

(No Model.)

3 Sheets—Sheet 1.

J. J. BUKOLT.
SELF ROCKING CRADLE.

No. 579,256.

Patented Mar. 23, 1897.

Fig. 1.

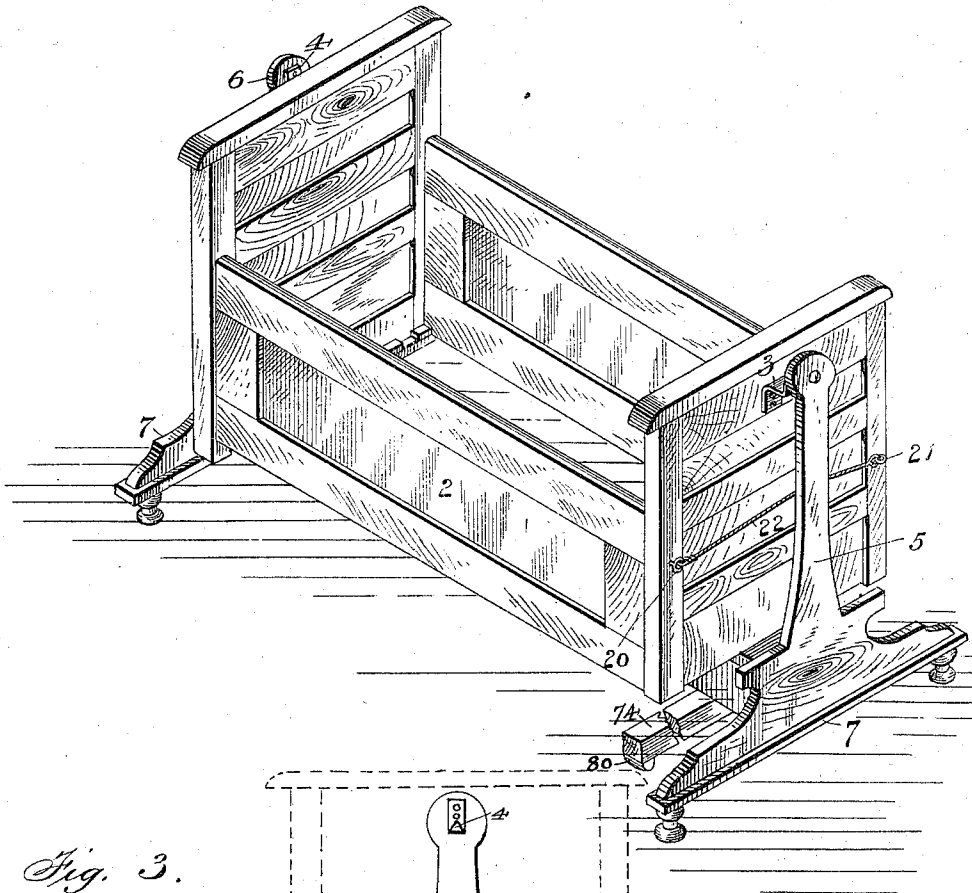
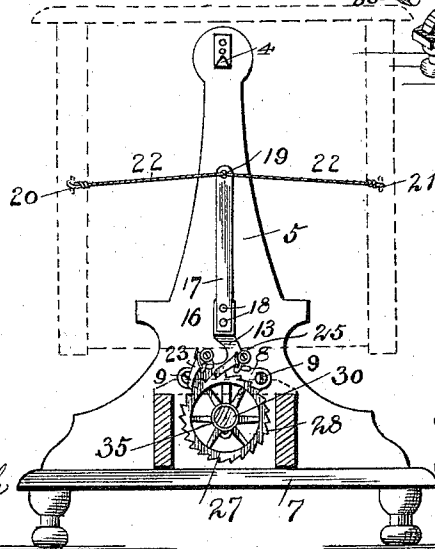


Fig. 3.



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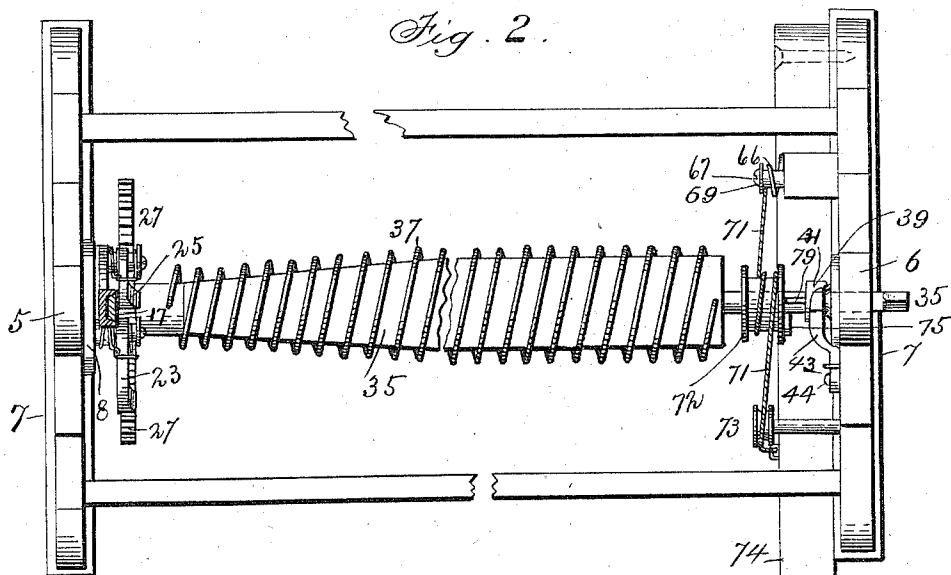
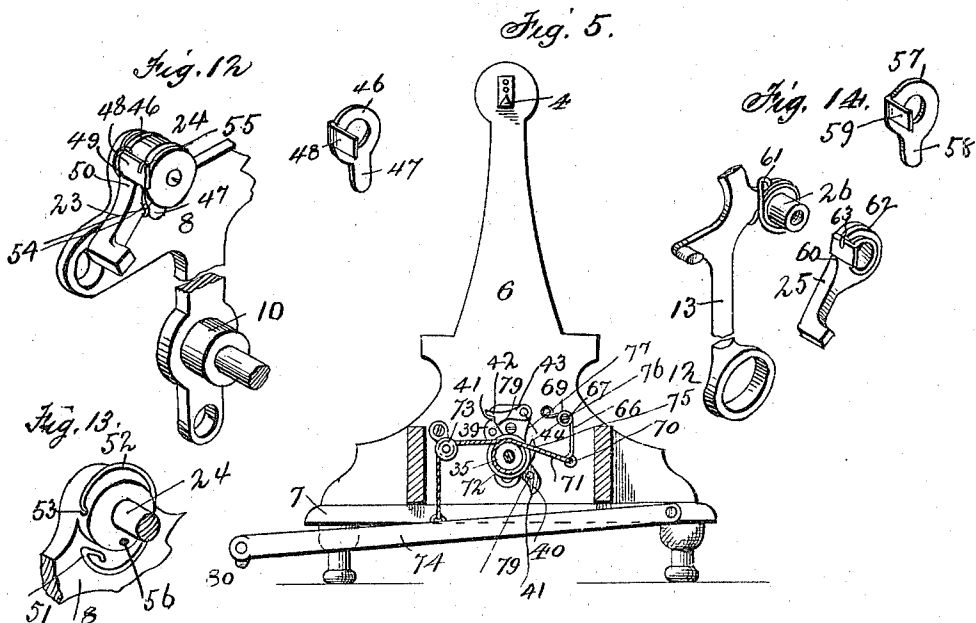
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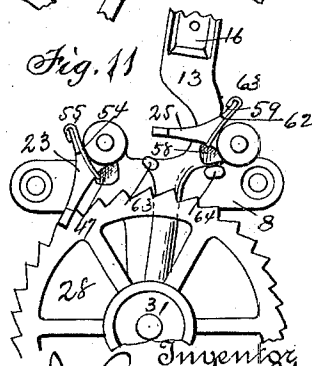
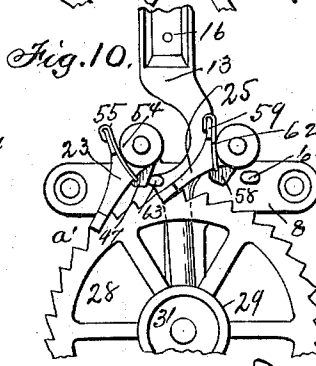
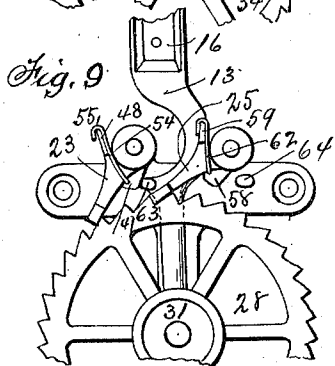
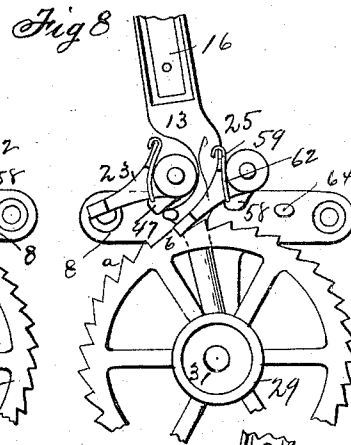
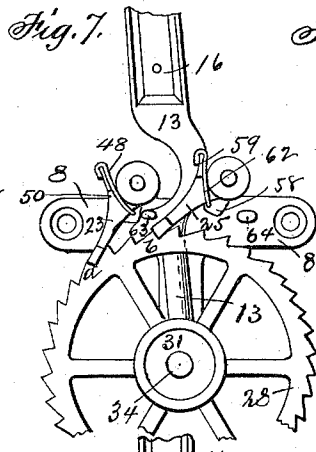
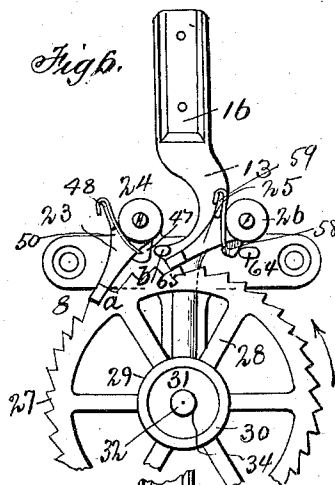
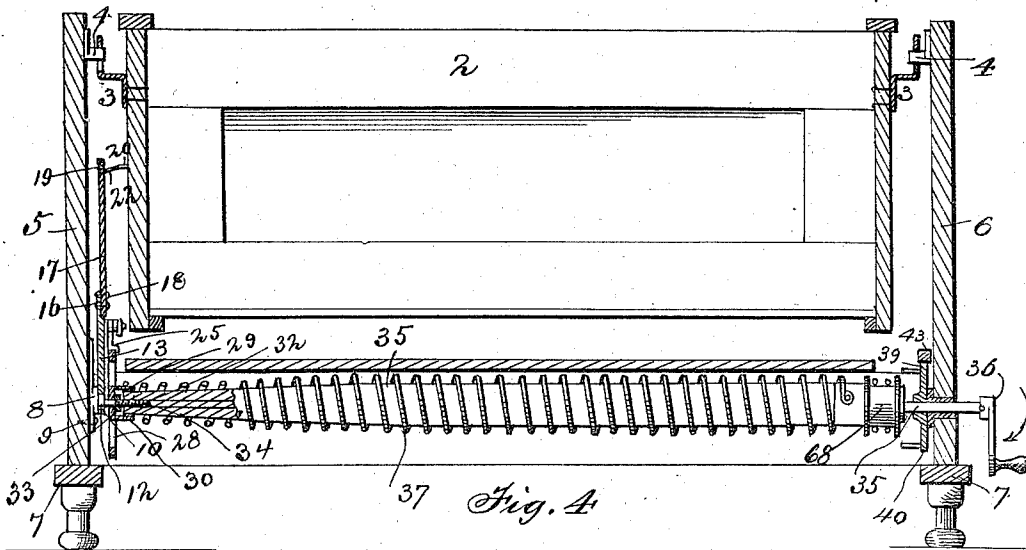
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UNITED STATES PATENT OFFICE.

JOHN J. BUKOLT, OF STEVENS POINT, WISCONSIN.

SELF-ROCKING CRADLE.

SPECIFICATION forming part of Letters Patent No. 579,256, dated March 23, 1897.

Application filed July 14, 1896. Serial No. 599,133. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. BUKOLT, a citizen of the United States, residing at Stevens Point, in the county of Portage and State of Wisconsin, have invented certain new and useful Improvements in Self-Rocking Cradles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to cradles for children, and more particularly to that class of self-rocking cradles in which the tension of a spring is released by a step-by-step movement to oscillate or rock the suspended cradle for an indefinite period of time.

The object of the invention is to produce a simple, cheap, and durable device of this kind; and to this end the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings the same reference numerals and letters indicate the same parts of the invention.

Figure 1 is a perspective view of my improved self-rocking cradle. Fig. 2 is a plan view, partly in section, with the cradle and the cover of the spring-case removed. Fig. 3 is a front end elevation, partly in section, showing the suspended cradle in dotted lines. Fig. 4 is a longitudinal section. Fig. 5 is a transverse sectional elevation of the rear end of the cradle. Fig. 6 is a plan view showing the first position of the escape-wheel, oscillating shoe, and pawls. Fig. 7 is a similar view showing the second position of the same. Fig. 8 shows the third position. Fig. 9 shows the fourth position. Fig. 10 shows the fifth position, and Fig. 11 the sixth position, of the same parts. Fig. 12 is a perspective detail of the stationary pawl with its washer shown removed on the right-hand side. Fig. 13 is a detail of the stud on which the stationary pawl is mounted, and Fig. 14 is a perspective view of the oscillating shoe with the pawl and washer shown removed on the upper right-hand side.

2 is the cradle-body, the head and foot board being provided with bearing-brackets 3 3, by which it is suspended upon the knife-

edge arms 4 4, secured in the upper ends of the standards 5 6, secured to the frame or stationary rectangular base 7, so that the cradle will oscillate or rock transversely from side to side.

8 is a bed-plate secured by screws 9 to the inside of the standard 5, and it is formed with an integral circular stud 10, on which is mounted the hub 12 of a shoe 13, extending upwardly and terminating in a rectangular socket 16, in which is secured the light wooden arm 17 by the bolts 18, so that the arm 17 and shoe 13 are free to oscillate on the stud 10. The upper end of this arm 17 is formed with an eye 19, and 20 21 are screw eyes or studs secured to the head of the swinging cradle approximately in the same horizontal line with the eye 19. One end of a flexible cord 22 is fastened to the stud 20, then passed through and secured to the eye 19 on the arm 17, and its free end secured to the stud 21 on the opposite side. From this construction it will readily be seen that if the arm 17 be oscillated on its bearing-stud 10 the oscillations will be transmitted to the cradle by the cord 22.

A pawl 23 is pivoted on the integral stud 24 of the bed-plate 8, and a similar pawl 25 is likewise pivoted on the stud 26, and these pawls alternately engage the teeth 27 on the escape-wheel 28, journaled on the stud 10. The hub 29 of this escape-wheel is formed with a circular flange 30, forming a central circular recess 31, in which is secured a stud-bolt 32, the collar 33 of which secures the wheel in place, at the same time permitting it to rotate freely on the stud 10.

On the projecting cylindrical end 34 of the bolt 32 is journaled one end of a shaft 35 in the recess 31 of the escape-wheel, and the opposite end of said shaft is journaled in the same horizontal line in the standard 6, through which its square end projects to receive a removable crank-handle 36.

A spiral spring 37 encircles the shaft 35, one end being secured to said shaft near its bearing in the standard 6, and the opposite end of said spring is secured to the hub 29 of the escape-wheel 28. A collar 38 is rigidly secured to the shaft 35, and it is formed with two oppositely-disposed arms 39 40, the outer ends of which terminate in a tooth 41, which

alternately engage a detent 42 in the free end of a gravity-pawl 43, fulcrumed on a pivot-screw 44, secured to the standard, and it serves to limit the up-and-down movement of said pawl. It will thus be seen that if the crank-handle 36 be rotated in the direction of the arrow it turns the shaft 35 and winds up the spring 37, one end of which is secured to and travels with the shaft, and the other end, being fast to the hub of the escape-wheel, remains stationary, the wheel itself being prevented from turning by the pawl 23.

Mounted on the same stud with the pawl 23 is a plate 46, having an integral radial arm 47, and on said plate at an angle of about forty-five degrees is a second integral arm 48, bent outwardly at a right angle to the face of the plate, its angular edge 49 resting against a shoulder 50 on said pawl. One end 51 of a coiled spring 52 engages the angular arm 48 of the plate 46, and its other end, after being coiled once or twice around the stud 24, is secured in an orifice 53 in the stud. The office of this spring 52 is to keep the angular arm 48 of the plate 46 in contact with the shoulder 50 of the pawl, and consequently press the free end of said pawl in engagement with the teeth on the escape-wheel.

A second coiled spring 54 has one end 55 likewise secured to the angular arm 48 of the plate 46, and after being coiled around the stud its other end is secured in an orifice 56 in the under side of the pawl. The office of this spring is to keep the shoulder 50 of the pawl in contact with the angular arm 48 of the plate 46 without reference to the position of the plate on the stud 24. A similar pawl 25 is pivoted on the stud 26 on the face of the shoe 13, so as to oscillate with it, and a plate 57, also mounted on said stud, is formed with a radial arm 58 and an angular arm 59, which bears against the shoulder 60 on the pawl. One end of a coiled spring 61 is secured to the angular arm 59 and its other end is secured to the shoe. This serves to press said pawl down, so that its free end will engage the teeth on the escape-wheel. A second spring 62 has one end 63 likewise secured to the angular arm 59 of the plate 57, and its other end is secured in an orifice in the under side of said pawl, and it serves to keep the shoulder 60 of the pawl 25 in contact with the under side of the arm 59 of the plate without reference to the position of the plate on the stud 26.

A stationary stud 64 on the bed-plate 8 projects into the path of the radial arm 58, and a similar stud 65 on the shoe 13 is alternately projected against and withdrawn from the radial arm 47 on the plate 46.

Assuming that the parts are in the position shown in Fig. 6, the spiral spring 37 is exerting its tension to rotate the escape-wheel in the direction of its arrow. The pawl 23 is in engagement with the tooth *a* of the escape-wheel and in the position shown in Fig. 6. Now if the shoe 13 be moved to the left to the

second position shown in Fig. 7 it will be seen that the stud 65 has pressed against the radial arm 47 of the plate 46 and raised its angular arm 48 from contact with the shoulder 50 on the pawl, the strain on the tooth *a* in the meantime being taken up by the pawl 23. If the shoe be moved a little farther to the left, the pawl 25 will come in contact with the tooth *b* of the escape-wheel, taking the strain thereof from the pawl 23 and pressing the escape-wheel backward just far enough for the tooth *a* to release the pawl 23, which is instantly carried up by the spring 52 until its shoulder 50 strikes against the angular arm 48, which is the upward limit of the play of the pawl and also the limit of the movement of the shoe in that direction, which is the third position of the parts, as shown in Fig. 8. The shoe now starts on its return movement, being given a fresh impulse by the momentum of the cradle and the tooth *b*, acting on the pawl 25 of the shoe. As the shoe starts on its return movement to the right its stud 65 is withdrawn from the radial arm 47 of the plate 46 and the spring 52, pressing the angular arm 48 against the shoulder 50 of the pawl, which forces its end down until it comes in contact with the back of the tooth *a*, the point of the tooth having passed under the line of the end of the pawl by reason of the shoe having moved a sufficient distance to the right, carrying the escape-wheel with it far enough for the point of the tooth *a* to clear the end of the pawl, and which is the fourth position, as shown in Fig. 9. The shoe continuing to move to the right next assumes the fifth position, as shown in Fig. 10, the stud 65 on shoe 13 having pressed the radial arm 47 of the plate 46 upward, carrying its angular arm away from the shoulder on the pawl 25, which is still in contact with the face of the tooth *b*. A little further movement of the shoe 13 in the same direction causes the face of the tooth *a'* to come in contact with the pawl 23, and it takes up the strain of the spring 37. As soon as the end of the pawl 25 has passed beyond the face of the tooth *b* the spring throws said pawl upward until its shoulder comes in contact with the angular arm, which position is the limit of the upward play of the pawl and the limit of the movement of the shoe in that direction, as shown in Fig. 11, and is the sixth position of the parts. As the shoe starts on its return movement the stud holds the radial arm up until the end of the pawl 25 has cleared the point of the tooth *b*, and the pawl then descends and rests on the back of said tooth in the first position shown. This finishes one complete oscillation of the cradle and shoe, and it will be observed that it only takes the movement of one tooth to accomplish this.

As the mainspring 37 extends the whole length of the cradle one winding will keep the cradle in motion for an indefinite period.

One end of a spring 66 is secured to a screw-stud 67 on the standard 6, and the body of the spring is then coiled two or three times around

a flanged spool 68, secured by a screw 69 to the base of the standard 6, and its free end terminates in an eye 70, to which is secured one end of a flexible cord 71, which passes three or four times around a flanged drum 72, loosely mounted on the shaft 35, thence over a pulley 73 on the base of the standard, and its end is secured to the free end of a foot-lever 74, fulcrumed on the standard-base.

10 A pawl 75 is pivoted to the side of the drum 72, the recessed end 76 of which is forced outwardly by a spring 77 against a pin 78 in the side of the drum, and said end 76 rotates with the drum in the path of the pins 79, secured to the side of the arms 39 and 40 on the collar 38, secured to the shaft 35. It will be seen that if the outer or free end of the foot-lever 74 be forced downwardly the flexible cord will rotate the drum 72 two or three times and the end 76 of the pawl 75 on said drum will come in contact with the pins 79 and rotate the shaft 35 a corresponding number of times, thereby winding up the spring. When the pressure is released from the foot-lever, the spring 66 and flexible cord 71 will restore the drum and foot-lever to their normal positions, the spring 77 allowing the end of the pawl 75 to spring inwardly from the pins 79 on the return movement of the drum.

30 A soft-rubber button 80 is secured to the under side of the free end of the foot-lever where it comes in contact with the floor and serves to deaden the sound at this point.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is—

1. A self-rocking cradle, comprising the standards 5 6, the cradle-body 2 suspended in the upper ends of said standards, the shaft 35 journaled in said standards, the spiral spring 37 mounted on said shaft and having one end secured thereto, the escape-wheel 28, to the hub of which the opposite end of said spring is secured, a pawl 23 pivoted on a stationary stud on the bed-plate 8, the oscillating shoe 13, pivoted to the bed-plate, the pawl 25 pivoted on said shoe, said pawls 23 and 25

alternately engaging the teeth on the escape-wheel, in combination with the oscillating arm 17 secured to said shoe, and the flexible cord 22 connected to the free end of said arm, and the cradle-body at a point below that from which the body is suspended, substantially as and for the purpose set forth.

2. A self-rocking cradle, comprising the standards 5 6, the cradle-body 2 suspended in the upper ends thereof, the shaft 35 journaled in said standards, the spiral spring 37, mounted on said shaft and having one end secured thereto, the escape-wheel 28, to which is secured the opposite end of said spring, the oscillating shoe 13 mounted on the bed-plate 8, and provided with the projecting stud 65, the pawl 25 having shoulder 60, plate 57 having a radial arm 58, and an angular arm 59, and coiled springs 60 62, in combination with the projecting stud 64, the pawl 23, having shoulder 50, the plate 46 having a radial arm 47 and an angular arm 48, the coiled springs 52 and 54 mounted on said bed-plate 8, the oscillating arm 17 and the flexible cord 22 connecting the said arm and suspended cradle-body, substantially as and for the purpose set forth.

3. A self-rocking cradle, comprising the mainspring 37 and shaft 35, the collar 38 formed with the integral arms 39 40 and teeth 41, the standards 6, the gravity-pawl 43 formed with an integral detent 43 and pivoted to said standard, substantially as and for the purpose set forth.

4. A self-rocking cradle, comprising the standards, the cradle suspended therefrom, the shaft 35 and mainspring 37, and the escape-wheel mechanism substantially as described, in combination with the spring 66, secured to one of said standards, the foot 74, the flexible cord connecting said spring and foot-lever, the drum 72 loosely mounted on the shaft 35, the pawl 75 mounted on said drum, and the arms 39 and 40, provided with pins 79 79 and formed integral with the collar 38 located in the path of the pawl 75, substantially as and for the purpose set forth.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOHN J. BUKOLT.

Witnesses:

R. H. BUTTERFIELD,
A. M. COPPS.