the ratchet-wheel there is pivoted, as at 16, a loose pawl 17, provided upon its lower edge with a depending lug 18, and adapted at its front end to engage said ratchet-wheel at which end the pawl is, in this instance, weighted.

19 designates a winding-cord, which is secured at one end to the drum 8, and is of a proper length.

20 designates the supporting-cord, one end of which is secured, as at 22, to a block 21, secured to the inner face of one of the side walls of the box. The opposite end of the said cord is secured to the drum 10, and the intermediate portion of the cord passes in loop form through the T-shaped guide-bail and supports a pulley and its sheave 23.

24 designates a car, in the present instance similar to a baby-carriage body, or said car may be of any construction, shape or design, such as a hammock, reclining-chair seat, crib, &c. From suitable points of the car lead supporting-cords 25, which connect with the hook 26, of the pulley-sheave in a removable manner.

To operate my swing, the winding-cord is pulled until the suspension-cord is wound upon its drum, which is occasioned by the rotations of the shaft and drums. As the supporting-cord is wound upon its drum the winding-cord is unwound, and vice versa. A child having been placed in the car, it requires but a slight push forward to start the apparatus. As the swing-arm goes to the front and passes beyond the perpendicular the balance-pawl falls to the rear, and just previous to the time said arm has reached the limit of its movement the arm 15 is with-

drawn from under the lug of the holding-pawl 18 and the latter falls. This permits of the ratchet-wheel turning, and as it does so a tooth thereof engages the pawl 13, thus throwing the swing rearwardly, and the movement of the swing-arm causes the arm 15 to immediately elevate the holding-pawl into engagement with the ratchet-wheel, and thus arrests the movement of the same, while the swing-arm, being loosely connected with the shaft, continues by its own momentum, by which latter it returns and the operation is repeated. When the swing-arm starts on its return movement and has passed about the distance of one tooth, the cam-arm of the swing-arm takes under and elevates the holding-pawl, so that it engages the ratchet and is maintained in its engagement by the tendency of the ratchet-wheel while the pawl of the swing-arm is returning or advancing to take engagement with the ratchet-wheel, the shock of said engagement being sufficient to give the ratchet-wheel a slight retrograde movement and thus release the pawl 17, permitting the same to fall, by gravity, out of engagement. In this manner the suspension-cord becomes unwound from the drum and the winding-cord becomes wound. After the suspension-cord has become unwound a pull upon the winding-cord rewinds the apparatus, the ratchet-wheel being permitted to rotate with the shaft and drums by the pawls. The rear end of the pawl 17 terminates at its rear end in a depending lug 17^a, against which the rear end of the cam-arm 15 abuts, and thus the rearward swing of the swing-arm 11 is limited.

If desired, and in order to prevent the noise of the pawl 17 riding over the teeth of the ratchet, I may, as shown in Fig. 5, weight the outer end of the pawl, so as to normally engage the teeth of said ratchet and provide the suspension-arm above the ratchet with a lateral arm 27, so that at a forward swing of the suspension-arm, and just as the pawl 13 is about to engage with the ratchet-wheel, the outer end of the arm 27 strikes and depresses the inner end of the pawl 17 from engagement with the ratchet, and maintains said pawl thus depressed until the swinging arm receives its throw.

Having described my invention, what I claim is—

1. In a swing, the combination, with a shaft, a drum and a ratchet-wheel mounted on the shaft, and means for winding the shaft, of a suspension-cord connected at one end of the drum, a swinging arm connected at its lower end to the suspension-cord, a car secured to the lower end of the cord, a pawl mounted on the arm and adapted to be engaged and be swung by the ratchet-wheel, and a holding-pawl adapted to engage the ratchet-wheel and adapted to be thrown into such engagement by contact with the swinging arm, substantially as specified.

2. In a swing, the combination, with the

shaft, the ratchet, the two drums thereon, a suspension-cord connected with one drum, a winding-cord oppositely wound upon the remaining drum, and a car connected to the lower end of the cord, of a swinging arm loosely suspended from the shaft and connected at its lower end to the suspension-cord, a holding-pawl loosely pivoted below the ratchet-wheel, a cam-arm extending from the swinging arm and adapted to actuate the holding-pawl so as to engage the ratchet-wheel, and an escape-pawl mounted on the swinging arm and adapted to engage the said ratchet-wheel, substantially as specified.

3. In a mechanical swing, the combination, with a box or case adapted to be secured to a ceiling or other fixed support and provided with transversely-opposite bearings, a shaft mounted for rotation in the bearings, a pair of drums and a ratchet-wheel mounted upon the shaft, a winding-cord mounted upon one drum, and a suspension-cord oppositely wound upon the other drum, of a car loosely connected to the suspension-cord, a swinging arm loosely suspended from the shaft at one side of the ratchet-wheel and provided at its lower end with an inverted-T-shaped guide for the passage of the suspension-cord, a pawl mounted upon said swinging arm and adapted to engage the ratchet-wheel, for which purpose the rear end of the pawl is weighted, and a gravity-actuated holding-pawl loosely pivoted below the ratchet and in the path of a cam-arm extending from the swinging arm, substantially as specified.

4. In a mechanical swing, the combination, with the box or casing secured to the ceiling and having a longitudinal partition arranged therein, the partition and one side of the casing having bearings, a shaft mounted upon the bearings, a pair of drums mounted upon the shaft, and a ratchet mounted upon the shaft at one side of the drums, of a suspension-cord having one end wound upon a drum and the other end rigidly connected to the opposite wall of the casing, a pulley removably mounted upon the cord, a car connected with the pulley, a winding-cord wound in a reverse direction upon the remaining pulley, a swinging arm loosely suspended from the shaft at one side of the ratchet and provided at its rear edge with a cam-arm, an inverted-T-shaped guide-arm depending from the swinging arm and loosely receiving the central looped portion of the suspension-cord, a balance-pawl pivoted upon the swinging arm, and a gravity-pawl pivoted to the partition and in the path of the cam-arm, whereby it is adapted to be thrown into engagement with the ratchet, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

IRA S. BUNKER.

Witnesses:

E. B. CORSE,
W. C. BERRY.