Jan. 6. 1925. 1,522,248

G. M. L. JOHNSON

ROLL FOR PLAYER PIANOS

Filed Oct. 27. 1923

Fig. 1

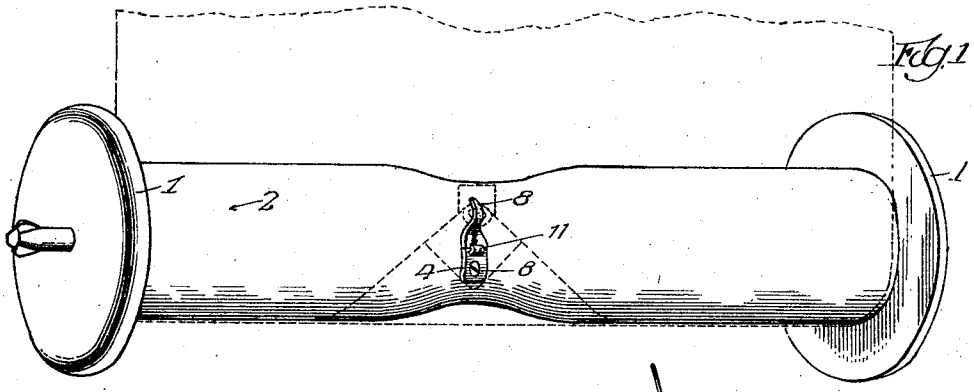


Fig. 2

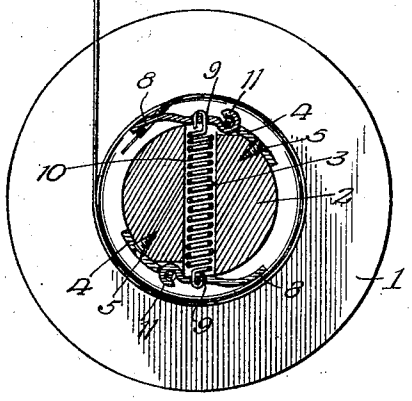


Fig. 3

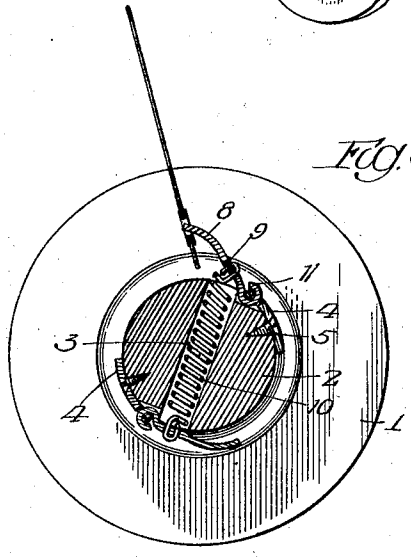
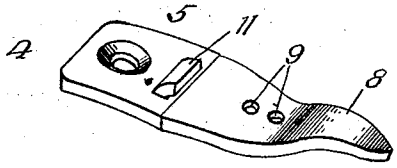


Fig. 4



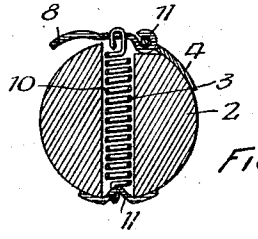
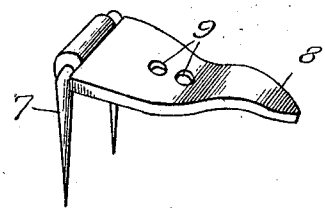


Fig. 6.

Fig. 5



Inventor:

George M. L. Johnson

by Albert Scheibli, Attorney

Patented Jan. 6, 1925. 1,522,248

UNITED STATES PATENT OFFICE.

GEORGE M. L. JOHNSON, OF GRAND HAVEN, MICHIGAN.

ROLL FOR PLAYER PIANOS.

Application filed October 27, 1923. Serial No. 671,269.

To all whom it may concern:

Be it known that I, GEORGE M. L. JOHNSON, a citizen of the United States, residing at Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in a Roll for Player Pianos; 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 relates to sheet winding rolls for player pianos, its general object being that of equipping such rolls with means which will effectively engage one end of a perforated music sheet and which will prevent a damaging of the engaged end of the sheet when the latter is unwound from the roll after the playing.

In player pianos, it has long been customary to effect the actuation by means of a perforated music sheet, which extends over a tracker bar between two rolls or bobbins on one of which rolls it is wound up as it unwinds from the other. For this purpose, the winding roll is commonly provided on its surface with a hook engaging an eye at one end of the music sheet, the portion of the roll carrying this eye being reduced in diameter so that the sheet can wrap around it without indenting or deforming the sheet.

While the ordinary hook arrangement employed on rolls for this purpose would be adequate if the sheet were always moved at the slow rate at which it travels during the playing of a selection, such hooks have not proven satisfactory during the much more rapid movement of the sheet when the same is being wound back on the initial roll. At this greater speed of movement, the hook which is carried by the roll from which the sheet is being unwound does not always release the eye of this sheet with such facility as to avoid damage. Consequently, it is quite common to have an end portion of the sheet torn off or to have the tip of the sheet ripped through at the eye, thus putting the sheet out of commission until it is mended in some manner.

My present invention aims to overcome this serious difficulty by providing a roll or bobbin with a yieldingly mounted hook adapted to swing away from the roll towards the plane of the unwinding end portion of the sheet, so that this sheet portion will be freely released even when moving at a high rate of speed. Furthermore, my invention provides a construction for this purpose which will be inexpensive and easily attached to a roll or bobbin, and which will facilitate the manual attaching of the music sheet. It also aims to provide an arrangement for this purpose which can readily be employed to form a duplex arrangement in which two hooks are secured at diametrically opposite points to the roll and in which a single spring normally retains both hooks in their operative positions. Still further and also more detailed objects will appear from the following specification and from the accompanying drawings, in which—

Fig. 1 is a perspective view of a player piano roll equipped with my invention and showing one of my novel hooks on the forward side of the roll.

Fig. 2 is an enlarged central and transverse section taken through the same roll after the latter has been rotated a quarter turn and showing the hooks as they appear when the sheet has been partly unwound from the roll, the hooks being in their normal position with one thereof engaging an eye at the end of the music sheet.

Fig. 3 is a view similar to Fig. 2, but showing how the eye-engaging hook is swung upwardly when the music sheet has been completely unwound and is disengaging itself from the hook.

Fig. 4 is an enlarged perspective view of one of the hooks shown in the embodiments of Figs. 1 to 3 inclusive, namely an embodiment in which each hook is pivoted to a hinge fastened to the roll by a screw.

Fig. 5 is a perspective view of an alternative type of hook, namely one in which a wire staple is substituted for the hinged plate and screw of Fig. 1.

Fig. 6 is a transverse section of a roll embodying my invention and equipped with only one hook.

In carrying out my invention, I mount each sheet-engaging hook on the roll so that its eye-engaging end normally extends approximately circumferential of the surface of the roll, the hook being pivoted at its rear end so that it can swing outwardly to present its eye-engaging end at a considerable angle from its normal position. Then I also provide spring means tending to hold the hook in its normal position and desirably construct the roll so that it will house

the spring means needed for this purpose. Furthermore, I desirably provide two such hooks on each roll, disposed in diametrically opposite and symmetrical positions and desirably employ a single spring for holding both hooks yieldingly in their normal positions.

For example, Fig. 1 shows a player piano roll comprising a pair of ends 1 connected by a shank 2, which shank desirably is cylindrical except for a relatively narrow center portion in which it is reduced in diameter by an amount corresponding approximately to the normal projecting of the sheet-engaging hook from the general cylindrical surface of the shank of the roll. This reduced central portion of the roll has a bore 3 extending transversely through the same and housing the spring as hereafter described. Each of the two hooking members desirably comprises a pivot element which is rigidly secured to one side of the said transverse bore 3, and a hook element pivoted to this pivot element and extending across the adjacent mouth of this transverse bore.

The pivot element of the hook member may be constructed in various ways, as for example in the form of a metal plate 4 having a screw eye in the same for receiving a screw 6 threaded into the roll, or in the form of a wire staple 7 driven into the roll as a substitute for such a metal plate and screw after the manner shown in Fig. 5. In either case, the hinge axis of the pivot is desirably near the adjacent mouth of the transverse bore in the roll, and the axis of the pivot extends parallel to the axis of the roll, while the eye-engaging element 8 of the hook member is provided with a pair of perforations 9 which are disposed opposite the said bore in the roll. These perforations 9 permit the end of a tension spring 10 to be looped through the same after the manner shown in Fig. 2, so that two oppositely disposed eye-engaging members can be connected by a single spring 10 as shown in Fig. 2. The spring thus employed is under a sufficient tension so that it will normally hold both eye-engaging elements in a position such as that shown in Fig. 2, or within the surface forming the general cylindrical contour of the shank 2 of the wooden roll, thereby permitting the music sheet to pass freely around the hooks.

As long as this sheet passes around the roll for at least one-half of the circumference of the latter, the pull of the sheet as transmitted to the hook through the eye of the sheet is directed substantially tangential of the roll towards the hinge of the hook, so that even a relatively light spring will readily hold the eye-engaging element in its normal position. However, when the inner end of the sheet is entirely unwound from the roll, the pull on the sheet shifts to an angle tending to become radial and the pull on the eye becomes more and more transverse of the eye-engaging portion of the hook. Consequently, this portion 8 is swung outward against the tension of the spring, as shown in Fig. 3, and readily permits the eye of the sheet to slip off the tip of the hook. By suitably proportioning the parts, and by thus pivoting each hook on an axis parallel to that of the roll, I can readily arrange my hooks so that the eye on an ordinary music sheet will readily slip off the hook even when the sheet is moving at a high rate of speed, thereby positively preventing a rupturing of the eye or other damage to the sheet. As soon as the unwound sheet has snapped off the hook, the spring returns the eye-engaging part of the hook member to its normal position, so that my damage saving arrangement requires no added attention whatever on the part of the user.

By providing two oppositely disposed hooks arranged in this manner I can facilitate the securing of the sheet to the rolls, as one or the other hook will almost always be disposed in a convenient position for attaching the eye of the sheet, while a single spring will suffice for holding both hooks normally in their operative positions and for permitting the necessary yielding of either thereof during the final unwinding of the sheet. In practice, the hook member desirably is formed so that the portion extending across the adjacent mouth of the transverse bore in the roll rests flatwise on the adjacent surface portion of the roll, thereby limiting the inward movement of the pivotally mounted hook portion by the pull of the spring, the free end portion of the hook being offset from this surface and curved somewhat inwardly of the roll after the manner shown in Figs. 2 and 4. Where the attaching or base portion of the hook member is in the form of a metal plate, this portion can be provided with a slot for receiving a bent rear end portion 11 of the hook element, and a similar recurved portion can be employed when the pivoting is done upon the back of a wire staple as shown in Fig. 5.

However, while I have illustrated and described my invention in highly desirable embodiments including hook elements having perforations through which the spring ends are looped and including a desirable curving of the hook elements, I do not wish to be limited to these or other details of the construction and arrangement above disclosed, it being obvious that many changes might be made without departing either from the spirit of my invention or from the appended claims.

Neither do I wish to be limited to the use of two such yieldingly mounted hooks on each roll, although the duplex arrangement will cost but little more and affords certain advantages. For example, Fig. 6 shows an embodiment of my invention in which the roll carries only a single hook and in which the opposite end of the spring is anchored by a wire extending across the adjacent end of the bore in the roll, this wire 11 having a bight extending into the bore and through which the spring is looped.

I claim as my invention:—

1. In a player-piano roll for use with a perforated sheet having an eye at one end, a drum, a hook pivotally mounted on the drum and adapted to extend through the eye, and resilient means for yieldingly holding the hook substantially circumferential of the drum, the pivotal mounting of the hook permitting the hook to be moved away from the circumference of the drum when the said end of a sheet is disposed oblique to the said circumference.

2. In a player-piano roll, a drum having a transverse bore, a hook pivoted to the drum and extending across the mouth of the bore, and a spring housed by the bore and continuously urging the hook towards the drum, the hook being movable away from the drum about its pivotal connection to the drum.

3. In a player-piano roll for use with a perforated sheet having an eye at one end, a drum, an eye engaging member movably mounted on the drum and adapted to extend through the said eye toward the said sheet end, the mounting of the said member permitting the same to be moved to a position in which it will release the eye when the sheet is unwound, and yielding means for resisting such movement.

4. In a player-piano roll, a drum having a bore extending transversely through the same, a pair of hook members movably mounted on the drum and each extending across one end of the bore, and a tension spring disposed in the said bore and connecting the hooks so as to urge the latter continuously toward the drum.

5. In a player-piano roll, a drum having a bore extending transversely through the same, a pair of hook members extending respectively across opposite ends of the bore and each pivoted at one end to the drum, the hook members having their other ends extending substantially circumferential of the drum and in the same direction rotationally of the drum, and a tension member extending through the bore and connecting the two hook members.

6. For use with a perforated music sheet having a terminal eye, a player roll carrying upon its surface a hook pivoted upon an axis parallel to the axis of the roll, the hook having its tip normally extending substantially circumferential of the roll, the pivotal mounting of the hook permitting the said tip to swing outwardly of the roll, and spring means resisting such outward swinging of the hook.

Signed at Grand Haven, Michigan, Oct. 8th, 1923.

GEORGE M. L. JOHNSON.