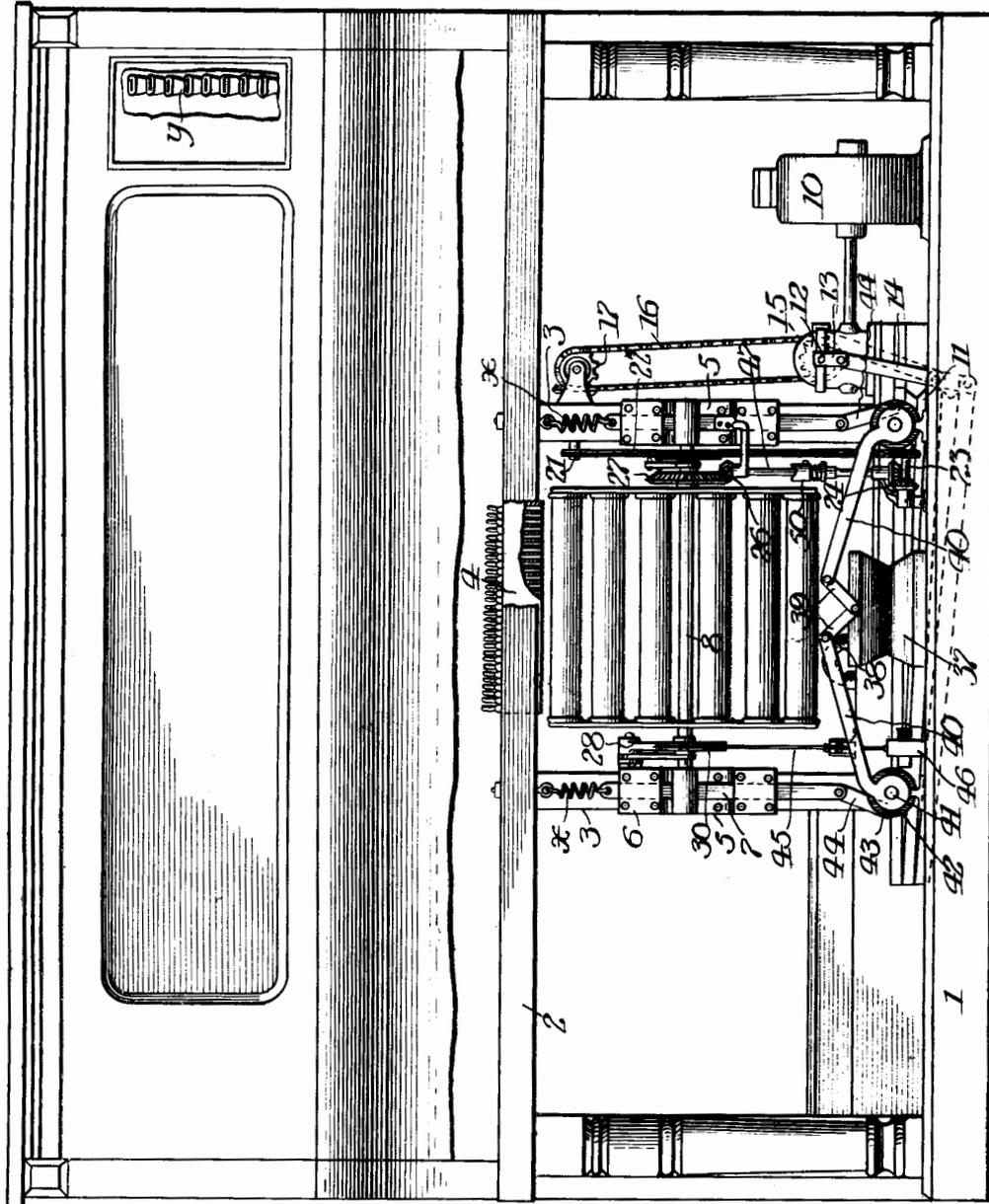


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COIN OPERATED AUTOMATIC PIANO PLAYER.  
APPLICATION FILED AUG. 7, 1912.

1,141,549.

Patented June 1, 1915.

2 SHEETS—SHEET 1.



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Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 4.

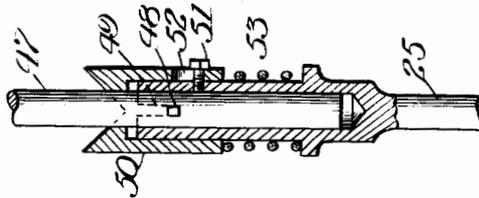


Fig. 3.

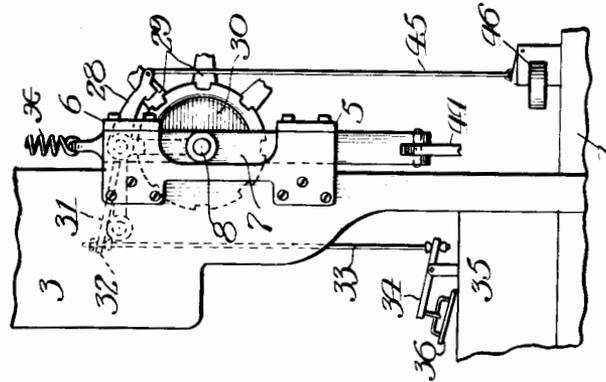
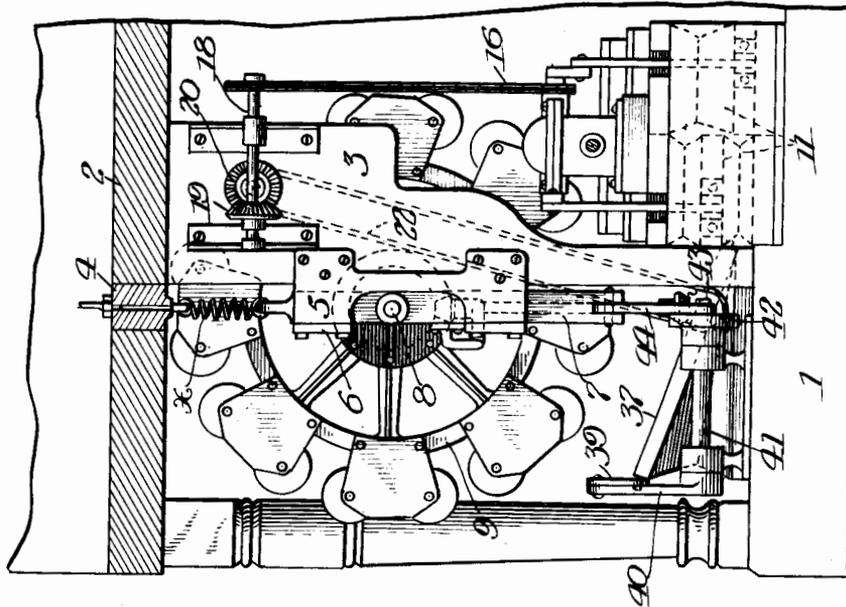


Fig. 2.



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# UNITED STATES PATENT OFFICE.

JOHN P. IOOR, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO NATIONAL PIANO MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COIN-OPERATED AUTOMATIC PIANO-PLAYER.

1,141,549.

Specification of Letters Patent.

Patented June 1, 1915.

Application filed August 7, 1912. Serial No. 713,716.

*To all whom it may concern:*

Be it known that I, JOHN P. IOOR, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Coin-Operated Automatic Piano-Players, of which the following is a full, clear, and exact description.

My invention relates to the mechanism of automatic pianos, and particularly to the mechanism thereon by means of which a number of rolls of perforated music sheets are carried by a rotatable drum in parallel relation to a tracker-board; said drum being rotated by suitable means to bring the roll of music into position to engage said tracker-board and enable the music to be played.

The principal object of my invention is to provide proper mechanism that will, after the selective mechanism of the piano has stopped the rotation of the drum at the proper point, cause the same to be raised bodily to such an extent that the perforated music sheet will engage and track on the tracker-board.

Another object is to provide suitable improvements to the driving and selecting mechanism that will readily accommodate themselves to such bodily movement of the drum or magazine.

These and other objects I accomplish by the means and in the manner hereinafter fully described and as more particularly pointed out in the claims, reference being had to the accompanying drawings forming a part hereof, in which:

Figure 1 is a front elevation of an upright automatic piano having the front plate of its lower portion removed and exposing to view my improvements to the same. Fig. 2 is a fragmentary right-hand end elevation of the same drawn to a slightly larger scale. Fig. 3 is a similar view of the left-hand end. Fig. 4 is a detail view of the extensible drive-shaft used in conjunction therewith.

Referring to the drawings, 1 represents a suitable base of the piano, 2 the horizontally disposed plate, corresponding in the ordinary piano to the key-bed foundation, and 3, 3, the vertically disposed standards that constitute the principal parts of the supporting frame for the music roll drum or magazine and coacting mechanism, as will hereinafter more fully appear. Mounted in the center of the plate 2 and arranged substan-

tially parallel to the front edge thereof, is a stationary tracker-board 4, which is, preferably, of the usual construction found in automatic piano playing mechanisms, the perforations in which are connected by tubes to the usual key-board operating mechanism (not shown). These tubes are non-flexible and will not crack or break nor get out of order because they are not subject to any movement, as in piano players in which the tracker-board moves and the magazine revolves on a fixed axis. Secured to the forward vertical edge of standards 3 are vertically elongated guide-plates 5, 5, that are provided with forwardly projecting guide-bosses near their upper and lower ends, in the alining channels in which vertically reciprocable carriers 7, are seated and retained by means of caps 6, 6. These carriers 7 consist of vertical bars the upper ends of which are suspended from the plate 2 by springs  $x, x$ . These carriers 7 are provided, mediate their ends, with suitable bearings in which the shaft 8 of a suitable music roll drum or magazine 9 is journaled, and springs  $x, x$  are used to counterbalance the weight of said magazine and its shaft. This magazine is, preferably, constructed in the same manner as the music roll magazine, shown and described in detail in Letters Patent Nos. 1,070,698 and 1,071,640 granted to Kingsley and Carlson August 19, 1913, and August 26, 1913, respectively, for automatic piano playing mechanism, and therefore, need not be described in detail herein. It is sufficient to state, however, that said magazine is adapted to carry the rolls of perforated music and the take-up or unwinding rolls in pairs, and is adapted to be rotated until the proper pair of rolls are disposed below the tracker-board and in position to be moved into engagement with the latter.

Mounted near one end of the base 1 of the piano is a suitable motor 10, (electric or otherwise) that is adapted, when in operation to drive the pump 11 of the piano playing mechanism, through the medium of a suitable transmission 12, and a crank 13, which latter is connected by links 14 to one of the hinged plates of the pump. One end of the crank-shaft 13 is provided with a sprocket-wheel 15 that is connected by a chain 16 to a sprocket 17 mounted on one end of a shaft 18 journaled in bearings near the upper end of standard 3. The end of

said shaft 18 opposite the sprocket is provided with a miter-gear 19 meshing with a corresponding miter-gear 20, and through this medium drives sprocket 21. This latter sprocket is connected by a chain 22 to a sprocket on one end of a short horizontally disposed shaft 23 mounted in suitable bearings below the plane of the magazine and this shaft 23 through the medium of a pair of miter-gears 24 actuates a telescopically extensible shaft 25, which latter is provided at its upper end with a beveled gear 26 meshing with a larger beveled gear 27 secured to the shaft 8 of the music roll magazine. The mechanism just described is adapted to be set in operation by means of electrical or other appliances (not shown) when a coin is dropped into one of a series of coin-chutes  $\gamma$ , shown in the upper right-hand corner of Fig. 1, and when so operated will rotate the magazine until it is stopped by the selective mechanism when the proper music roll has arrived under the tracker-board 4.

The mechanism for selecting the proper music roll to be played may be of the type shown and described in the before mentioned Letters Patent, or of any other suitable type, and when this mechanism is set in motion, it is adapted to pull down or depress a pawl 28 that is adapted to engage one of a series of recesses 29 in the periphery of a suitable concentric plate 30 secured to and rotatable with the magazine-shaft. There are as many of these recesses 29 on this plate as there are rolls of perforated sheet music to be played, and when said pawl 28 has been depressed its opposite end, which is extended beyond its pivot and provided with a roller 31, is raised and lifts an arm 32, which latter reciprocates a vertically disposed rod 33, whose lower end is secured to one end of a lever 34 pivotally mounted on the top of an air-chest 35. The opposite end of this lever 34 is provided with a valve 36 that is adapted to close an air-chest communicating with the pump, and enables the latter to suck the air therefrom and from the tracker-board 4.

When the magazine has been rotated to its proper position and the selected perforated sheet music roll is below the tracker-board 4, the entire magazine and its directly connected parts are raised until said perforated music sheet comes in direct engagement with the tracker-board. This is accomplished by the following mechanism, which I herein describe for convenience, but to which I do not wish to be particularly limited in my claims, for it is obvious that other means may be employed for the same purposes without materially departing from the spirit of my invention as set forth in the claims. This mechanism located, preferably, immediately below the forward portion of the magazine, comprises a suitable bellows 37

connected by a tube 38 to air-chest 35, and when the air is exhausted from the latter, said pneumatic 37 will collapse. The top-plate is the movable plate of bellows 37 and its forward edge is connected by links 39 to suitable levers 40, which latter have their opposite ends mounted on rock-shafts 41 secured in suitable bearings on the base-plate 1 of the piano. The opposite ends of these rock-shafts 41 are provided with suitable disks 42, which have crank-pins 43 that are connected, by means of pitmen 44, to the lower end of the carrier 7. When the bellows 37 collapses, the adjacent ends of levers 40 are drawn downward, and rock the shafts 41 to such an extent that the crank-pins 43 will move pitmen 44 upward to such an extent that the carriers 7 will be raised to the limit of their upward movement, and lift the magazine sufficient to bring the perforated music sheet of the selected roll below and into operative contact with the tracker-board. At the same time the pawl 28, being seated in one of the recesses 29, will raise rod 45, the lower end of which is secured to an armature 46, and as the magazine is raised the selective circuit passing through this armature will be broken.

In order to accommodate it to the rise of the magazine, the extensible shaft 25 is, preferably, made in two parts. The upper part 47 of this shaft is slidably keyed to and provided with a pin 48 that moves in a slot 49 in the socket in the upper end of said shaft 25. A suitable cylindrical gland 50, having a V-shaped groove cut in its upper surface, is mounted on this shaft 47, and its skirts extend down past and inclose the upper end of the socket. This gland is adapted to have a slight sliding movement on said socket, and it and the upper part of shaft 25 are rotated by a pin 51 tapped transversally through a longitudinally elongated slot 52 in said gland. Shaft 47 and said gland are cushioned and prevented from pounding the lower part of shaft 25 by a coil-spring 53 surrounding the socket on the said shaft 25, between the lower end of said gland and a circumferential shoulder formed on the upper end of said shaft 25, and thus the two parts of this extensible shaft are maintained in such relation that the lower part will transmit its rotative movement to the upper and the upper can move longitudinally independently of the lower.

What I claim as new is:—

1. In a piano-playing apparatus, a stationary tracker-board, music-sheet rolls, a rotatable support therefor the axis of which is parallel to that of said rolls, an extensible shaft connected to rotate said support, and means for bodily moving said support to carry said music-sheets into or out of engagement with said tracker-board whereby said shaft is extended.

2. In a piano playing apparatus, a stationary tracker-board, music-sheet rolls, a rotatable support therefor, and a shaft upon which the same is mounted, suspended reciprocable carriers in which said shaft is journaled, and means for moving said carriers to bring the music-sheet into engagement with said tracker-board.

3. In a piano playing apparatus, a stationary tracker-board, music-sheet rolls, a rotatable support therefor, and a shaft upon which the same is mounted, an extensible shaft for actuating the shaft of said support, reciprocable carriers in which the shaft for the support is journaled, and means for moving said carriers to bring the music-sheet into engagement with said tracker-board.

4. In a piano playing apparatus, a stationary tracker-board, a series of pairs of music-sheet rolls, a rotatable support for said rolls, a shaft for said support, bearing devices for said shaft, bellows, and means actuated thereby that simultaneously move said bearings and thereby bring the music-sheets into engagement with said tracker-board.

5. In a piano playing apparatus, a stationary tracker-board, a series of pairs of music-sheet rolls, a rotatable support for said rolls, a shaft therefor, means for revolving said shaft; bearing devices for said shaft, bellows, and means actuated thereby that simultaneously move said bearings and thereby bring the music-sheets into engagement with said tracker-board.

6. In a piano playing apparatus, a stationary tracker-board, a series of pairs of music-sheet rolls, a rotatable support for said rolls, reciprocable carriers having bearings for said support, a bellows, suitable rock-shafts arranged at right angles to the axis of said support, movable means for transmitting the motion of said bellows to said shafts, and mechanism that connects said shafts to said carriers and moves the latter to bring the music-sheets into engagement with said tracker-board.

7. In a piano playing apparatus, a stationary tracker-board, a series of music-sheet rolls, a rotatable support therefor, means for bodily moving said support toward and from said tracker-board, and selective devices adapted to stop the rotation of said support at predetermined points.

8. In a piano playing apparatus, a stationary tracker-board, a series of music-sheet rolls, a rotatable support therefor, means for bodily moving said support toward and from said tracker-board, and selective devices comprising an indented disk secured concentric to said support, and a pawl adapted to engage said disk to stop the rotation of said support at predetermined points.

In witness whereof I have hereunto set my hand this 2nd day of July, 1912.

JOHN P. IOOR.

Witnesses:

FRED P. GEIB,  
I. D. TAYLOR.