No. 746,166. PATENTED DEC. 8, 1903.

M. W. ROBINSON.

MOTOR ATTACHMENT FOR CRADLES.

APPLICATION FILED NOV. 5, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

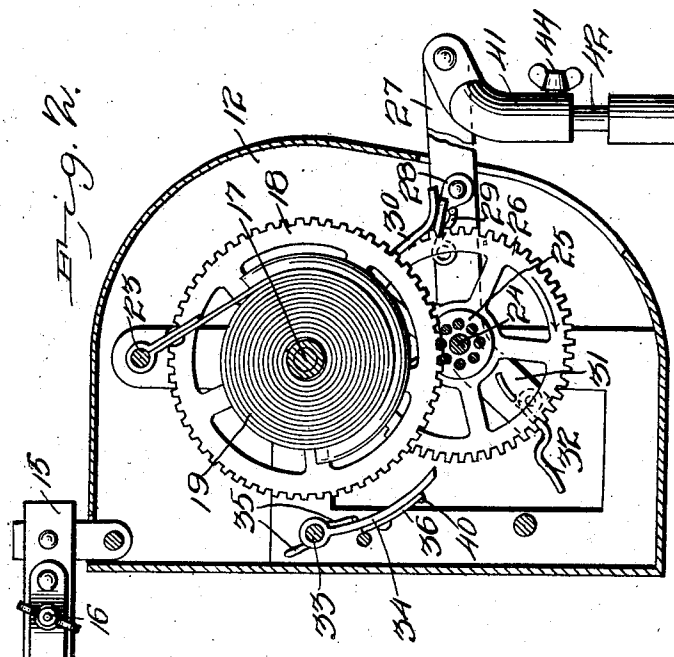


Fig. 3.

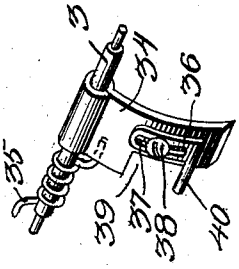
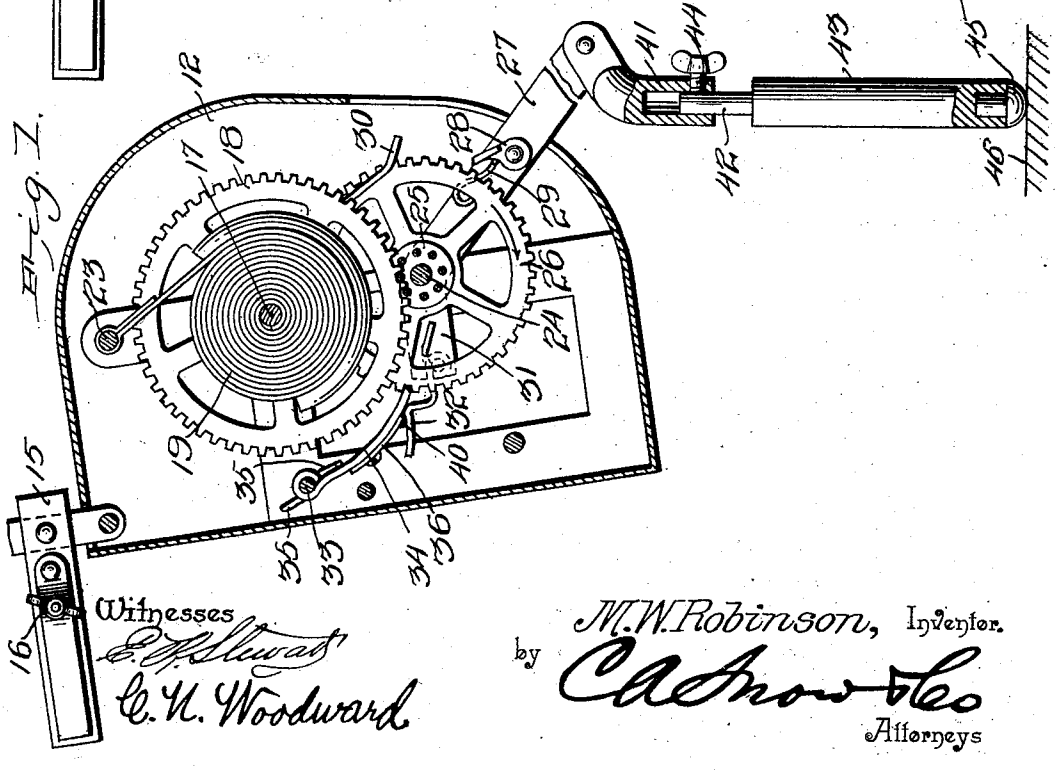


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

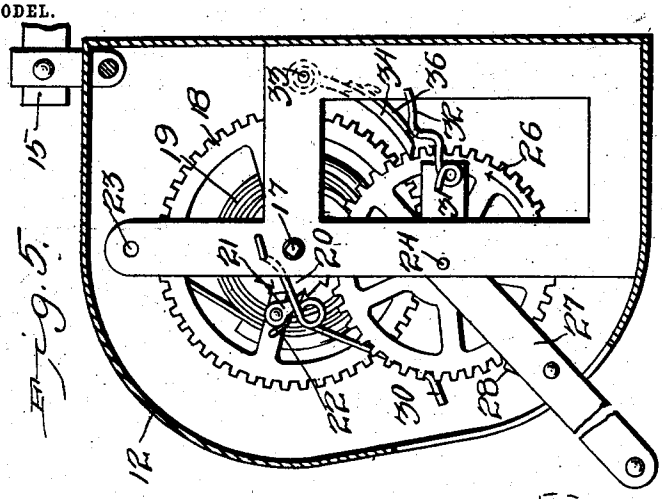
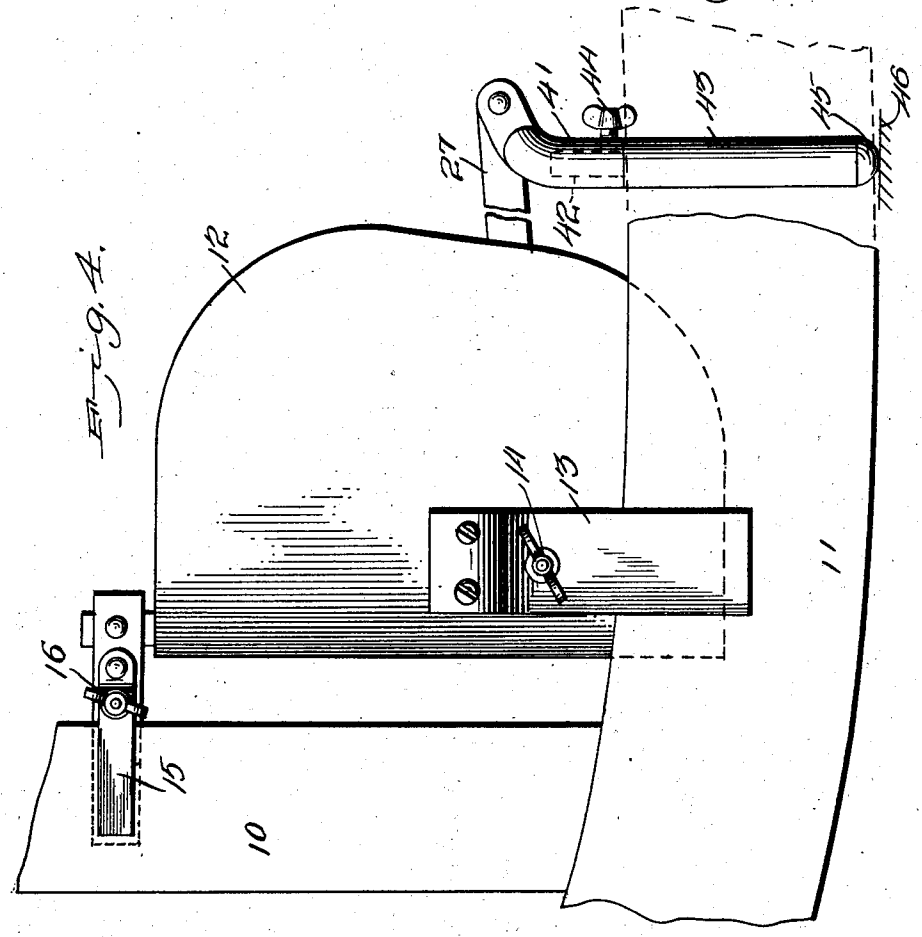


Fig. 4.



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No. 746,166. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

MATTHIAS WEST ROBINSON, OF LONOKE, TENNESSEE, ASSIGNOR OF ONE-HALF TO CHARLEY EDWARD ROBINSON, OF MILTON, TENNESSEE.

MOTOR ATTACHMENT FOR CRADLES.

SPECIFICATION forming part of Letters Patent No. 746,166, dated December 8, 1903.

Application filed November 5, 1902. Serial No. 130,185. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS WEST ROBINSON, a citizen of the United States, residing at Lonoke, in the county of Gibson and State of Tennessee, have invented a new and useful Motor Attachment for Cradles, of which the following is a specification.

This invention relates to devices employed for imparting an oscillatory or reciprocatory movement to cradles, rocking-chairs, and similar devices, but which may be employed for imparting motion to swinging signs, fans, or any other articles to which a vibratory motion is to be imparted, and I do not therefore desire to be limited in any manner to the article or apparatus to which the device is applied and reserve the right to apply it in any location to which it is adapted.

The object of the invention is to produce a device simple in construction, easily applied and operated, which will exert a force against the vibrating member from one side and be reset into operative position by the momentum of the return stroke, whereby a continuous vibratory motion is imparted within the range of the power of the spring which operates the mechanism.

The invention consists in certain novel features of construction, as hereinafter shown and described, and specified in the claims.

In the drawings illustrative of the invention, Figures 1 and 2 are sectional elevations of the motor in its two positions at the opposite end of the stroke. Fig. 3 is a detached perspective view of the stop-pawl. Fig. 4 is a view of the motor from the outside, illustrating the manner of attachment to a cradle or rocking-chair. Fig. 5 is a sectional elevation from the side opposite to that shown in Figs. 1 and 2.

The invention may be applied, as above noted, to a cradle, a rocking-chair, or any other article or device to which a vibratory or oscillatory motion is to be imparted, but will be more particularly applicable to the rocking of cradles, and for the purpose of illustration the device is shown applied to a cradle of ordinary construction, in which 10 represents the body of the cradle, and 11 one of the rockers.

The improved device will be attached preferably to one of the rockers adjacent to one end, as indicated, and will be incased in an inclosing frame or shield 12, suitably clamped to the rocker, as by a clamp 13, supported in place by a set-screw 14, engaging the rocker 11, and another clamping means 15, provided with a clamp-screw 16, engaging one of the vertical members of the body portion 10. By this arrangement the inclosure 12 may be clamped to any ordinary cradle or rocking-chair and easily removed therefrom when required or when it is desired to transfer the device to another chair or cradle. The clamping means may be modified to any required extent to adapt the device to different forms of cradles or chairs to which it is to be applied.

Within the casing 12 is journaled a main shaft 17, carrying a gear-wheel 18, a coiled spring 19, winding-ratchet 20, with its pawl 21 and pawl-spring 22 of the usual construction, one end of the spring 19 being connected to the casing 12, as by a transverse rod 23, and the other end attached to the shaft 17, by which means the power of the spring may be utilized to rotate the shaft 17 forcibly. Another transverse shaft 24 is journaled in the casing 12 adjacent to the gear 18 and carrying a pinion 25, engaging the gear 18, and also carrying a comparatively large ratchet-wheel 26, as shown.

Poised upon the shaft 24 is a lever 27, extending toward the outer end of the rocker 11 and provided with a pawl 28, adapted to engage the teeth of the ratchet 26 when in its inward position, but held normally out of engagement with the ratchet-teeth by a spring 29, by which means the pawl 28 will be held yieldably out of engagement with the ratchet-wheel.

Attached to the casing 12 is a spring trip member 30, so located and formed as to engage the outer side of the pawl 28 and throw it inward into engagement with the ratchet-teeth of the wheel 26 near the end of the upward stroke of the lever 27. The pawl 28 will thus remain in engagement with the ratchet-teeth of the wheel 26 during the downward stroke of said lever and also during the last portion of its upward stroke, when the pawl engages the trip 30, as will be herein-

after explained. The opposite end of the lever 27 is preferably extended downwardly and outwardly, as shown, and provided with a spring trip-finger 32.

Movably attached to a transverse rod 33 is a pawl 34, adapted to engage the teeth of the ratchet-wheel 26 on the opposite side from the pawl 28 and held normally out of engagement with the ratchet-teeth by a spring 35 upon the rod 33.

The rod 33 will be connected to the casing 12, and one end of the spring 35 will be engaged to the rod or to the casing and the other end exerting its force against the inner side of the pawl 34, and thus holding it out of engagement with the ratchet-wheel.

The spring-finger 32 is intended to engage the rear or outer side of the pawl 34 and throw it into engagement with the ratchet-teeth of the wheel 26 when the portion 31 of the lever is elevated, as hereinafter explained.

Upon the outer side of the pawl 34 is movably supported a slide 36, the slide formed with a slot 37, with which a clamp-screw 38 engages, as shown in Fig. 3, the slot and clamp-screw providing for the adjustment of the slide longitudinally of the pawl, as will be obvious.

The pawl 34 is provided on one edge with a recess 39, and the slide 36 is provided with a projection 40, extending over this recess, and the trip-finger 32 will be disposed to engage the projection 40 when moved upwardly by the action of the lever 27. By this arrangement the trip-finger 32 by engaging the projection 40 will throw the pawl 34 into engagement with the ratchet-wheel 26, as before stated, and by adjusting the slide 36 with its projection 40 longitudinally of the pawl the trip-finger 32 may be caused to actuate the pawl at an earlier or later period of the stroke of the lever, and thus regulate the movements.

The free end of the longer arm of the lever 27 is provided with an arm 41, preferably curved inwardly, as shown, and provided in its free end with a cavity adapted to receive a stud 42 on an extension 43, the member 41 having a set-screw 44, adapted to engage the stud 42 within the cavity; and thus regulate the position of the extension 43 relative to the arm 41. The extension 43 is preferably provided with a rubber or other yieldable foot 45, the latter adapted to engage the floor on which the cradle rests, and indicated at 46.

The arm 41 is pivotally connected to the lever 27 and free to swing thereon, as indicated.

The operation of the device when constructed and applied as herein described is as follows: When the device is tilted to the position shown in Fig. 1 of the drawings, the pawl 34 will engage the ratchet-wheel 26, thus retaining the latter stationary against the tension of the spring which is exerted upon the said ratchet-wheel to rotate the latter in the direction of the arrow. The ratchet-wheel being thus held from rotation, the spring may be wound by means of an ordinary key in the usual well-known manner. The spring having been wound, the cradle or other article to which the motor is attached is moved by hand in such a manner as to cause the outer projecting end of the lever 27 to be elevated by means of the member pivotally connected with said lever and engaging the floor. It will be noticed that at this time the pawl 28, connected with said lever, is being held by the spring 29 out of engagement with the teeth of the ratchet-wheel, while the pawl 34 is retained in engagement with the teeth of said wheel by the tension of the mainspring upon the latter. When the pawl 28 passes into engagement with the trip-finger 30, it is forced by the action of said finger and against the tension of spring 29 into engagement with the ratchet-wheel 26. The latter is thus subjected to a back movement against the tension of the mainspring, which although trifling is sufficient to enable the spring 35 to release pawl 34 from engagement with said ratchet-wheel. The tension of the mainspring 19 now becomes potent to rotate the ratchet-wheel upon its axis, the action of said ratchet-wheel engaging the pawl 28 being to exert a downward pressure against the free end of the lever 27, carrying said pawl, which is effective in restoring the motor-casing to the initial position, (shown in Fig. 1,) consequently rocking and tilting the article to which said motor-casing is attached to said initial position. The movement will continue until the trip-finger 32, carried by lever 27, engages the pawl 34, throwing the latter into engagement with the teeth of the ratchet-wheel. When the pawl 34 is thus thrown into engagement with the ratchet-wheel, the latter receives a slight backset, sufficient, however, to enable the spring 29 to release the pawl 28 from its engagement. The weight or momentum of the article operated upon will now return the device to the position shown in Fig. 2, the spring being held inactive during the period of such return by the engagement of the pawl 34 with the ratchet-wheel until the pawl 28 becomes once more actively engaged with the latter, when the force of the spring becomes once more actively expended to rotate said ratchet-wheel in the direction of the arrow and to continue the operation, as described. The operation of the device may be discontinued at any time by simply steadying the device until one of the pawls, preferably the pawl 34, becomes actively engaged with the ratchet-wheel. When the reciprocation of the cradle or other device to which the motor is attached is stopped at this point, it is evident that it will remain practically stationary until it receives a starting impulse from the hand of the operator or in any convenient manner.

The spring 19 may be made of any suitable size or desired length, so that the intermit-

tent motion may be continued for any desired length of time.

The trip-fingers 32 30 will be preferably formed of steel wire and will be sufficiently yieldable to permit the continued movements of the lever 27 31 at the final ends of their stroke to provide for the proper action upon the pawls 28 34, as will be obvious.

The adjustable feature 36 40 of the pawl 34 is an important feature of the invention, as by this means the proper coaction between the parts is insured, and no danger exists of any displacement or irregularity of action caused by a too rigid connection between the parts.

The adjustable extension 43 provides for the proper regulation of the motion, and the cushion 45 effectually prevents any abrasion of the floor or the wearing of carpets.

Having thus described the invention, what is claimed is—

1. In a device of the character described, a supporting-frame, a spring carried by said frame, an escapement-wheel actuated by said spring, a movable lever, means for detachably connecting said lever to said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, a trip-stop, yieldable means for holding said trip-stop out of engagement with said escapement-wheel during the operative stroke of said lever, and means carried by said lever for engaging said trip-stop with said escapement-wheel at a certain predetermined point in the stroke of the lever, whereby the force of the spring-actuated escapement-wheel is intermittently communicated to the lever, substantially as described.

2. In a device of the character described, a supporting-frame, a spring carried by said frame, an escapement-wheel actuated by said spring, a lever intermediately supported movably upon the axle of said escapement-wheel, means carried by said lever for detachably connecting it to said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, a trip-stop, means for holding said trip-stop out of engagement with said escapement-wheel during the operative stroke of said lever, and means carried by said lever for engaging said trip-stop with said escapement-wheel at a certain predetermined point in the operative stroke of the lever, whereby the force of the spring-actuated escapement-wheel is intermittently communicated to the lever, substantially as described.

3. In a device of the character described, a supporting-frame, a spring carried by said frame, an escapement-wheel actuated by said spring, a movably-supported lever, a pawl connected movably to said lever, a spring disposed to yieldably maintain said pawl out of engagement with said escapement-wheel, a trip-finger carried by said frame and adapted to move said pawl into engagement with said escapement-wheel at a certain predetermined point in the stroke of said lever, a trip-stop movably supported in said frame, a spring disposed to yieldably maintain said trip-stop out of engagement with said escapement-wheel, and means carried by said lever adapted to move said trip-stop into engagement with said escapement-wheel at a certain predetermined point in the stroke of the lever, whereby the force of the spring-actuated escapement-wheel is intermittently communicated to the lever, substantially as described.

4. In a device of the character described, a stationary member, a vibrating member, a spring carried by said vibrating member, an escapement-wheel actuated by said spring, a lever movably supported and movably engaging said stationary member, means for detachably connecting said lever to said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, a trip-stop, yieldable means for holding said trip-stop out of engagement with said escapement-wheel during the operative stroke of said lever, and means carried by said lever for engaging said trip-stop with said escapement-wheel at a certain predetermined point in the stroke of the lever, whereby the force of the spring-actuated escapement-wheel is intermittently communicated to the lever, substantially as described.

5. In a device of the character described, a stationary member, a vibrating member, a spring carried by said vibrating member, an escapement-wheel actuated by said spring, a lever movably supported and movably engaging said stationary member, a pawl connected movably to said lever, a spring disposed to yieldably maintain said pawl out of engagement with said escapement-wheel, a trip-finger carried by said frame and adapted to move said pawl into engagement with said escapement-wheel at a certain predetermined point in the stroke of said lever, a trip-stop movably supported in said frame, a spring disposed to yieldably maintain said trip-stop out of engagement with said escapement-wheel, and means carried by said lever adapted to move said trip-stop into engagement with said escapement-wheel at a certain predetermined point in the stroke of the lever, whereby the force of the spring-actuated escapement-wheel is intermittently communicated to the lever, substantially as described.

6. In a device of the character described, a stationary member, a vibrating member, a spring carried by said vibrating member, an escapement-wheel actuated by said spring, a lever intermediately supported movably upon the axle of said escapement-wheel and in movable engagement with said stationary member, means carried by said lever at one side of said escapement-wheel whereby it is detachably connected thereto during the

movement of the lever in one direction and released therefrom during the return stroke, a trip-stop at the opposite side of said escapement-wheel, yieldable means whereby said trip-stop is held out of engagement with said escapement-wheel during the stroke of said lever, and means carried by said lever whereby said trip-stop is moved into engagement with said escapement-wheel at a certain predetermined point in the stroke of the lever, substantially as described.

7. In a device of the character described, a stationary member, a vibrating member, a spring carried by said vibrating member, an escapement-wheel actuated by said spring, a lever movably supported upon said vibrating member, a foot member movably connected to said lever and engaging said stationary member, means for detachably connecting said lever to one side of said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, stop means for detachably connecting the opposite side of said escapement-wheel to said supporting-frame during the return stroke of said lever, and means carried by said lever for connecting said stop means with said escapement-wheel at a certain predetermined point in the operative stroke of said lever, substantially as described.

8. In a device of the character described, a stationary member, a vibrating member, a spring carried by said vibrating member, an escapement-wheel actuated by said spring, a lever movably supported upon said vibrating member, a foot member formed in two parts and longitudinally adjustable and movably connected to said lever and engaging said stationary member, and means whereby the force of said spring is caused to intermittently actuate said escapement-wheel and correspondingly operate said lever, substantially as described.

9. In a device of the character described, a stationary member, a vibrating member, a supporting-frame, clips for detachably connecting said frame to said vibrating member, a spring carried by said frame, an escapement-wheel actuated by said spring, a lever movably supported by said frame, means for movably connecting said lever to said stationary member, and means whereby the force of said spring is caused to intermittently actuate said escapement-wheel and correspondingly operate said lever, substantially as described.

10. In a device of the character described, a vibrating member, a supporting-frame detachably connected to said vibrating member, a spring carried by said frame, a lever movably supported by said frame, a foot member formed in two parts and longitudinally adjustable and movably connecting said lever with said stationary member, and means whereby the force of said spring is caused to intermittently actuate said lever and foot member and cause it to react against said vibrating member, substantially as described.

11. In a device of the character described, a supporting-frame, an escapement-wheel carried by said frame, a spring disposed to actuate said escapement-wheel, a lever movably connected relative to said escapement-wheel, a pawl carried by said lever and held normally out of engagement with said escapement-wheel, a trip-finger adapted to move said pawl into engagement with said escapement-wheel at a certain predetermined point in the stroke of said lever, a trip-stop movably carried by said frame and yieldably maintained normally out of engagement with said escapement-wheel, and means carried by said lever for moving said trip-stop into engagement with said escapement-wheel at a certain predetermined point in the stroke of the lever, substantially as described.

12. In a device of the character described, an inclosing casing, an escapement-wheel rotatively engaging said casing, a spring disposed to actuate said escapement-wheel, a lever movably connected relative to said escapement-wheel, means for detachably connecting said lever to said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, stop means for detachably connecting said escapement-wheel to said supporting-frame during the return stroke of said lever, and means carried by said lever for connecting said stop means with said escapement-wheel at a certain predetermined point in the operative stroke of said lever, substantially as described.

13. In a device of the character described, a supporting-frame, an escapement-wheel rotatively engaging said frame, a spring disposed to actuate said escapement-wheel, a lever movably connected relative to said escapement-wheel, means for detachably connecting said lever to said escapement-wheel during its movement in one direction and releasing it therefrom during the return stroke, a trip-stop movably connected to said frame, means for yieldably holding said trip-stop out of engagement with said escapement-wheel, a stop-bar adjustably connected to said trip-stop, and a trip-finger carried by said lever and adapted to engage said stop-bar and move said trip-stop into engagement with said escapement-wheel at a certain predetermined point in the operative stroke of the lever, substantially as described.

14. In a device of the character described, a supporting-frame, a toothed escapement-wheel rotatively engaging said frame, a spring disposed to actuate said escapement-wheel, a lever movably connected relative to said escapement-wheel, a pawl movably engaging said lever and adapted to engage said escapement-wheel, a spring disposed to maintain said pawl yieldably out of engagement with said escapement-wheel, a trip-finger carried by said frame and adapted to engage said pawl with said escapement-wheel at a certain

predetermined point in the stroke of the lever, and a trip means carried by said frame and adapted to be operated by said lever to engage said trip means with said escapement-wheel at a certain predetermined point in the operative stroke of the lever, substantially as described.

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

MATTHIAS WEST ROBINSON.

Witnesses:

D. WITHERINGTON,

A. C. ABNEY.