

J. P. IOOR.
 ROLLER FOR PLAYER PIANOS.
 APPLICATION FILED FEB. 7, 1914.

1,203,348.

Patented Oct. 31, 1916.
 2 SHEETS—SHEET 1.

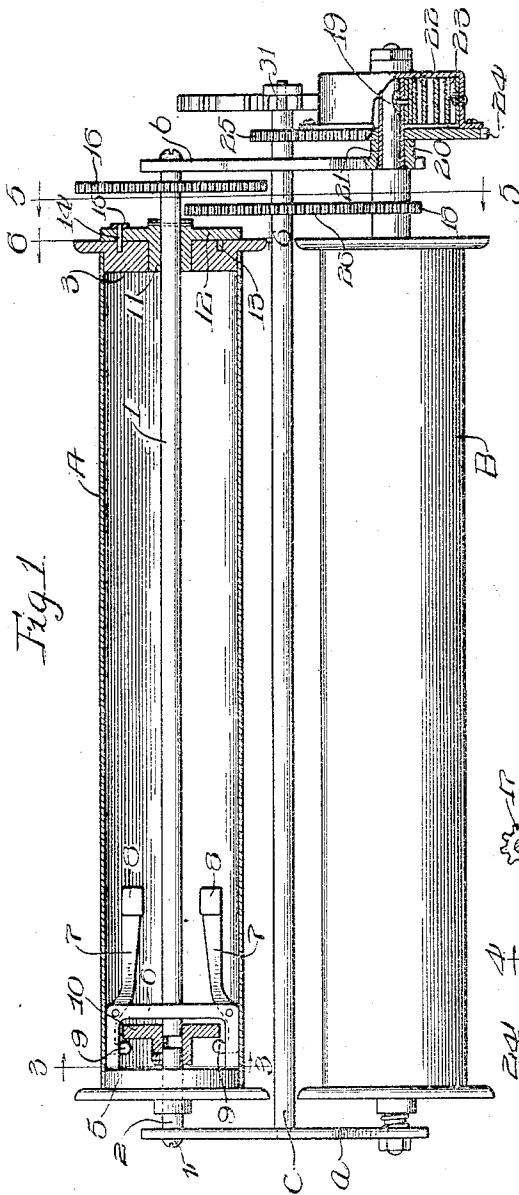


Fig. 1.

Fig. 3.

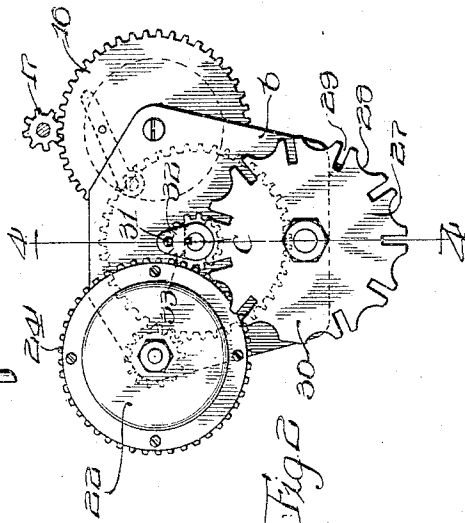
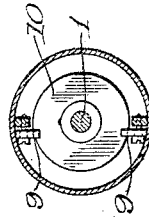


Fig. 2.

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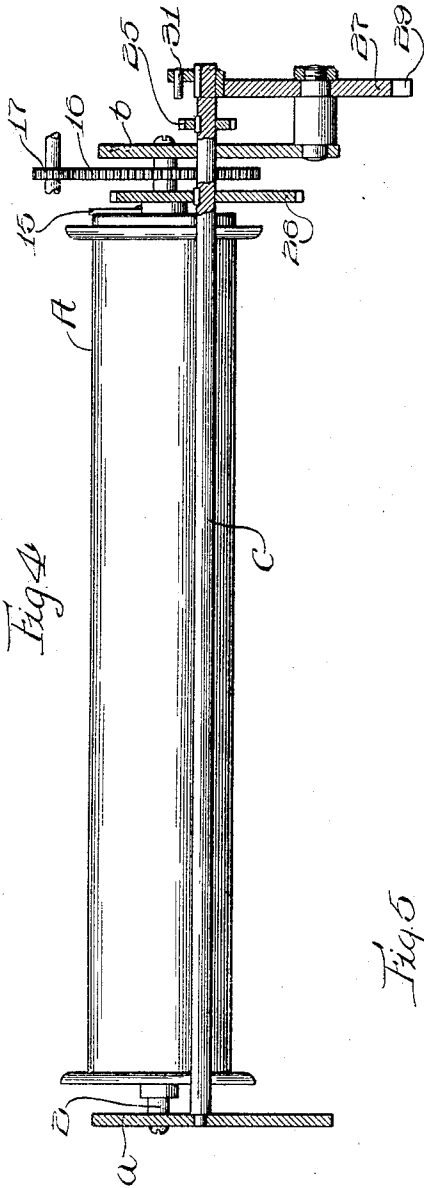


Fig. 4

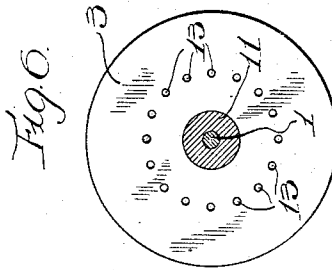


Fig. 5

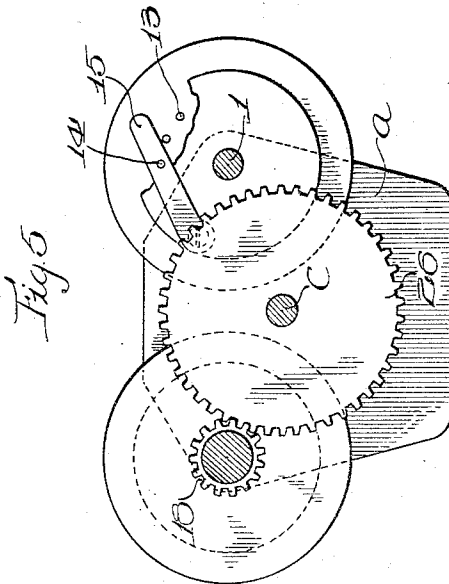


Fig. 6

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UNITED STATES PATENT OFFICE.

JOHN P. IOOR, OF WEST PHILADELPHIA, PENNSYLVANIA.

ROLLER FOR PLAYER-PIANOS.

1,203,348.

Specification of Letters Patent.

Patented Oct. 31, 1916.

Application filed February 7, 1914. Serial No. 817,106.

To all whom it may concern:

Be it known that I, JOHN P. IOOR, a citizen of the United States, residing at West Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Rollers for Player-Pianos, of which the following is a full, clear, and exact description.

My invention relates to player pianos, and particularly to the rollers thereof upon which the rolls of perforate music are wound.

The object of my invention is to govern and regulate the speed at which the perforate music travels over the tracker-board of the instrument while in operation, and to prevent the sudden jerk of the web of the roll when the unwinding movement of the same is finishing, so as to avoid the danger of tearing the said web.

Still another object is to provide means whereby the web of the said perforate music may be tightened or adjusted upon the rollers without removing the same from their support so as to avoid any slack thereof, which condition, owing to changes in climate or otherwise, is constantly arising.

These and other objects I accomplish by the means of a governor and by a peculiar stop-mechanism, substantially as hereinafter fully described and as more particularly pointed out in the claims.

In the drawings: Figure 1 is a top plan view of one of the music roll carriers, drawn partly in section showing my improvements applied thereto. Fig. 2 is a right-hand end elevation thereof. Fig. 3 is a vertical transverse section thereof taken on line 3—3, Fig. 1. Fig. 4 is a vertical longitudinal section taken on line 4—4, Fig. 2. Fig. 5 is a transverse vertical section taken on line 5—5, Fig. 1. Fig. 6 is a similar view taken on line 6—6 of said figure.

I have not shown, and it will not be necessary to describe the mechanism employed in a player piano in connection with which my improvements are operated. Suffice it to say that the perforate music is automatically unwound from one roller and wound upon another, and then unwound from the latter and rewound upon the former.

Referring to the drawings, it will be observed that the hollow rollers or spools A and B, on which the web of the perforate music is wound or unwound, are of the ordinary type; the former, A, being what is

commonly known as the "take-up," and the latter the reversing spool. These spools are, preferably, mounted in pairs around the periphery of a suitable magazine (not shown), which latter is bodily revoluble on its axis so as to bring the selected music roll into engagement with the tracker-board. In order to mount these spools in the magazine, suitable carriers are provided that comprise a pair of end-plates *a* and *b*, in which suitable bearings are provided for the journaling of the aforesaid spools. Said end-plates are, preferably, connected together by means of a suitable longitudinally disposed bar or shaft C, as shown.

The "take-up" spool is, preferably, provided with a sectional shaft comprising two members, 1 and 2, the former being securely mounted in the head 3 and extending nearly to the opposite head thereof closing one end of said spool. The other member 2, of said shaft is shorter than member 1 and is, preferably, stationary, and is secured by means of a longitudinally extending screw 4 to the side-plate *a* of the carrier and passes into the head 5 of the spool a short distance, as shown. This head 5 revolves loosely on shaft-member 2, is circular and extends into the adjacent end of the cylindrical shell and has a circumferential flange on its outer side that constitutes the end flange of the same. The inner end of this head 5 is provided with a substantially U-shaped yoke 6 that extends diametrically across the axis of said spool, and is securely mounted on the adjacent end of shaft-member 1, and has the corners thereof provided with pivotal bearings for suitable corresponding governor arms 7, 7, that are weighted at the ends 8 farthest from head 5, and have the ends nearest said head bent toward the axis of the spool.

Secured to the inner end of the stationary shaft-member 2 by means of a suitable set-screw is a disk 10, which is spaced a suitable distance away from head 5, and is of such diameter that its circumference is within the periphery described by the governor arms 7. These governor arms are loosely pivoted in the yoke, and, of course, revolve with shaft-member 1 and the spool mounted on the latter when the same is driven. The centrifugal force exerted by the revolving spool causes the weighted ends 8 of the arms to swing outwardly, thus bringing the hooked or bent ends 9 of said arms into frictional

engagement with the side of disk 10. As the speed increases so the friction increases, and when the latter is sufficient to retard the rotation of the take-up spool it will act in the same manner as the usual frictional governor and reduce the speed of said spool to normal. By adjusting the disk 10 upon the stationary shaft-member 2, the normal speed at which the spool is revolving is determined to a nicety.

The inner end of shaft-member 1, preferably, has bearings in the bore of the boss of disk 10, substantially as shown in Fig. 1, while its opposite end has bearings in the carrier-plate *b*. The head 3 closing the end of the cylindrical shell of the "take-up" spool opposite the governor is immovably secured therein indirectly. This is done so that the roll of music may be adjusted and tightened upon the spool without removing it therefrom. In order to accomplish this result, I secure to shaft-member 1 a false head 12, which bears against the outer surface of head 3, and which has an inwardly extending boss 11, which head 3 can be rotatively adjusted. Head 3 is provided with a circumferentially arranged series of holes 13, in its outer surface which are covered by this false-head, and the latter is provided with a flat spring 15, one end of which is securely fastened to the outer surface thereof, and the free end of this spring has a pin secured thereto and projecting through an opening in said false-head that can be pulled outward and then permitted to snap back into any one of said holes according as desired. This permits the spool to be rotated independent of the false-head until the web of the music roll is taut or in proper adjustment, and then locking the same to the false-head by permitting the pin to be inserted into another hole. The outer end of shaft-member 1 is provided with a comparatively large gear 16 that derives motion through a suitable drive-pinion 17. The shaft of this pinion is journaled in bearings independent of the support of the spools, and said pinion is only engaged by gear 16 when the web of the perforated music roll or sheet is brought into engagement with the tracker-board (not shown) of the player piano, and is disengaged therefrom when said music roll disengages from the tracker-board.

The music spool B upon which the roll of music is usually wound has a small pinion 18 secured to the sleeve extending from its head at the end thereof adjacent to the end of roller A that is engaged by the false-head 12, and this pinion is separated from plate *b* of the carrier in which spool B is mounted by an extension of said sleeve. A shaft 19 extends through the bearing boss 20 of plate *b* and through the bore of a bushing 21, which latter is screwed into said plate *b*. The outer end of said shaft 19 is screw-

threaded, and is provided with a suitable nut, if desired, by means of which (and the nut on its opposite screw-threaded end), it is secured in position in the carrier-plates *a* and *b*. The outer end of the bushing 21, preferably, has a bell-shaped casing 22 secured thereto, which latter surrounds and incloses a suitable clock-spring 23, whose inner end is secured to bushing 21, and whose outer end is secured to the inner circumference of said casing. Rigidly secured to the flanged edges of the mouth of the casing 22 is a large gear 24 that engages a pinion 25 on a shaft C that extends parallel to and midway between the shafts upon which the spools are mounted. Immediately next to the inner surface of the adjacent plate *b* of the carrier, shaft C is provided with a comparatively large gear 26 that meshes with pinion 18, as before mentioned. When the "take-up" spool is revolved through the medium of pinion 17 and gear 16, to wind the perforated web of the music roll thereon, spool B will unwind, and through the medium of pinion 18 gear 26, shaft C and pinion 25 winds the spring 23. This leaves the spring 23 tightened and ready to wind the music web of the roll upon spool B from spool A at the proper time.

In order to automatically stop the operation of the take-up and supply spools A and B, respectively, at a predetermined point when unwinding or rewinding, I provide a suitable stop mechanism, which comprises an escapement or stop-wheel 27, the periphery of which is provided with a plurality of equi-distant corresponding concaved recesses 29, and between said concaved recesses suitable radial slots 29 are cut into said wheel. At one place between these recesses, a blank space 30 is left in the periphery of the wheel by omitting the slot. These slots are adapted to be engaged, one after the other, by a pin 31, which projects inward from the end of an arm 32, which latter is mounted on the outer end of the shaft C. The boss of this arm extends in the same direction as the said pin, and is rounded so as to conform to and engage the concaved recesses in the periphery of wheel 27, and the extended portion thereof on the side thereof from which the arm projects is cut away or flattened. As shaft C rotates, arm 32 will rotate, and when the cylindrical portion of its extended boss engages the concaved recess in wheel 27, the said wheel remains stationary, but when the cut away side of the extended boss is opposite said wheel, the latter is released and moved forward by the pin 31 engaging said slots. The said wheel is moved intermittently until the pin engages the blank or slotless point on the periphery of said wheel, whereupon the shaft C and the rollers or spools will be immediately stopped. As soon as the direction

of the spools is reversed, arm 32 will rotate and pin 31 will enter slots 29 and rotate the wheel 27 intermittently in the opposite direction. Owing to the reduction in the gear-
 5 wheel will make but one revolution while the perforated sheet of music is unwinding or rewinding. It might be here stated that in automatic pianos of this particular type,
 10 the rolls of perforate music are usually made of the same length in order that the period of playing each roll will always be approximately the same for different selections played by the instrument.

15 While I have described and shown in connection with my improvements certain specific elements and instrumentalities through the medium of which I accomplish the objects of my invention, it, of course, will be
 20 understood that I do not wish to be restricted or limited in any way to these specific elements, for it is obvious that numerous equivalents might be employed to accomplish the same ends. All such modifications
 25 or variations, I desire it understood are included within the scope of my invention as set forth in the appended claims.

What I claim as new is:

30 1. In a player piano a carrier for perforated music rolls, a rotatable hollow spool, a stationary shaft upon which one end thereof is mounted, a disk carried by said shaft, and means mounted on the interior of
 35 said spool that frictionally engage said disk during the approximate maximum rotation of said spool.

40 2. In a player piano a carrier for perforated music rolls, a rotatable hollow spool, a stationary shaft upon which one end thereof is mounted, a disk carried by said shaft, and a lever mounted on the interior of said spool that frictionally engages said disk during
 45 the approximate maximum rotation of said spool.

50 3. In a player piano a carrier for perforated music rolls, a rotatable hollow spool, a stationary shaft upon which one end thereof is mounted, a disk carried by said shaft, and a pair of weighted horizontally
 55 disposed arms mounted on the interior of said spool the ends of which arms are adapted to frictionally engage said disk during the approximate maximum rotation of said spool.

60 4. In a player piano, a carrier for perforated music rolls, a hollow rotatable take-up spool, a rotatable rewinding spool, said spools being connected by the web of the music rolls adapted to be wound thereon,
 65 gearing arranged at one end of the rewinding spool, and a mutilated escapement intermittently driven from the gearing and adapted to positively stop the rotation of the rewinding spool at a predetermined point.

5. In a player piano, a carrier for perforated music rolls, a rotatable take-up wheel, a rotatable rewinding spool, said spools being connected by the web of the music rolls adapted to be wound thereon,
 70 gearing arranged at one end of and connected to said spools to rotate the same, an additional mutilated escapement-wheel also arranged at the same end of said spools and adapted to be periodically and intermit-
 75 tently turned, and a pinion engaged by said gearing and carrying a projection adapted to engage in the mutilations of the escapement-wheel to turn the same.

6. In a player piano, a carrier for perforated music rolls, a hollow rotatable take-up
 80 spool, a rotatable rewinding spool, said spool being connected by the web of said music rolls, gearing connected with one end of said rewinding spool, a pinion actuated by said
 85 gearing and having a projection, and an intermittently rotatable escapement-wheel actuated by said pinion once during each revolution and having a series of slots in which the projection of the pinion is adapted to
 90 engage.

7. In a player piano a carrier for perforated music rolls, a hollow take-up spool rotatable therein and a rotatable rewinding
 95 spool that are connected by the web of the roll adapted to be wound thereon, gearing connected with one end of said rewinding spool, and devices for stopping the rotation of said gearing at each end of the music roll and comprising an intermittently rotatable
 100 escapement-wheel having a series of equidistant radial slots in a portion of its periphery, a pinion actuated by said gearing, and a lateral pin on said pinion shaft that enters said slots *seriatim* once during each
 105 revolution.

8. In a player piano a carrier for perforated music rolls, a rotatable spool upon which the music roll is adapted to be wound,
 110 a governor for controlling the speed thereof, means for actuating said spool, and releasable interlocking devices connecting said means and spool whereby said spool is adjustable independent of said actuating means.

9. In a player piano a carrier for perforated music rolls, a rotatable spool having a head closing one end upon which the music
 115 roll is adapted to be wound, a governor for controlling the speed thereof, means for actuating said spool, a bushing fast on said actuating means upon which said head is carried, and devices that engage said head and said bushing and adjustably lock the same together.

10. In a player piano a carrier for perforated music rolls, a rotatable spool having a head closing one end upon which the music
 125 roll is adapted to be wound, a governor for controlling the speed thereof, means for actuating said spool, a bushing fast on said
 130

actuating means upon which said head is carried, a pin engaging said bushing and said head, and a spring retaining said pin in its adjusted position.

5 11. In a player piano, a pair of parallel spools upon which the perforated music roll thereof is alternately wound and unwound, means for actuating said spools, devices connecting said actuating means and one of said
10 spools whereby said spool may have a rotatable movement independent of said actuating means, a governor for controlling the speed of one of said spools, and an intermittently rotatable escapement mechanism for
15 automatically stopping the rotation of said spools in either direction at a predetermined point.

12. In a player piano a carrier for perfo-

rated music rolls, a hollow rotatable take-up spool, a rotatable rewinding spool, gearing 20 connected with one end of said rewinding spool, and intermittent rotatable devices driven by said gearing; said take-up and rewinding spools being connected by the web of the roll adapted to be wound thereon, and 25 said intermittent rotatable devices being provided with means to stop the rotation of the rewinding spool when said web is substantially unwound from the take-up spool.

In witness whereof I have hereunto set 30 my hand this seventeenth day of January, 1914.

JOHN P. IOOR.

Witnesses:

ALEX. LIEBERMAN,
FRANK D. THOMASON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."