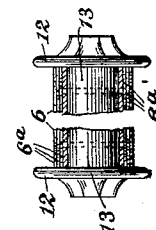
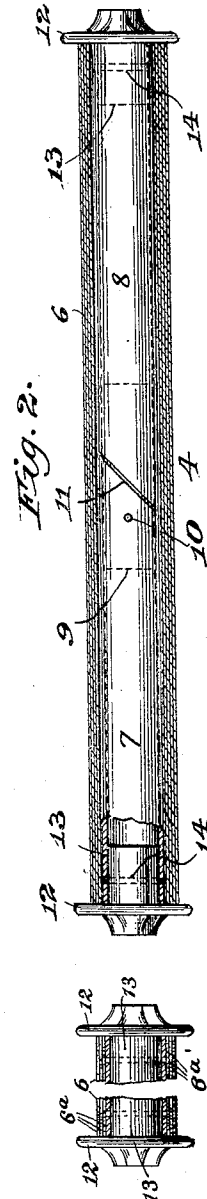
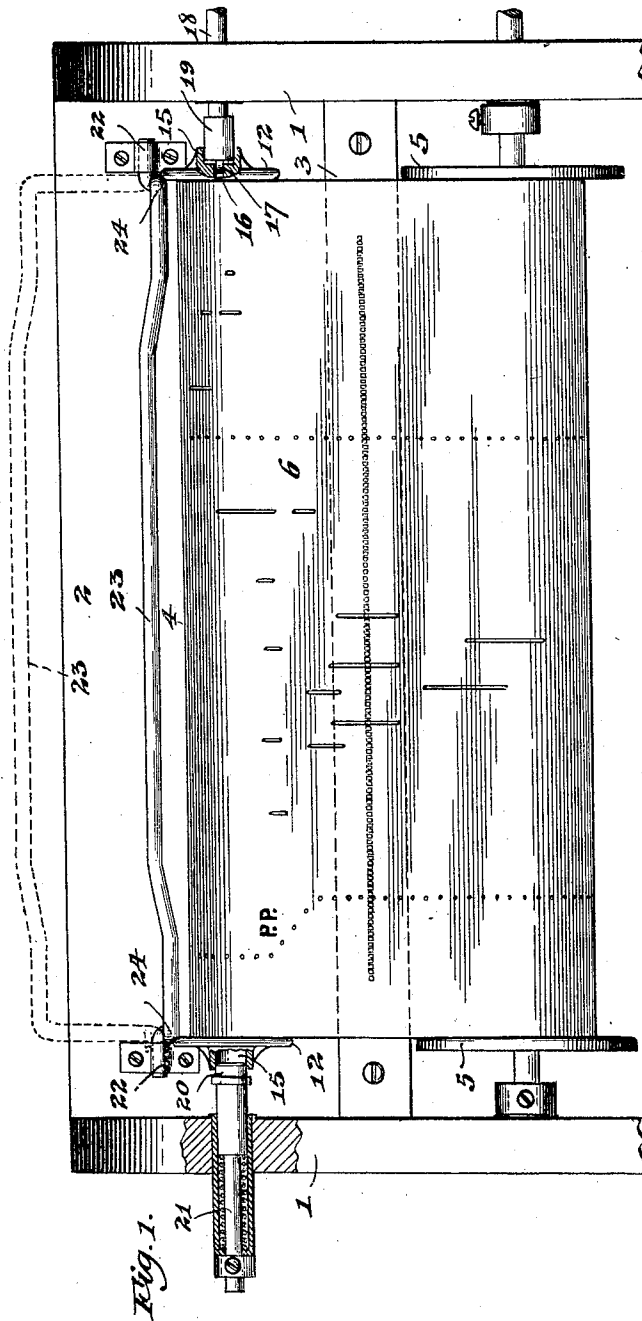


E. C. HISCOCK.
SELF PLAYING MUSICAL INSTRUMENT.
APPLICATION FILED NOV. 4, 1910.

992,772.

Patented May 23, 1911.



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UNITED STATES PATENT OFFICE.

EMORY C. HISCOCK, OF CHICAGO, ILLINOIS, ASSIGNOR TO W. W. KIMBALL COMPANY,
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SELF-PLAYING MUSICAL INSTRUMENT.

992,772.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed November 4, 1910. Serial No. 590,604.

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 Self-Playing Musical Instruments, of which the following is a specification.

This invention relates to improvements in that class of self-playing musical instruments which employ a perforated paper sheet traveling over a tracker-board between delivery and take-up spools or cylinders, and it has reference more particularly to a new and improved means for causing the perforated sheet to accurately track or register with the ports in the tracker-board. As is well known, music-rolls are subjected to a limited degree of expansion and contraction due to the hygrometric conditions of the atmosphere, and unless some means is provided for neutralizing this condition, the perforated sheet is liable to get more or less out of proper relation to the tracker-board, injuring or spoiling the musical effect designed to be produced.

A leading feature of my invention resides in a novel spool-centering device which, when in working position, lies between and operates upon the flanges of the delivery spool, which latter is so mounted on its supports as to be capable of a limited longitudinal play, thereby insuring the correct relation of the spool relatively to the tracker-board.

In the preferred embodiment of the invention, herein shown, the delivery spool itself is extensible, being made in two sections capable of sufficient relative longitudinal movement to accommodate the expansion and contraction of the paper-roll wound thereon, but so connected that both sections will be driven from a rotary impulse imparted at one end of the spool; in which case the centering device proper not only accurately positions the spool as a whole relatively to the tracker-board, but also insures that the expanding and contracting movements shall take place equally from the center of the spool.

My invention and its manner of use will be readily understood when considered in connection with the accompanying drawing, which illustrates one practical embodiment thereof, and in which,

Figure 1 is a front elevational view of the tracker-board of a self-playing piano and the delivery and receiving-spools, with my improved centering device applied thereto; and Fig. 2 is an elevational view, partly in longitudinal section of the preferred form of delivery spool. Fig. 3 is an enlarged elevational view, partly in longitudinal section and broken out between its ends, of the spool, illustrating the manner and means of attaching the record sheet thereto.

Referring to the drawing, 1 designates a pair of frame uprights between which and to a back plate 2 is secured the usual tracker-board 3.

4 designates as an entirety the delivery spool, 5 the receiving-spool, and 6 the perforated paper sheet. The delivery spool herein shown is extensible to accommodate itself to the expansion and contraction of the paper-roll wound thereon, the cylindrical body of the spool being made in two sections 7 and 8 (Fig. 2) which may be made from stiff pasteboard, card-board or the like.

9 designates a solid wood plug or connector which is secured within the inner end of the section 7 as by a pin 10 and projects from the inner end of the same, forming a bearing or support on which the corresponding inner end of the section 8 is adapted to be telescopically mounted. The two inner ends of the sections 7 and 8 meet in an oblique joint 11, which insures the driving and driven relation between the two sections under rotative movement, while permitting a free relative endwise movement between the two sections.

12 designates the heads or flanges of the spool, preferably of hard rubber composition, which are secured to the ends of the spool-body by means of inwardly extending hollow hubs or bosses 13 secured to the respective section 7 and 8 by cross-pins 14. Both heads are formed on their outer sides with circular recesses or cavities 15, in the bottom of one of which is a transverse slot 16 adapted to be entered by a tongue 17 on the driving spindle 18, this latter having a bearing-boss 19 adapted to enter the recess 15 and constitute a support for the spool at one end. The cavity 15 in the opposite spool-head takes over a bearing-boss 20 on the inner end of a spring-pressed spindle 21; the spindles 18 and 21 being suitably mounted in the frame uprights 1. The spool sup-

ports 19 and 20 are so spaced apart relatively to the length of the spool itself that when the latter is mounted thereon, with the sections 7 and 8 substantially meeting at the center joint 11, the spool will have a limited extent of longitudinal play relatively to its said supports.

The perforated record sheet 6 is attached as by paste indicated at 6^a (Fig. 3) at the opposite edges of its inner end to the outer ends of the spool sections 7 and 8 just inwardly of the flanges 12, being preferably thus secured to the extent of several turns around the spool-body. From this it will be readily seen that, as the record sheet in the form of a roll coiled around the body of the spool, expands and contracts, it will force apart and draw together the two spool sections, this action being permitted by reason of the limited endwise play of the spool relatively to its supports.

Pivottally mounted in bearings 22 secured to the back wall 2 of the frame is the spool-centering device proper herein shown as consisting of a bail-shaped member 23 pivoted at the outwardly turned ends of its parallel arms in the bearings 22, and with its transverse member substantially co-extensive longitudinally with the distance between the spool flanges 12. The corner portions of the bail are beveled on their under and outer sides, as shown at 24, which beveled portions lie against the inner sides of the peripheries of the spool flanges, so that the weight of the bail exerts a light outward thrust upon said flanges, causing the latter to move outwardly to equal extents under an expanding movement of the paper roll, and likewise insuring equal inward movements of the flanges under the contracting movement of the paper roll, which latter causes the flanges to move inwardly by virtue of the fact that the inner end of the paper roll is itself secured to the spool sections 7 and 8 to which the flanges are rigidly secured. Hence, the action of the centering member 23 is such as to maintain the center of the spool at a fixed position relatively to the tracker-board and cause the expansion of the spool and paper roll to take place evenly and uniformly on opposite sides of the center. This expansion and contraction is so slight in extent that, when uniformly distributed from the center toward both ends of the roll, it does not impair the registration of the music sheet with the tracker-board.

While the spool-centering device is herein shown as applied to an extensible music roll, and while I contemplate that such will be its chief application, yet it is manifest that the centering device may be used to advantage in effecting and maintaining the correct position relatively to the tracker-board of a non-expansible music-roll, and

hence the invention, in its broader aspects, is not limited to the employment of an extensible roll.

I do not herein make any claim to the novel structural features of the extensible spool herein shown, since the latter forms the subject matter of an application for Letters Patent filed by me on the 4th day of November, 1910, Serial No. 590,603.

I claim—

1. The combination with the tracker-board of a self-playing musical instrument, of a flanged music-roll spool, supports on which said spool is rotatably mounted with capacity for a limited longitudinal play, and a centering device disposed between and engaging the inner sides of the flanges of the spool for centering the spool in relation to the tracker-board, substantially as described.

2. The combination with the tracker-board of a self-playing musical instrument, of a flanged music-roll spool, supports on which said spool is rotatably mounted with capacity for a limited longitudinal play, and a pivoted centering device movable into and out of a position wherein it engages the inner sides of the flanges of the spool for centering the spool in relation to the tracker-board, substantially as described.

3. The combination with the tracker-board of a self-playing musical instrument, of an extensible flanged music-roll spool, supports on which said spool is rotatably mounted, with capacity for a limited longitudinal play, and a centering device disposed between and engaging the inner sides of the flanges of the spool and automatically maintaining the center of the spool in fixed relation to the tracker-board, substantially as described.

4. The combination with the tracker-board of a self-playing musical instrument, of a sectional flanged music-roll spool the sections whereof are capable of endwise movement toward and from each other, a paper-roll attached at its inner end to the outer ends of the sections of said spool, supports on which said spool is rotatably mounted with capacity for a limited longitudinal play, and a centering device engaging the flanges of the spool and automatically maintaining the center of the spool in fixed relation to the tracker-board, substantially as described.

5. The combination with the tracker-board of a self-playing musical instrument, of a flanged music-roll spool, supports on which said spool is rotatably mounted with capacity for a limited longitudinal play, and means for centering the spool in relation to the tracker-board comprising a member movable into and out of a position between the flanges of the spool, said member having beveled surfaces directly engaging said flanges, substantially as described.

6. The combination with the tracker-board of a self-playing instrument, of a flanged music-roll spool, supports on which said spool is rotatably mounted with capacity for a limited longitudinal play, and means for centering the spool in relation to the tracker-board comprising a pivoted gravity-actuated member disposed between the flanges of the spool, said member having beveled surfaces directly engaging said flanges, substantially as described.

7. The combination with the tracker-board of a self-playing musical instrument, of a sectional flanged music-roll spool the sections whereof are capable of endwise movement toward and from each other, a paper roll attached at its inner end to the outer ends of the sections of said spool, sup-

ports on which said spool is rotatably mounted with capacity for a limited longitudinal play; and means for centering the spool in relation to the tracker-board comprising a pivoted gravity-actuated member disposed between the flanges of the spool, said member having beveled surfaces directly engaging said flanges and automatically operating, under expansion and contraction of the paper roll, to insure equal and opposite movements of the sections of the spool relatively to its center, substantially as described.

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Witnesses:

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DAISY C. THORSEN.

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