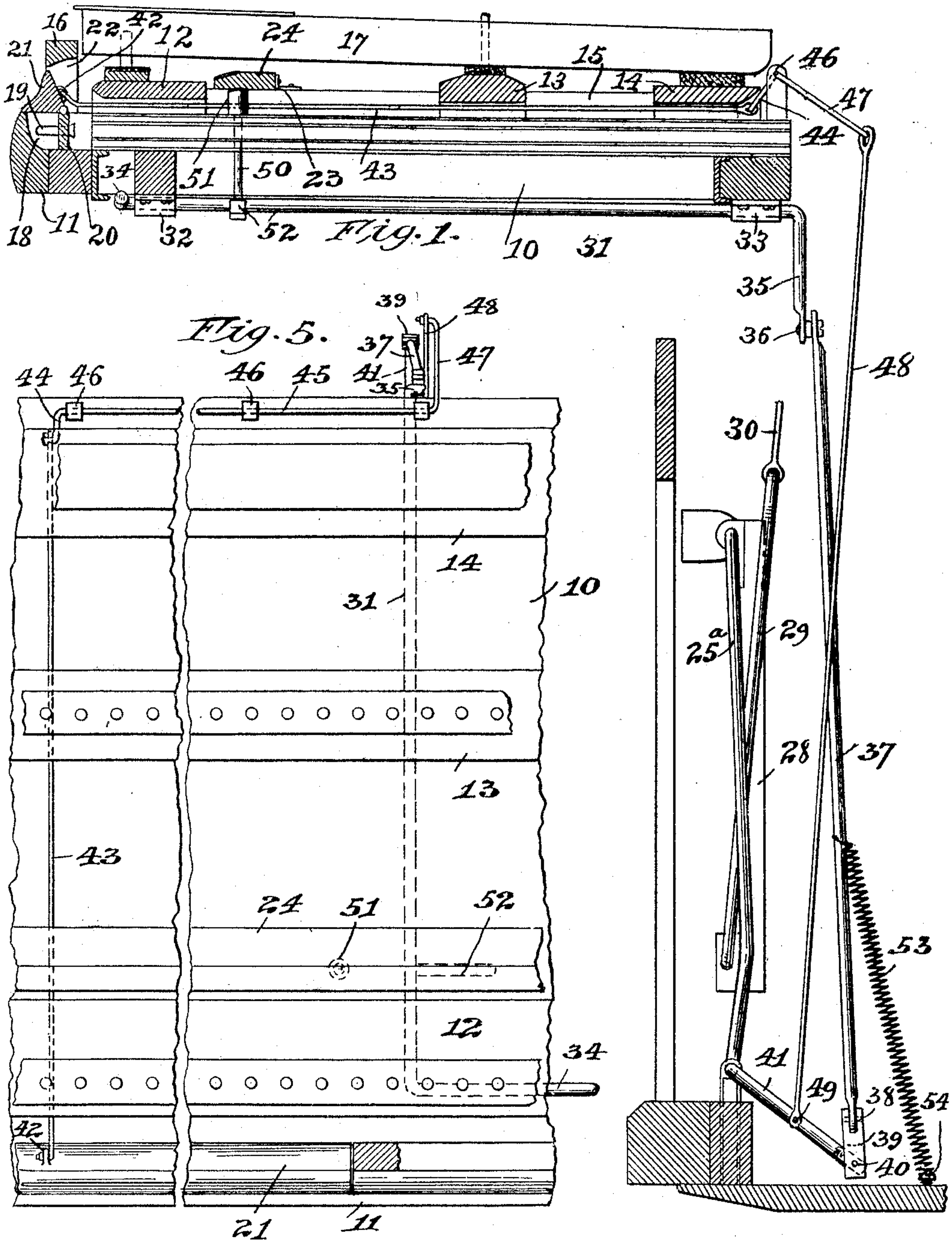


974,884.

Patented Nov. 8, 1910.

4 SHEETS—SHEET 1.



Witnesses,  
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PLAYER PIANO.

Patented Nov. 8, 1910.

4 SHEETS—SHEET 2.

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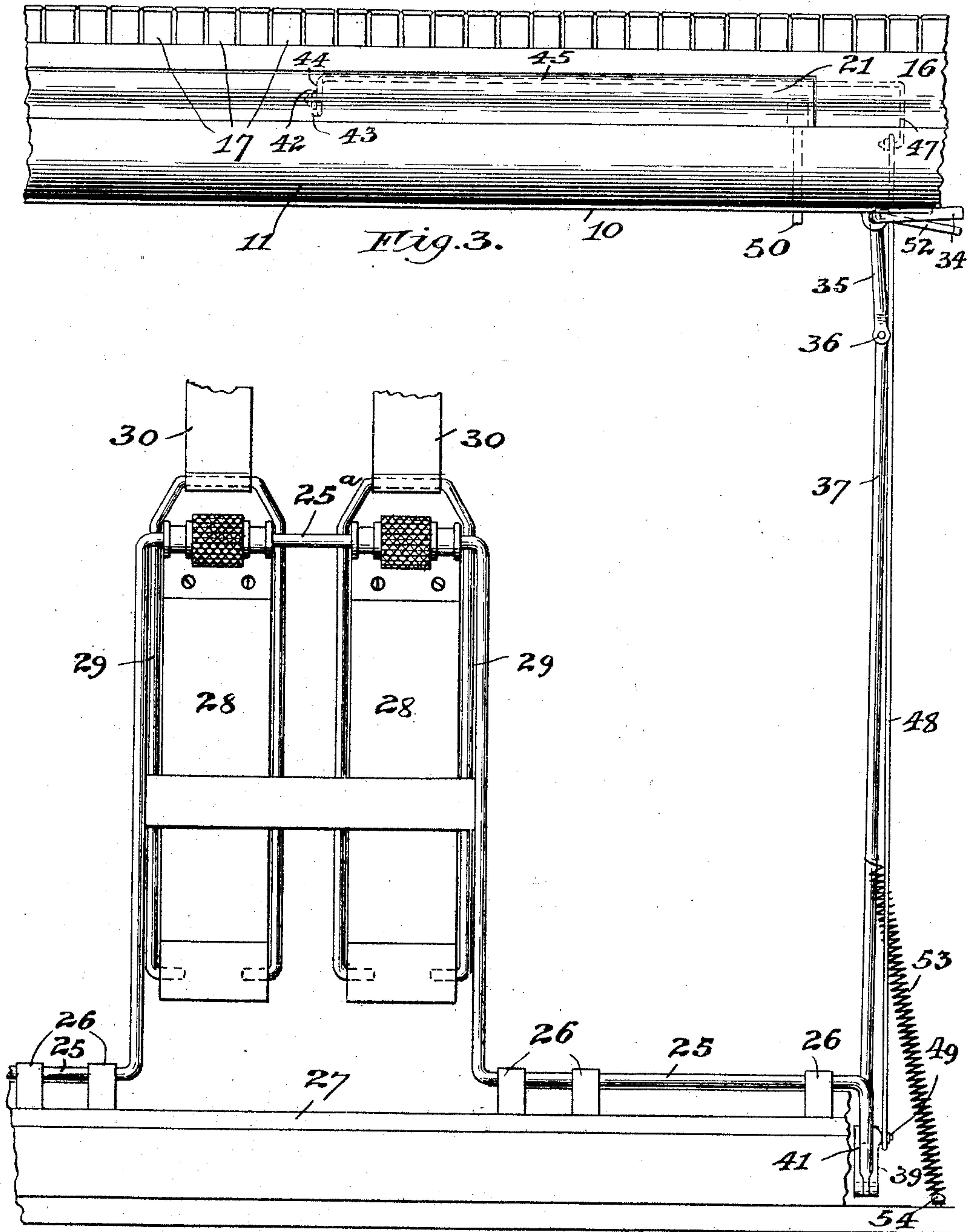
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APPLICATION FILED OCT. 20, 1909.

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4 SHEETS—SHEET 3.



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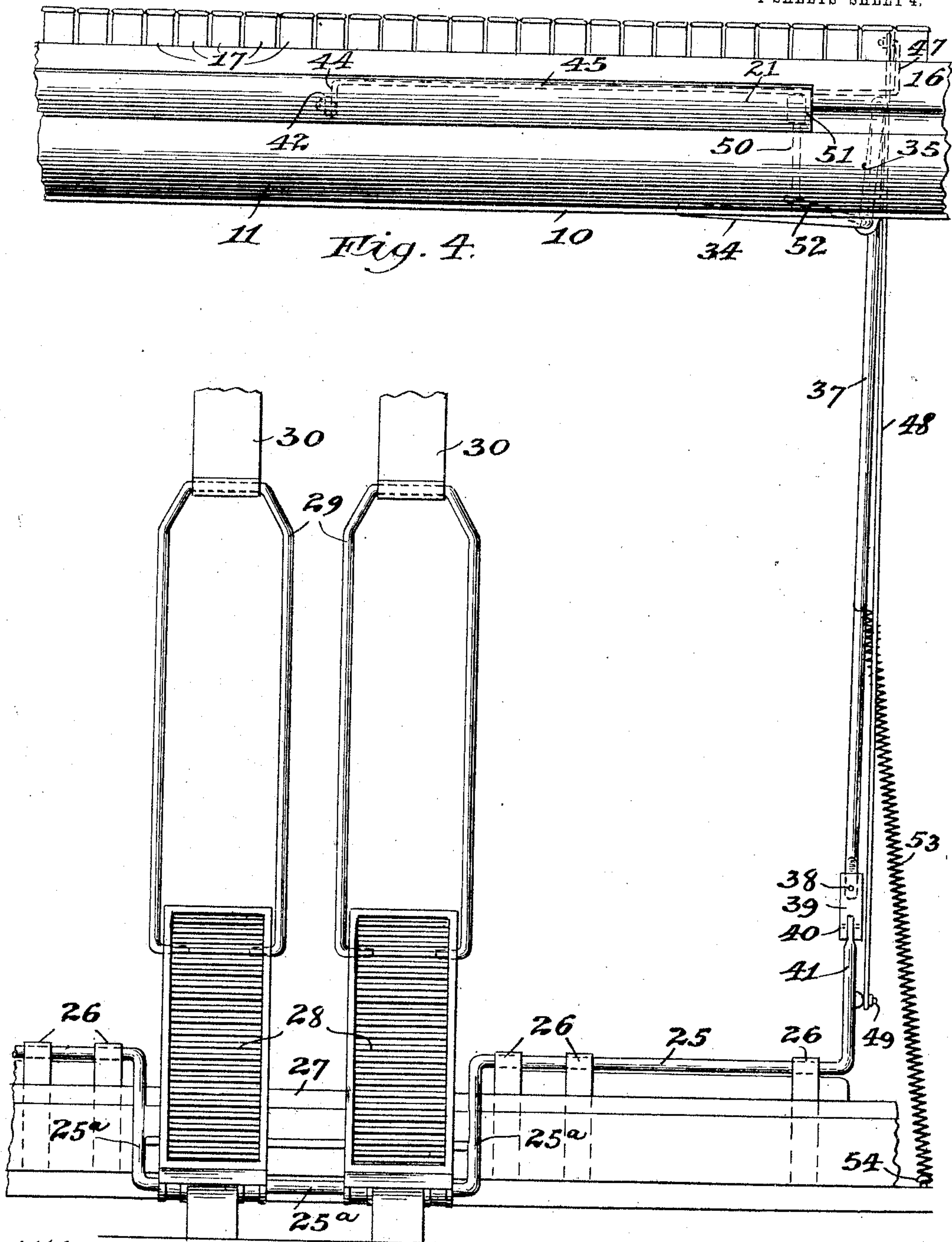
E. C. HISCOCK.  
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

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## PLAYER-PIANO.

974,884.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed October 20, 1909. Serial No. 523,649.

*To all whom it may concern:*

Be it known that I, EMORY C. HISCOCK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Player-Pianos, of which the following is a specification.

This invention relates to improvements in mechanical piano players, having reference more particularly to that type of player wherein the pneumatically operated playing mechanism is located wholly within the case of the piano itself, such pianos being commonly known as player pianos. Instruments of this type commonly employ a set of expression-levers which control the devices for producing the tempo effects, the loud and soft playing effects, etc., which levers are usually located beneath or within a recess in the key-slip or key-bed, and in the latter case a hinged closure or cover member, which sometimes comprises a section of the key-bed, is employed to conceal the said levers when they are not in use. Mechanical players of this type also commonly employ a pedal mechanism for operating the main bellows, which pedal mechanism is so constructed as to be foldable behind the lower front panel of the piano case, or behind a sliding closure therein when not in use, while capable of being unfolded or opened down into operative position when required for service, in which position the pedals overlie the usual piano pedals.

It is desirable to convert the instrument from manual to mechanical playing condition, and vice versa, as quickly and with as few movements as possible; and to the attainment of this end I have developed my present invention which, in its most complete form, has, as its principal and broad novel feature the provision of manually operable means through the actuation of which both the cover of the expression-levers and the pedal mechanism which operates the bellows may be simultaneously opened to place the instrument in condition for mechanical playing, or may be simultaneously closed to place the instrument in condition for manual playing. In its preferred form, shown in the accompanying drawings and hereinafter described in detail, this operating means comprises a rock-shaft journaled transversely of and beneath the key-bed, this rock-shaft having on its forward end a

crank-arm or handle for operating the same and on its rear end a crank-arm which, through suitable lever and link connections extending to the cover of the expression-levers and to the foldable pedal mechanism, operates to simultaneously open the said parts when said rock-shaft is turned in one direction and to simultaneously close the said parts when said rock-shaft is turned in the opposite direction.

Piano players of the type referred to are sometimes provided with a device in the nature of a key-lock, which has the function of supporting the keys against depression when the instrument is operated by the mechanical playing mechanism. Such a key-lock must, of course, be capable of retraction to an idle position so as not to interfere with the manipulation of the keys during the manual playing of the instrument.

A further feature of the present invention, consists in a means for moving the key-lock into operative position by and from the same manually operated means which effects the opening and closing movements of the cover of the expression-levers and the pedal mechanism; this key-lock actuating means preferably being brought into action at the conclusion of the opening of the cover and pedal mechanism and by a further or continued movement in the same direction of the main operating member of such cover and pedal opening and closing mechanism. While the invention in its most complete and preferred form provides for the actuation of the cover of the expression levers and also of the key-lock from the same means which folds and unfolds the pedal mechanism, yet this pedal-operating means as applied to the folding and unfolding of the pedal mechanism itself possesses novelty and in itself constitutes a part of the present invention.

A further noteworthy feature of the mechanism forming the subject-matter of the present invention resides in the self-locking capacity which characterizes its preferred form; that is, when the mechanism is fully actuated in either direction of movement, it is self-locked against accidental movement in the opposite direction, thus insuring the retention of the several parts securely in the positions to which they may have been moved until positively shifted to their reverse positions by the manipulation of the actuating means thereof.

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My invention will be readily understood when considered in connection with the accompanying drawings, which show one practical form in which the same may be embodied as applied to an ordinary upright piano having an internal player mechanism, and in which—

Figure 1 is a cross-sectional view through the key-bed, base, and lower front panel of a piano, showing my improvements in side elevation and in the relative positions which the parts assume when the cover of the expression-levers is closed, the pedal mechanism is folded, and the key-lock is idle. Fig. 2 is a view similar to Fig. 1, but showing the cover open and the pedal mechanism unfolded or swung down into operative position, and the key-lock forced upwardly into operative position, and illustrating the relative positions which the actuating parts thereof assume at such time. Fig. 3 is a front elevational view of Fig. 1. Fig. 4 is a front elevational view of Fig. 2. Fig. 5 is a top plan view of the parts shown in Fig. 1. Referring to the drawings, 10 designates as an entirety the key-bed, 11 the key-bed ledge, 12, 13 and 14 the front, balance and back rails, 15 the cross-pieces, 16 the key-slip, and 17 the keys, all as usual in any piano of the upright type. The key-bed ledge 11 has formed in the upper surface thereof a recess or chamber 18 located centrally thereof, within which chamber project the forward ends of certain levers conventionally illustrated at 19, which levers control the means for producing the tempo effects, soft and loud pedal effects, etc. Hinged to the upper edge of the rear wall 20 of the chamber 18 is a cover or closure 21, herein shown as a strip of triangular cross-section adapted to rock through a slot 22 formed in the key-slip 16 between the closed position shown in Fig. 1, wherein it covers and conceals the levers 19, and the open position shown in Fig. 2, wherein said levers are exposed and accessible for manipulation. Hinged at 23 to the top of the cross-piece 15 is a key-lock 24 in the form of a strip extending transversely of and beneath the entire bank of keys, said strip being hinged at its rear edge, as shown, with its upper forward edge preferably beveled or tapered as shown at 24<sup>a</sup> and capable of being thrust upwardly to the position shown in Fig. 2 wherein it rests against the under side of the forward end portions of the keys and supports the latter securely against depression.

The pedal mechanism as herein shown comprises a shaft 25 journaled at 26 in suitable bearings in the base-rail 27, said rod having a central offset or bail-shaped portion 25<sup>a</sup> on which are hinged the lower ends of a pair of pedals 28, the upper ends of said pedals being pivotally supported by the lower

ends of a pair of suspension links 29, to the upper ends of which latter are connected straps 30 that extend upwardly to and directly operate the exhaust bellows or pumps (not shown) of the player, these latter being conveniently located to be so operated. Describing now the means which I have devised for effecting the movements of these several parts in the described order and relation, 31 designates a rock-shaft journaled in suitable front and rear bearings 32 and 33 beneath the key-bed 10 and transversely of the latter, said rock-shaft having on its forward end an actuating arm or handle 34, preferably integral therewith, and on its rear end a crank-arm 35 extending substantially at right angles to the arm 34. Pivotally connected at 36 to the outer end of the arm 35 is a connecting rod 37 extending downwardly and at its lower end pivotally connected at 38 to another short link 39, which latter is pivoted at its lower end at 40 in a direction at right angles to the pivot 38 to the outer end of a crank-arm 41 on and preferably integral with the pedal shaft 25.

Hinged at 42 to the inner or rear side of the cover 21 is a horizontal connecting rod 43 that extends beneath the front, balance and back rails transversely of the key-bed and at its rear end is pivotally connected to a short arm 44 on a rock-shaft 45 (Fig. 5) journaled in suitable bearings 46 on the rear edge of the key-bed, the opposite end of said shaft 45 having a crank-arm 47 disposed substantially at right angles to the crank-arm 44, from the outer end of which arm 47 is suspended a connecting rod 48 pivoted at its lower end at 49 to the crank-arm 41 of the pedal shaft 25.

Slidably mounted in the key-bed beneath the key-lock 24 is a push-rod 50, the upper end of which carries a head 51 directly engaging the under side of the key-lock strip 24, while its lower end projects slightly below the key-bed 10. Fast on the rock-shaft 31 at a point directly opposite the push-rod 50 is a laterally projecting arm 52 that extends at a small angle in advance of the operating arm 34, said arm 52 being adapted, when the rock-shaft 31 is turned from the position shown in Fig. 3 to that shown in Fig. 4, to strike the lower end of the push-rod 50 and force the same upwardly, thereby raising the key-lock to operative position as shown in Fig. 2.

A tensile spring 53 is attached at its lower end as by a screw 54 to the base-board of the instrument or to any suitable part of the frame thereof, and at its upper end is attached to the connecting rod 37, said spring normally exerting a downward pull on said connecting rod which is designed to oppose and approximately counterbalance the gravity effect of the pedals as the latter are unfolded or opened down, to insure an easy



movement and prevent the lower ends of the pedals from striking the floor with undue force or violence, and also to assist the operator in the folding movement.

5 When the piano is played manually and the player mechanism is idle, the parts occupy the relative positions shown in Figs. 1 and 3 wherein the expression-levers are concealed by the cover 21 and the pedal  
10 mechanism is folded behind the lower front panel. When the instrument is to be operated by the player mechanism, the operator grasps the handle 34 and swings it through approximately a half circle or until the arm  
15 52 strikes the lower end of the push-rod 50. Such a movement of the rock-shaft suffices, through the described connections, to fully open the cover 21 and lower the pedal mechanism, as shown in Figs. 2 and 4. If  
20 the operator then desires to lock the keys against movement he continues the rocking or turning movement of the shaft 31 by swinging the arm 34 still higher or to the fully raised position shown in Figs. 2 and  
25 4, which causes the arm 52 to raise the push-rod 50 and place the key-lock in operative position, as shown in Fig. 2. The turning of the rock-shaft in the opposite direction, or back to the original position simultane-  
30 ously restores the cover and pedal mechanism to closed position and also releases the key-lock 24. It will be observed by reference to Figs. 3 and 4 that in both positions the pivot joint 36 between the arm 35 and con-  
35 necting rod 37 lies slightly to the outer side of or beyond the vertical plane of the rock-shaft 31. This automatically locks the actuating mechanism against accidental move-  
40 ment in either direction from fully set position, and insures against accidental opening or closing of the cover and pedal mechanism and accidental release of the key-lock without the necessity of employing any special locking mechanism.

45 From the foregoing it will be seen that the device of my invention enables the conversion of the instrument from manual playing to mechanical playing condition, and vice versa, to be very easily and quickly ef-  
50 fected by a single simple swinging movement of the operating arm or handle 34 located beneath and concealed by the key-bed. It also permits the key-lock to be used, at the option of the operator, simply  
55 by a continued movement in the same direction of the operating arm or handle after the latter has been operated to a sufficient extent to open the cover and unfold the pedal mechanism.

60 I claim:

1. In a player piano, the combination with a cover for the expression-levers and a fold-  
65 able bellows-operating pedal mechanism, of means connected to and simultaneously actuating said cover and pedal mechanism to

effect both the opening and closing movements of the same.

2. In a player piano, the combination with a cover for the expression-levers, a fold-  
70 able bellows-operating pedal mechanism, and a key-lock, of means connected to and simultaneously effecting the opening movements of said cover and pedal mechanism, and means for actuating said key-lock from  
75 said cover and pedal opening means.

3. In a player piano mechanism, the combination with a cover for the expression-  
80 levers, a foldable bellows-operating pedal mechanism, and a key-lock, of means for simultaneously opening said cover and pedal mechanism, and means for actuating said key-lock from a further movement in the same direction of said cover and pedal open-  
ing means.

4. In a player piano mechanism, the combination with a foldable bellows-operating  
85 pedal mechanism, and manually operable means for opening and folding the same, of a key-lock, and means for actuating said key-lock from said pedal-actuating means  
90 upon the conclusion of the pedal-opening movement of the latter.

5. In a player piano, the combination with a foldable bellows-operating pedal  
95 mechanism including a pedal-shaft journaled on the lower portion of the piano frame, of a rock-shaft journaled beneath the key-bed, an operating handle on one end of said rock-shaft, and positively acting connections  
100 between the other end of said rock-shaft and said pedal shaft serving to effect both the opening and closing movements of said pedal mechanism.

6. In a player piano, the combination with a foldable bellows-operating pedal mecha-  
105 nism including a pedal-shaft journaled on the lower portion of the piano, of a rock-shaft journaled beneath the key-bed, an operating handle on one end of said rock-shaft, a crank-arm on the other end of said rock-  
110 shaft, a crank-arm on said pedal-shaft, and a link connecting said crank arms and transmitting both up and down movements of the former to the latter.

7. In a player piano, the combination with  
115 a cover for the expression-levers, and a foldable bellows-operating pedal mechanism, of a rock-shaft journaled beneath and transversely of the key-bed, an operating handle on the forward end of said rock-shaft, and  
120 connections between the rear end of said rock-shaft and said cover and pedal mechanism, respectively.

8. In a player piano, the combination with a cover for the expression-levers, and a fold-  
125 able bellows-operating pedal mechanism including a pedal-shaft journaled on the lower portion of the piano frame, of a rock-shaft journaled beneath and transversely of the key-bed, an operating handle on the forward  
130



end of said rock-shaft, a crank-arm on the rear end of said rock-shaft, a crank-arm on said pedal shaft, a connecting link between the crank-arms, and lever and link connections between said pedal-shaft crank-arm and said cover.

9. In a player piano, the combination with a cover for the expression-levers, and a foldable bellows-operating pedal mechanism including a pedal-shaft journaled on the lower portion of the piano frame, of a rock-shaft journaled beneath and transversely of the key-bed, an operating handle on the forward

end of said rock-shaft, a crank-arm on the rear end of said rock-shaft, a crank-arm on said pedal-shaft, a connecting link between said crank-arms, a horizontal rock-shaft journaled on the rear portion of the key-bed and having crank-arms on its respective ends, and links connecting said last-named crank-arms with said cover and with said pedal-shaft crank-arms, respectively.

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Witnesses:

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