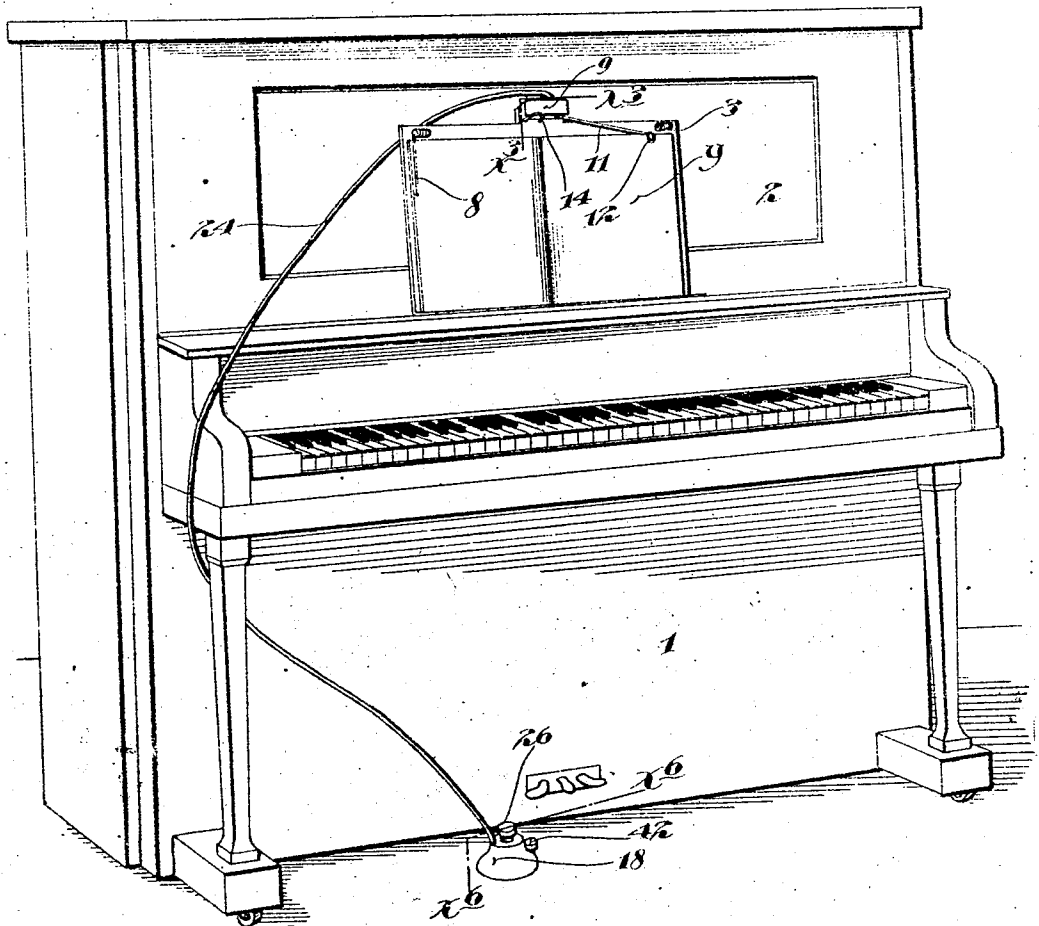


APPLICATION FILED MAR. 20, 1912.

3 SHEETS--SHEET 1.

1,060,682.

Fig. 1



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1,060,682.

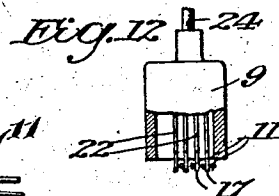
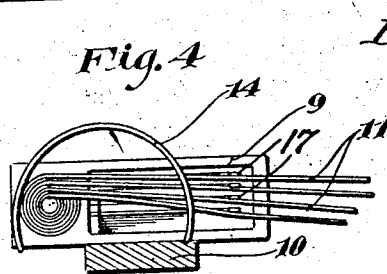
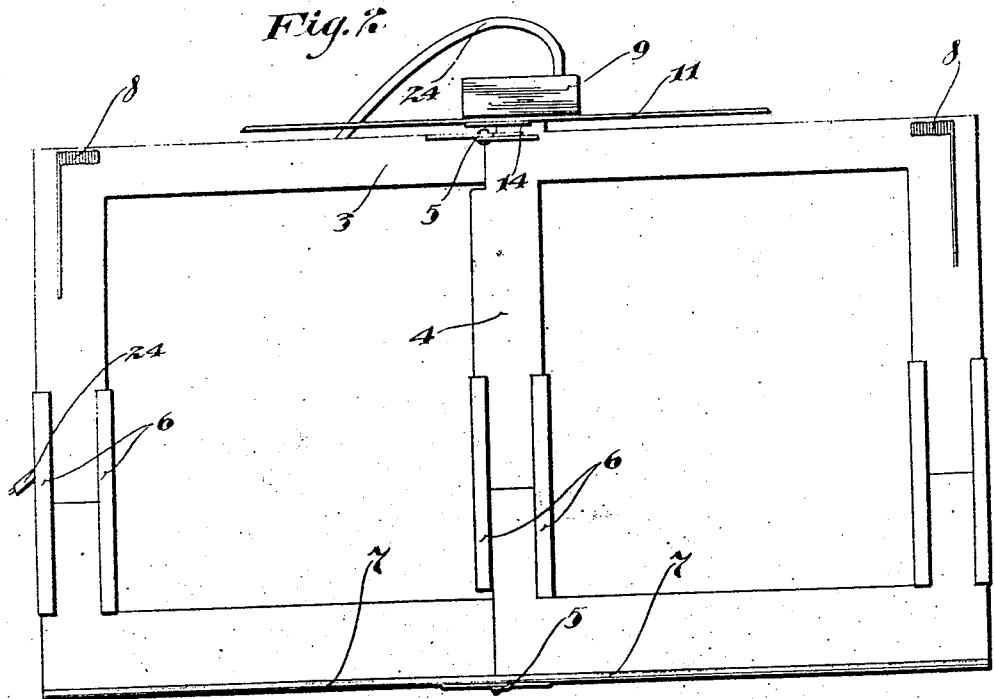


Fig. 5

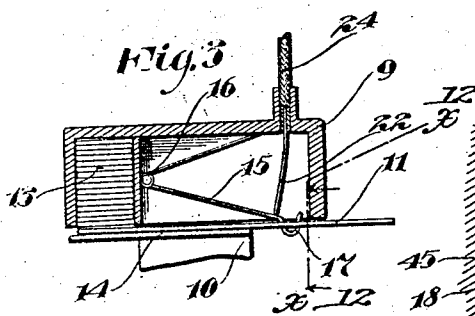
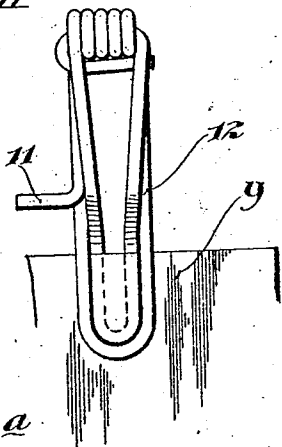
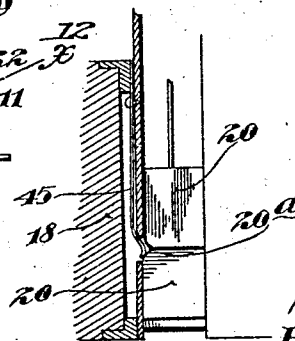


Fig. 9



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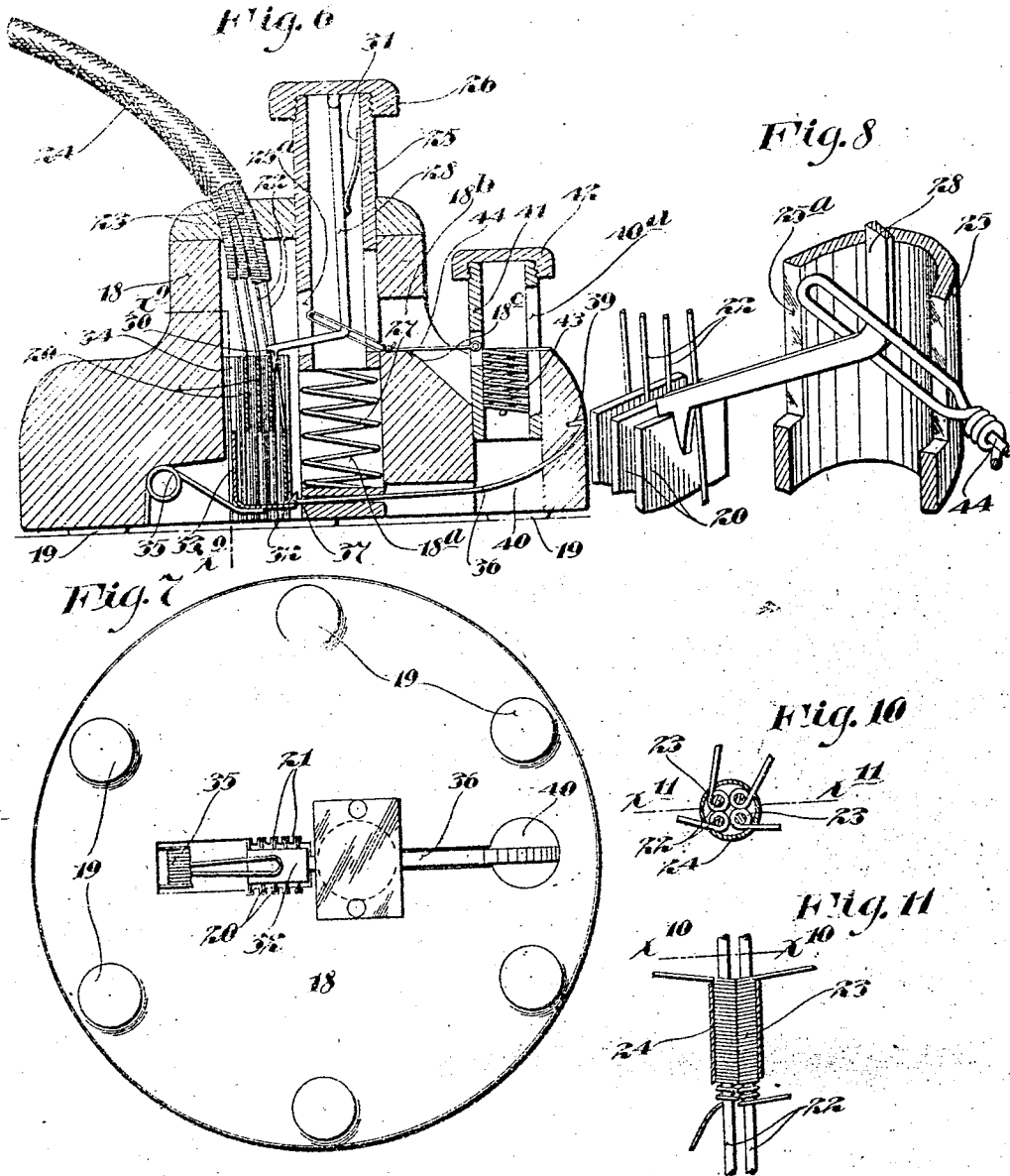
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MUSIC LEAF TURNER.
APPLICATION FILED MAR. 20, 1912.

Patented May 6, 1913.

3 SHEETS-SHEET 3.

1,060,682.



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UNITED STATES PATENT OFFICE.

HALVOR E. HOINES, OF MINNEAPOLIS, MINNESOTA

MUSIC-LEAF TURNER.

1,060,682.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed March 20, 1912. Serial No. 685,038.

To all whom it may concern:

Be it known that I, HALVOR E. HOINES, a subject of the King of Norway, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Music-Leaf Turners; and I do hereby 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 for its object to provide an improved music leaf turner, and to this end, it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a perspective view showing the improved music leaf turner attached in working position to an upright piano; Fig. 2 is a view in front elevation showing the music rack and a portion of the leaf turning mechanism; Fig. 3 is a detail view on an enlarged scale, in longitudinal section, taken on the line $x^a x^a$ of Fig. 1; Fig. 4 is a bottom plan view of the parts shown in Fig. 3; Fig. 5 is a detail view showing one of the spring closed leaf holding grapple jaws; Fig. 6 is a view in vertical section, on an enlarged scale, taken on the line $x^b x^b$ of Fig. 1; Fig. 7 is a bottom plan view of the parts shown in Fig. 6; Fig. 8 is a detail view in perspective showing a portion of the releasing and re-setting mechanism; Fig. 9 is a view in vertical section taken on the line $x^c x^c$ of Fig. 6; Fig. 10 is a transverse section, taken on the line $x^{10} x^{10}$ of Fig. 11; Fig. 11 is a longitudinal section taken on the line $x^{11} x^{11}$ of Fig. 10; and Fig. 12 is a view partly in end elevation and partly in transverse section, taken on the line $x^{12} x^{12}$ of Fig. 3.

The numeral 1 indicates, as an entirety, an upright piano illustrated simply for the purpose of showing the improved music leaf turner applied in working position. Detachably mounted on the piano 1, is a folding and adjustable music rack 2; said rack comprises a metallic marginal frame 3, having an intermediate vertically extended tie member 4. The horizontal members of the frame 3 are transversely divided adjacent to the left hand edge of the member 4, and

are connected by means of a pair of vertically aligned hinges 5, which permit the rack 2 to be folded like a book. The vertical members of the rack 2 are also transversely divided and the lower sections thereof are provided with guide flanges 6 in which the upper members thereof are slidably mounted under friction. Both sections of the lower member of the frame 3 are provided with an out-turned leaf supporting ledge 7. Cover holding spring fingers 8 are secured, one to each of the upper corners of the rack 2.

A rectangular metallic box 9 is rigidly secured to an extension 10, projecting from the upper member of the frame 3 and is provided with an open bottom. Carried by the box 9, is a multiplicity of leaf turning arms 11, terminating at their outer ends, in spring closed leaf holding grapple jaws 12, and terminating at their inner ends in coiled springs 13. As shown, there are four of these leaf turning arms 11; but, of course, any desired number may be provided. The springs 13 are concentrically located, one within the other, as shown in Fig. 4; and, as an entirety, are mounted within the box 9. At their free ends, the springs 13 are rigidly secured with respect to the box 9, and the leaf turning arms 11 are arranged to work just below the box 9, one slightly above the other. A segmental guide bar 14 is rigidly secured to the bottom of the box 9, and over which bar the leaf turning arms 11 slide during their leaf turning operations.

Escapement springs 15 independently hold the leaf turning arms 11 against the tension of their springs 13. These escapement springs 15 are anchored, at their intermediate portions, to the box 9 at 16, with their upper ends engaging the box 9 as a base of resistance. The free or lower ends of the escapement springs 15 terminate in depending retaining fingers 17 having direct engagement, one with each of the leaf turning arms 11.

Loosely resting on the floor, close to the piano 1, is a casing 18 in which is mounted the escapement releasing mechanism and, also, the re-setting mechanism, all of which is arranged to be operated by the foot of the pianist. Feet 19 of rubber or other suitable material, are secured to the bottom of the casing 18 to frictionally hold the same against slippage. Vertically movable re-

leasing plates 20, four in number, as shown, are slidably mounted at their vertical edges in vertically extended channels 21 formed in the sides of the casing 18. Flexible wire cables 22 connect the plates 20 with the retaining finger 17 of escapement springs 15. Each cable 22 is mounted in a flexible conduit 23 preferably, as shown in Fig. 10 and Fig. 11, constructed from a coiled wire. All of the conduits 23 are mounted in a flexible casing 24, the upper end of which is secured to and projects into the box 9, and the lower end thereof is secured to and projects into the casing 18.

A foot operated tubular releasing plunger 25 is slidably mounted in a vertically extended seat 18^a formed in the casing 18. The upper end of the plunger 25 projects above the casing 18, and is provided with a cap 26 that engages the top of the casing 18 to limit the downward movement thereof. Compressed between the bottom of the casing 18 and the lower end of the plunger 25, is a coiled spring 27, yieldingly and normally holding said plunger in its extended or operative position. Pivottally mounted at its upper end, within the tubular plunger 25, is a depending lever 28 terminating at its lower end in a laterally projecting arm 29 that projects through a slot 25^a in the casing 18, and arranged to work over the tops of the releasing plates 20. Integrally formed on the under side of the arm 29, near its free end, is a depending stop finger 30 arranged to successively engage the sides of the releasing plates 20.

A leaf spring 31 is secured to the plunger 25, and arranged to engage the lever 28 and yieldingly hold the stop finger 30 in engagement with the releasing plates 20, nearest the plunger 25. Underlying the lower horizontal edges of the releasing plates 20, is a vertically movable re-setting plate 32 having an upturned portion 33 slidably mounted at its vertical edges in a pair of vertically extended grooves 34, formed in the casing 18, and that extend parallel with the grooves 21. The re-setting plate 32 is yieldingly pressed upward by means of a spring 35 anchored within the casing 18. Horizontally mounted for sliding movement in the casing 18 is a spring latch 36, terminating at one end in an upturned cam nose 37 that normally overlies the re-setting plate 32 and normally holds the same downward against the tension of the spring 35. The other end of the spring latch 37 is anchored at 39 to the casing 18.

Mounted in a vertically extended seat 40, formed in the casing 18 for vertical sliding movement, is a tubular re-setting plunger 41 arranged with its upper end projecting above the casing 18, and provided with a cap 42 adapted to engage the upper surface of the casing 18 to limit the downward move-

ment thereof. Within the plunger 41 is mounted a coiled spring 43 having one of its ends anchored to the plunger 41 and its other end projecting through a slot 40^a cut in the side of the plunger 40, and anchored to the casing 18. The intermediate portion of the spring latch bar 36 extends through the seat 40 below said plunger 41 and in a position to be engaged by the said plunger during its downward movement to retract the spring latch 36 and, thereby, release the re-setting plate 32. Embracing the lever 28 at its junction with the arm 29, is a looped wire 44 which projects through a slot 18^b cut in the vertical wall of the casing 18 and is pivoted to the plunger 41. The intermediate portion of the wire 44 engages a cam shoulder 18^c formed by the slot 18^b.

The releasing plates 20 are independently and yieldingly held in inoperative positions against the tension of the escapement springs by means of flat leaf springs 45, secured to the casing 18. The springs 45 are arranged to engage stop shoulders 20^a on the releasing plates 20.

The operation of the improved music leaf turner may be briefly stated as follows: Normally, the leaf turning arms 11 are held to the right with respect to Fig. 1, against the tension of the springs 13 by the escapement springs 15. Each leaf turning arm is secured to one of the leaves of a book *y*, by means of the spring closed grapple jaws 12. The cables 22 are of such length as to hold the plates 20 in their uppermost positions against the tension of the escapement springs 15. To turn one of the leaves of the book *y*, the plunger 25 is pressed downward by the foot against the tension of the spring 27. During this movement of the plunger 25, the arm 29 moves down one of the plates 20. As soon as the foot is removed from the plunger 25, the same is immediately returned to its normal position by the spring 27, and the arm 29 is moved outward by means of the spring 31 until stopped by the finger 30 engaging the next plate 20. The plates 20, as they are moved downward, are yieldingly held in this position by means of the springs 45. The improved device is now again in a position to turn the next leaf of the book *y*. To return the plates 20 to their normal positions, the plunger 41 is pressed downward by the foot, thereby operating the latch 36 and releasing the re-setting plate 32. As soon as the re-setting plate 32 is released, the spring 35 moves the same upward and carries therewith any or all of the plates 20 which may have been moved downward during the leaf turning process. During the return movement of the plates 20, the springs 45 are moved out of engagement with the stop shoulders 20^a. At the same time the plunger 41 is moved downward, the connected wire

44 carries the arm 29 and the finger 30 into a retracted position, thereby permitting the plates 20 to be returned to their normal positions. The leaf turning arms 11 are returned to their normal positions by hand.

What I claim is:

1. In a device of the kind described, the combination with a music rack, of a plurality of leaf turning devices, carried by said rack, an escapement cooperating with each of said leaf turning devices, means for actuating said leaf turning devices after the same have been released by said escapements, a casing located at a distant point from said music rack, releasing devices, movably mounted in said casing, flexible connections between said escapements and releasing devices, and common means operative successively on said releasing devices, to actuate said escapements, substantially as described.

2. In a device of the kind described, the combination with a music rack, of a plurality of leaf turning devices, carried by said rack, an escapement cooperating with each of said leaf turning devices, means for actuating said leaf turning devices after the same have been released by said escapements, a casing located at a distant point from said music rack, releasing devices, movably mounted in said casing, flexible connections between said escapements and releasing devices, common means operative successively on said releasing devices, to actuate said escapements, and means for holding said releasing devices in inoperative positions, substantially as described.

3. In a device of the kind described, the combination with a music rack, of a plurality of leaf turning devices carried by said rack, an escapement cooperating with each of said leaf turning devices, means for actuating said leaf turning devices after the same have been released by said escapements, a casing located at a distant point from said music rack, releasing devices, movably mounted in said casing, flexible connections between said escapements and releasing devices, common means operative successively on said releasing devices, to actuate said escapements, means for holding said releasing devices in inoperative positions, and means for returning said releasing devices to operative positions, substantially as described.

4. In a device of the kind described, the combination with a music rack, of a plurality of leaf turning devices carried by said rack, an escapement cooperating with each of said leaf turning devices, means for actuating said leaf turning devices, after the same have been released by said escapements, a casing, releasing plates, movably mounted in said casing, flexible connections between said escapements and releasing

plates, and a yieldingly held plunger, operative successively on said releasing plates, to actuate said escapements, substantially as described.

5. In a device of the kind described, the combination with a music rack, of a plurality of leaf turning devices carried by said rack, an escapement cooperating with each of said leaf turning devices, means for actuating said leaf turning devices, after the same have been released by said escapements, a casing, releasing plates, movably mounted in said casing, flexible connections between said escapements and releasing plates, a yieldingly held plunger, operative successively on said releasing plates, to actuate said escapements, and a yieldingly held plunger for returning said releasing plates to operative positions, substantially as described.

6. In a device of the kind described, the combination with a music rack, of a leaf turning device carried by said rack, an escapement cooperating with said leaf turning device, means for actuating said leaf turning device after the same has been released by the escapement, a casing, a releasing plate movably mounted in said casing, a flexible connection between said escapement and said releasing plate, a releasing plunger mounted in said casing, a movable part carried by said releasing plunger, and operative on said releasing plate for actuating said escapement, and means for rendering said movable part inoperative and for resetting said releasing plate.

7. In a device of the kind described, the combination with a music rack, of a spring operated leaf turning arm carried by said rack, an escapement cooperating with said leaf turning arm, a casing, a releasing plate mounted in said casing, a connection between said escapement and said releasing plate, a releasing plunger mounted in said casing, a yielding part carried by said releasing plunger and operative on said releasing plate to actuate said escapement, means for yieldingly holding said releasing plate in an inoperative position, and means for returning said releasing plate to its normal position.

8. In a device of the kind described, the combination with a music rack, of a spring operated leaf turning arm carried by said rack, an escapement cooperating with said leaf turning arm, a casing, a releasing plate mounted in said casing, a connection between said escapement and said releasing plate, a releasing plunger mounted in said casing, a yielding part carried by said releasing plunger and operative on said releasing plate to actuate said escapement, means for yieldingly holding said releasing plate in an inoperative position, and means for simultaneously moving said movable

part into an inoperative position and for returning said releasing plate to an operative position.

9. In a device of the kind described, the combination with a music rack, of a spring operated leaf turning arm carried by said rack, an escapement cooperating with said leaf turning arm, a releasing plate mounted in said casing, a connection between said escapement and said releasing plate, a releasing plunger and a re-setting plunger mounted in said casing, a yielding part carried by said releasing plunger and operative on said releasing plate to actuate said es-

capement, means for yieldingly holding said releasing plate in an inoperative position, and means operated by said re-setting plunger for simultaneously moving said yielding part into an inoperative position and for returning said releasing plate to an operative position.

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

HALVOR E. HOINES.

Witnesses:

EDITH SIMERMAN,
HARRY D. KILGORE.