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MUSICAL INSTRUMENT ROLL GEARING SHIFT AND BRAKE.

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1,103,871. **Patented July 14, 1914.**

Fig 1.

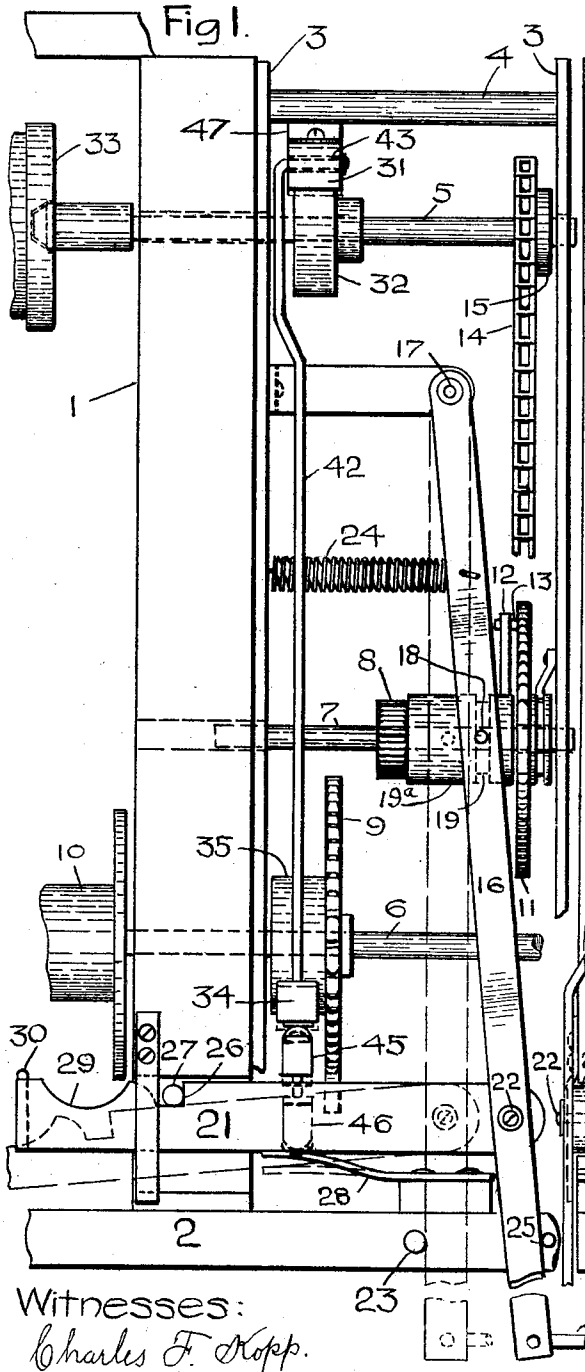
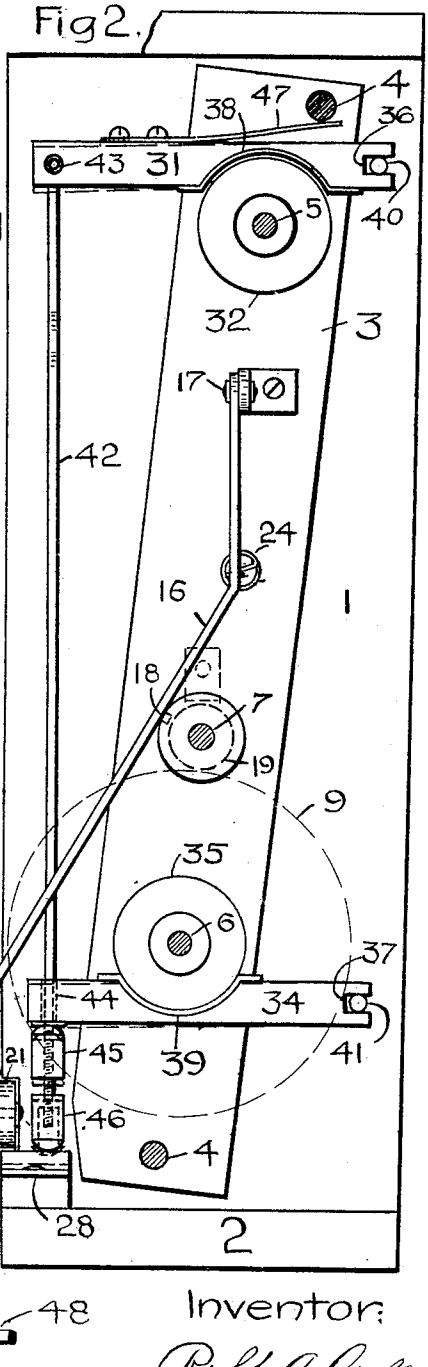


Fig 2.



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MUSICAL-INSTRUMENT-ROLL-GEARING SHIFT AND BRAKES.

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To all whom it may concern:

Be it known that I, ROBERT A. GALLY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Musical-Instrument-Roll-Gearing Shifts and Brakes, of which the following is a specification.

The present device secures a compact, simple and direct control of the gear shift and brakes of the roll spindles of the sheet music propelling apparatus of a self-playing musical instrument, in place of the former complicated and indirect apparatus in general use.

In the drawings Figure 1 is a front view of one end of a music-roll box and gearing with the new brakes and shifter; and Fig. 2 an end view of same.

The right hand end 1 of a music-sheet roll-box is supported on a shelf 2, and on the side of said end 1 is attached a frame carrying the roll-gear parts, only the parts essential to the present invention being shown. Only plates 3 and post 4 of the frame are included in drawings herein.

Upper spindle 5 is for engaging and revolving any ordinary music-spool, and the lower spindle 6 is for engaging and driving the take-up roller which receives the music-sheet during playing. A drive-shaft 7 has a pinion 8 attached thereto and adapted to engage the gear 9 attached to spindle 6 to propel the take-up spool 10 when the drive-shaft 7 is at leftward position. A sprocket-wheel 11 is loose on drive-shaft 7, but is engaged by said shaft 7 through clutch pins 12 and 13 when shaft 7 is in its rightward position to drive the upper spindle 5 for rerolling the music-sheet. A drive-chain 14 connects large sprocket-wheel 11 to small sprocket-wheel 15 on upper spindle 5. Shift-lever 16 is hung from a bearing or pivot 17 and has pin 18 engaging in an annular groove 19 in a collar 19^a on drive-shaft 7. When the shift-lever 16 is moved to the left it throws the drive-shaft 7 and its attached pinion 8 to the left so that said pinion 8 engages with the gear-wheel 9 to drive the take-up spool 10. When the shift-lever 16 is moved to the right its clutch-pin 12 engages clutch-pin 13 of sprocket-wheel 11 to drive the chain 14 and sprocket-wheel 15 and spindle 5 to rewind the music-sheet. Shifter-handle 21 is pivoted to shift lever 16 by a pivot or screw 22 at one end, and lies horizontally with its other end extending into the roll box near box-end 1. A stop 23 at left of lower end of lever 16 detains its motion to the left against a pull on the handle 21 and spring 24, and a stop 25 at right of lower part of lever 16 prevents excess motion in that direction. A notch 26 in upper edge of shifter-handle 21 engages a catch or pin 27 fastened above it, and under said handle is a lifting-spring 28 fastened on the shelf 2. When the handle 21 is pressed down it releases notch 26 from catch pin 27, so the handle 21 can move to left to shift to operative drive of the take-up spool 10. A cove 29 in top of handle 21 gives an easy hold for the operator's finger to move the handle 21 to the left, and the spring 24 pulling leftward on shift-lever 16 assists such motion, and will make certain the completion of the motion if not fully made by the operator, and if the connections are nicely and freely fitted, the spring 24 will effect the complete leftward motion automatically after the simple pressing down of handle 21 to release its notch 26 from catch pin 27. A lug 30 on left end of handle 21 makes easy the pressing of the handle to the right by the operator's finger. When the handle 21 is thrown to the right the lifting spring 28 throws the handle 21 upward so that the notch 26 engages catch-pin 27 to hold the handle 21, shift-lever 16 and connected parts in position for the rewinding of the music by spindle 5. The leftward pressure of spring 24 on shift-lever 16 and handle 21 serves to hold the notch 26 of the handle 21 to the left against catch pin 27 for exact operative position of the rewind clutch-pins 12 and 13.

The foregoing described shifter action for controlling the change from forward to rewinding operations of the music-sheet is also well adapted to a simplified brake system for steadying the travel of the music-sheet in both said directions.

A brake 31 acts on top of brake-wheel 32 attached on spindle 5 which revolves with the music-spool 33. A brake 34 acts on under face of brake-wheel 35 attached on spindle 6 which revolves with the take-up spool 10. Brakes 31 and 34 have slots 36 and 37 at their ends away from their curved shoe parts 38 and 39, and these slots 36 and 37

engage respectively with bearing pins 40 and 41, on which they not only swing to allow the shoes 38 and 39 to bear on their respective wheels 32 and 35, but the slotted construction insures a certain and perfect centering of the curve of the shoe to the face of its corresponding wheel. A shift-rod 42 connects together the two brakes 31 and 34, being hooked into a transverse hole 43 in forward end of upper brake 31, and passed through a vertical hole 44 in the front end of lower brake 34. The lower end of shift-rod 42 below the lower brake 34 is threaded and immediately below the brake 34 is a regulating button 45 run on said thread of rod 42 with its upper end against the lower face of lower brake 34, and below said regulating button 45 is another regulating button 46 run on said thread of rod 42 with the lower end of said lower regulating button 46 bearing on top of lifter-spring 28.

When the handle 21 is in its right hand position to shift the apparatus to rewind the music-sheet on music-spool 33 by revolution of spindle 5, said handle 21 is raised by lifting spring 28 and regulating button 46 is thrust up by lifting spring 28 thus pressing the shoe 39 of lower brake 34 against lower brake wheel 35, retarding spindle 6 and take-up spool 10 from racing and thus throwing loose the music-sheet during slowing down of high speed rewinding, as also to cause the music-sheet to be smoothly and snugly wound on its music-spool 33. When the handle 21 is moved to its left hand position the shift-lever 16 holds the pinion 8 in mesh with large gear 9 to drive the spindle 6 and take-up spool 10 for winding the music-sheet on to said take-up spool 10, which winding of the music-sheet causes the music-spool to revolve spindle 5 and its brake wheel 32, the brake 31 then bearing its shoe 38 on the brake wheel 32 as the handle 21 is then held down by the catch pin 27 over the un-notched part of handle 21, thus locking the spring 28 from any action on regulator 46 and shifter-rod 42, so that the shifter-rod 42 and brake 34 and its shoe 39 drop away from lower brake wheel 35, and upper brake 31 and its shoe 38 bear down on upper brake wheel 32 and so retard and steady the motion of spindle 5 and the music-spool 33, so that the music-sheet is held to a steady motion and runs smoothly as it plays.

Connecting rod 48 is attached to the lower end of the shift-lever 16 to convey motion to the air cut-off of player action and the high tension service for rewind, or other like purposes.

What I claim as my invention, is:

1. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel axes, a brake-wheel on each said spindle, a brake to each said wheel, and a vertically operating reciprocating actuating-means adapted to bodily reciprocate longitudinally of itself and throw each said brake against its wheel and the other brake away from its wheel at that same time.

2. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertically operating actuating-means adapted to bodily reciprocate longitudinally of itself and throw each said brake against its wheel and the other brake away from its wheel at that same time.

3. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and vertically operating actuating-means adapted to bodily reciprocate longitudinally of itself and throw each said brake against its wheel and the other brake away from its wheel at that same time.

4. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and vertically operating actuating-means adapted to bodily reciprocate longitudinally of itself and throw each said brake against its wheel and the other brake away from its wheel at that same time, a spring above and bearing down on said upper brake, and a second spring below and upwardly bearing against said actuating-means and said lower brake.

5. In a music-roll gearing: a music spool

gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertical connecting rod reciprocating longitudinally of itself and engaging both said brakes and adapted to bodily reciprocate longitudinally of itself.

6. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertical connecting-rod engaging both said brakes, a spring above and bearing down on said upper brake, and a second spring of greater power than the first named spring and positioned below and upwardly bearing against said vertical conneting-rod and the lower brake when not depressed, and means for depressing said lower spring when said upper spring is to act on the upper brake and its wheel.

7. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertical connecting-rod engaging both said brakes, a spring above and bearing down on said upper brake, and a second spring below, and upwardly bearing against said vertical connecting-rod and having vertical motion, and a horizontal shifting handle-bar at bottom of said rod and having horizontal motion and vertical motion, its vertical motion actuating said vertical rod.

8. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and vertically operating actuating-means adapted to throw each said brake against its wheel and the other brake away from its wheel at that same time, a spring above and bearing down on said upper brake, and a second spring below, and upwardly bearing against said actuating-means and said lower brake, and a horizontal shifting handle-bar having horizontal motion and vertical motion and bearing on top of said second spring and actuating said spring by said vertical motion.

9. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gear at will, a spindle adapted to engage and reroll a music spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertical connecting-rod engaging both said brakes, a spring above and bearing down on said upper brake, and a second spring below, and upwardly bearing against said vertical connecting-rod and a horizontal shifting handle-bar having horizontal motion and vertical motion and bearing on top of said second spring and actuating said spring by said vertical motion.

10. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and vertically operating actuating-means adapted to throw each said brake against its wheel and the other brake away from its wheel at that same time, a spring above and bearing down on said upper brake, and a second spring below, and upwardly bearing against said actuating-means and said lower brake, and a horizontal shifting bar having horizontal motion and vertical motion and bearing on top of said second spring and actuating said spring by said vertical motion.

11. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a spindle adapted to engage

and reroll a music-spool, a second spindle adapted to drive a music-sheet take-up spool, the two spindles having parallel and horizontal axes, a brake-wheel on each said spindle, a brake above the brake-wheel of the upper spindle, a brake below the brake-wheel of the lower spindle, and a vertical connecting-rod engaging both said brakes, a spring above and bearing down on said upper brake, and a second spring below, and upwardly bearing against said vertical connecting-rod, and a horizontal shifting bar having horizontal motion and vertical motion and bearing on top of said second spring and actuating said spring by said vertical motion.

12. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, two horizontal spindles, one above the other and having parallel axes, a brake wheel on each said spindle, a brake lying immediately over the upper brake-wheel and a brake lying immediately under the lower brake-wheel, a vertical connecting-rod engaging both brakes, the lower part of said rod having screw threads thereon, a regulating button mounted on said threads of the rod immediately below and bearing against the under face of the lower brake, and a second regulating button mounted on said threads below the first button, and a spring immediately beneath and bearing upwardly against said lower regulating button.

13. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, two horizontal spindles, one above the other and having parallel axes, a brake wheel on each said spindle, a brake lying immediately over the upper brake-wheel and a brake lying immediately under the lower brake-wheel, a vertical connecting-rod engaging both brakes, the lower part of said rod having screw threads thereon, a regulating button mounted on said threads of the rod immediately below and bearing against the under face of the lower brake, and a second regulating button mounted on said threads below the first button, and a spring immediately beneath and bearing upwardly against said lower regulating button, and a horizontal shifting handle-bar having horizontal and vertical motion over said spring and vertically actuating said spring, button, rod and brakes.

14. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a revoluble spindle, a brake-wheel thereon, a brake having a curved shoe corresponding to the arc of said wheel and adapted to press on said wheel during operation, means to press on said brake and in the direction against the face of said wheel, a fixed bearing-pin, and a longitudinal slot in the end of said brake away from its shoe and in a plane parallel with the axis of said spindle, said slot engaging on said bearing-pin.

15. In a music-roll gearing: a music spool gearing, a take-up roller gearing, a driving means, and operative connections to both said gearings adapted to clutch in either gearing at will, a revoluble spindle, a brake-wheel thereon, a brake having a curved shoe corresponding to the arc of said wheel and adapted to press on said wheel during operation, means to press on said brake and in the direction against the face of said wheel, a fixed bearing-pin, and a longitudinal slot in said brake in a plane parallel with the axis of said spindle, said slot engaging on said bearing-pin.

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Witnesses:
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