Dec. 15, 1925. 1,565,633

S. L. FISHER

MUSIC ROLL SPINDLE

Filed May 6, 1921

Fig. 1.

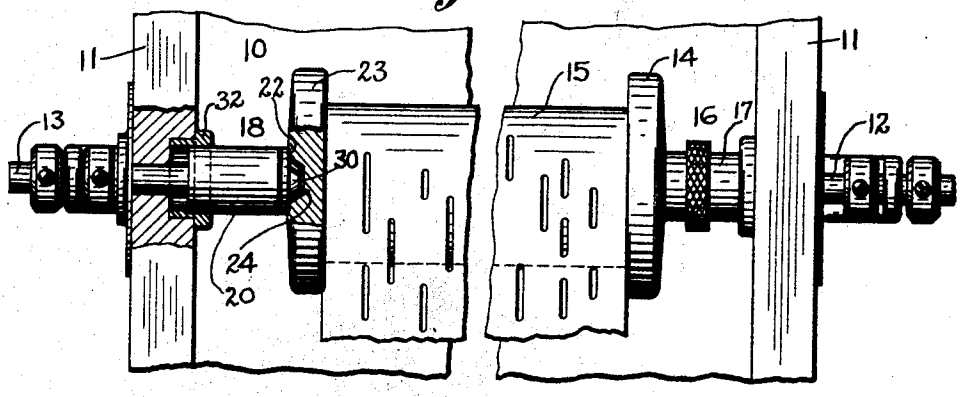


Fig. 2.

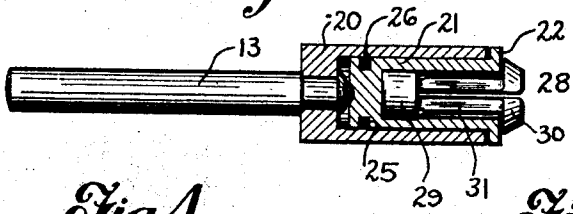


Fig. 3.

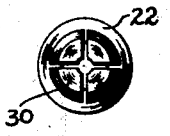


Fig. 4.

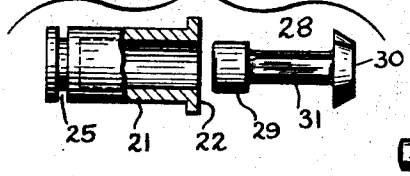


Fig. 5.

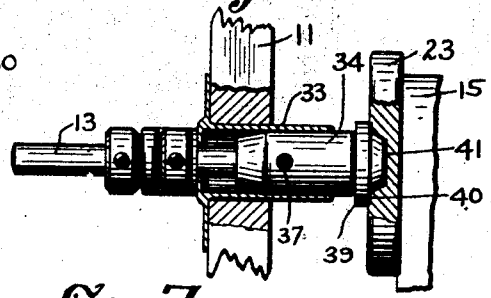


Fig. 6.

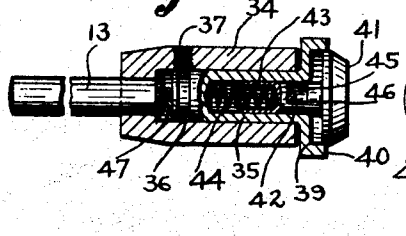
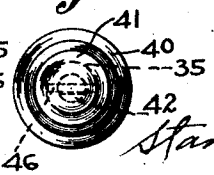


Fig. 7.



Inventor
Stanley L. Fisher
By Henry E. Rockwell
Attorney

Patented Dec. 15, 1925. 1,565,633

UNITED STATES PATENT OFFICE.

STANLEY L. FISHER, OF CHESTER, CONNECTICUT, ASSIGNOR TO THE PRATT READ PLAYER ACTION COMPANY, OF DEEP RIVER, CONNECTICUT.

MUSIC-ROLL SPINDLE.

Application filed May 6, 1921. Serial No. 467,342.

To all whom it may concern:

Be it known that I, STANLEY L. FISHER, a subject of the King of Great Britain, residing in Chester, county of Middlesex, State of Connecticut, have invented certain new and useful Improvements in Music-Roll Spindles, of which the following is a full, clear, and exact description.

This invention relates to spindles for supporting rotating music rolls or spools upon which are wound note sheets used in connection with self-playing musical instruments. In general the music spool is provided with a socket at each end, which sockets receive the supporting spindles, the spool being driven by one only of the spindles, usually that one at the right hand side of the spool box. This application has particular reference to the left hand or non-driving spindles of the general type shown in my copending application, No. 130,469, filed November 9, 1916, (Patent No. 1,402,060 January 3, 1922) of which this application is a continuation in part.

The sockets provided in the ends of the music spools may be of varying sizes so that the supporting spindles, which of necessity must be small enough to fit the smallest socket, do not fit the larger sockets accurately. Such a loose fitting of the parts results in the roll dropping or shifting about on the spindles, particularly when it is being rewound, which causes a distressing knocking or chattering noise.

One of the objects of the present invention is to obviate this disadvantage by the provision of a non-driving spindle which is resiliently pressed into engagement with the walls of the music roll socket. The roll socket engaging member, while fitting the smallest sockets provided in the spools, will nevertheless be tightly engaged with larger roll sockets.

A still further object of my invention is to provide a left-hand or non-driving spindle of novel and simple construction, which will accurately fit roll sockets of varying sizes.

A still further object of my invention is to provide a spindle of the type described with a spring-pressed roll rocket engaging member which will automatically be moved into position to engage the walls of the roll socket and will not require a manual adjustment for this purpose when the roll is inserted.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a fragmentary front elevation of a spool box provided with a roll supporting spindle embodying my improvements;

Fig. 2 is a sectional view of my improved left hand spindle;

Fig. 3 is an end view of the same;

Fig. 4 is a detail view of some parts of the spindle;

Fig. 5 is a fragmentary front elevation of a modified form of my invention;

Fig. 6 is a sectional view of the spindle shown in Fig. 5; and

Fig. 7 is an end view of the same.

I have selected to show in a preferred form of my invention, a spool box 10 of usual form provided with the side frame members 11 in which are slidably mounted spindle supporting shafts 12 and 13. A music roll 14 upon which is wound a note sheet 15 is shown supported by the spindles 16 and 18 which may be more fully described hereinafter. The note sheet is, in operation, wound from the spool 14 by a take-up spool (not shown) in the usual manner.

The right hand spindle 16 will be provided with suitable driving means such as the usual driving tenon, as is shown in my copending application previously referred to. This spindle is also provided with a collar or sleeve member 17, the periphery of which abuts the flange of the music roll about the usual socket to correctly center the same. As this application is not particularly concerned with this right hand or driving spindle, a fuller description thereof will be unnecessary.

The left hand or non-driving spindle consists of a barrel member 20 which is secured in a suitable way upon the end of the shaft 13. This barrel member is of cylindrical

form and has mounted therewithin a bushing 21 which projects from the barrel at its forward end and has provided thereon a shoulder 22 which projects over the peripheral edge of the barrel 20 and makes abutting contact with the face of the spool flange 23 adjacent the roll socket 24. The bushing 21 is provided with an annular recess 25 near its rear end and a pin 26 is passed through the walls of the barrel member and into this recess, so that rotation of the bushing within the barrel may be permitted and at the same time withdrawal of the bushing from the barrel will be prevented.

Within a cylindrical bore within the bushing is mounted a roll socket engaging member 28, which consists of a plug or body member 29 machined to fit closely within the bushing, carrying the head 30 of this member upon a plurality of resilient spring members 31, which are attached to the plug 29 at their rear ends. The member 30, as shown in Figs. 2 to 4, is tapered toward the music spool so as to present a surface frusto-conical in shape and is segmentally divided into a plurality of parts, four, as shown in the drawing, one of which is carried upon each of the springs 31.

The barrel 20 is mounted within a bushing member 32 supported in the side frame of the spool box so that it may be moved in the direction of the length of the shaft 13 to permit the insertion of the music roll between the spindles. This spindle 18 may be mounted in the the well-known manner so that it will then be resiliently moved toward the roll to properly engage the same. As may be inferred from the foregoing, the socket engaging member 30 will, to some extent, enter within the roll socket 24, while the flange 22 upon the bushing 21 will engage the face of the roll about the socket. While the spring members 31 will normally retain the segments of the head 30 expanded, as shown in Fig. 3, so as to engage the side wall of the roll socket, they may be forced toward each other to some extent, when this member is moved within the socket, depending upon the size thereof. It will, however, be obvious that due to the expanding action of the springs upon the segments of the head as well as due to the tapering shape of the head, the latter will always be kept in accurate engagement with the side wall of the socket. The shoulder 22 by engaging the face of the roll will, in connection with the right hand spindle, accurately center the same, and the note sheet 15, with relation to the tracker bar.

In Figs. 5 to 7 of the drawings, I have shown a modified form of my invention, wherein, likewise, the supporting shaft is provided with a barrel member containing a bushing rotatably mounted therein, which is provided with a shoulder to engage the face of the roll and which carries a spring-pressed tapering roll socket engaging member.

In Fig. 5, I have shown the side frame member of the spool box provided with a bushing 33, in which is slidably mounted the shaft 13, which supports the left hand end of the roll. The shaft 13 has secured thereon a barrel member 34 in which is mounted a bushing 35 provided with the recess 36 near its rear end. A screw 37 is inserted through the barrel member, the end of which enters the recess 36 to permit rotation of the bushing 35, but preventing its withdrawal from the barrel. The bushing 35 is flared at its forward end to provide a seat 39 and an annular shoulder 40 to engage the face of the music spool in a manner similar to the shoulder 22 upon the bushing 21. A tapered roll socket engaging member 41 frusto-conical in shape is provided upon its rear face with a plug or stem 42 which is received within the bore of the bushing 35. The stem 42 is provided with a socket 43 which seats a spiral spring 44 reacting against the bottom of the bore in the bushing. The roll socket engaging member 41 will be slidably received within the flared portion 39 of the bushing when it is moved to the left in Fig. 6 against the tension of the spring 44. The stem 42 is notched at 45 to receive a pin 46 driven through the wall of the bushing to prevent the ejection of the roll socket engaging member by the spring 44. This notch is, as shown, considerably longer than the diameter of the pin, so that a slidable movement of the member 41 with relation to the bushing is permitted.

The operation of this device will be similar to that of the embodiment of my invention shown in Figs. 1 to 4. The shaft 13, as shown in Fig. 5, may be moved to the left to permit the insertion of the spool between the spindles. When this has been accomplished, the shaft is again moved to the right by the usual resilient means, so that the roll socket engaging member will enter to some extent the socket 24 in the spool, while the shouder 40 will engage the face of the spool about this socket. When the flange 40 abuts the face of the roll, the movement of the shaft 13 to the right will, of course, be determined, but the roll socket engaging member 41 will have an independent movement within the bushing, due to the action of the spring 44 by which it will be resiliently urged to the right to snugly engage the side wall of the socket. It will be obvious that in both forms of my invention this roll socket engaging member is resiliently mounted so that it is urged at all times into snug engagement with the roll socket. This engagement is due to the lateral expanding action upon the segments of the head 30 by the springs 31 in the one

case and to the movement of the socket engaging member longitudinally of the supporting shaft by the spring 44 in the other case. The roll socket engaging members are in both instances carried upon plugs which are mounted within the bushings which are in turn rotatably mounted in the barrel members.

If desired, some anti-friction means may be provided between the rear end of the bushing and the forward end of the shaft 13, such as the balls 47 which may respectively be spun into the shaft and bushing. It will be obvious that as the bushings which carry the roll engaging members are rotatably mounted with respect to the shaft 13, this shaft may or may not be rotatably mounted within the frame of the spool box.

While I have shown and described some preferred embodiments of my invention, it is to be understood that the same will not be limited thereto in all its details, but is capable of many modifications and variations which will come within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. A music roll spindle comprising a shaft, a member rotatably carried by the shaft, a roll socket engaging means carried by said rotatable member and resiliently urged relatively thereto into snug engagement with the roll socket.

2. A music roll spindle comprising a shaft, a member rotatably carried by the shaft, a spring pressed means carried by said rotatable member and having roll socket engaging means thereon.

3. A music roll spindle comprising a shaft, a member rotatably carried by the shaft, roll engaging means mounted within said member, and a spring also disposed within the rotatable member to urge said means into engagement with the roll and means for operatively supporting said shaft.

4. A music roll spindle comprising a shaft, a member rotatably carried by the shaft and having roll-socket engaging means and a roll-end-face engaging means thereon said first means being movable to engage the roll socket independently of said second means.

5. A music roll spindle comprising a supporting shaft, a member rotatably mounted thereon and provided with a shoulder to engage the end face of the music roll, and means carried by said member and movable relatively thereto to enter the roll socket.

6. A music roll spindle including a shaft, a barrel member mounted thereon, and a bushing mounted in said barrel member, said bushing projecting from the barrel and having a shoulder formed thereon to project over the edge of the barrel member and engage the end face of the music roll and means supported by the bushing to engage the roll socket.

7. A music roll spindle including a shaft, a barrel member secured thereon, a bushing mounted in said barrel member, said bushing projecting therefrom and having a shoulder formed thereon to engage the end face of the music roll, means to prevent withdrawal of the bushing from the barrel while permitting rotation of the same therein and means supported by the bushing to engage the roll socket.

8. A music roll spindle including a shaft, a barrel member secured thereon, a bushing mounted in said barrel member, said bushing projecting therefrom and having a shoulder formed thereon to engage the end face of the music roll, said bushing having an annular recess therein, a pin passing through the barrel member and entering said recess and means to (project within) the roll socket.

9. A music roll spindle comprising a shaft, a barrel member mounted thereon, a bushing mounted in said barrel and having a shoulder formed thereon to engage the end face of the music roll, and a roll-socket engaging member carried by the bushing.

10. A music roll spindle comprising a shaft, a barrel member mounted thereon, a bushing rotatably mounted in said barrel and provided with an annular music roll engaging shoulder projecting over the edge of the barrel and a roll-socket engaging member carried by the bushing.

11. A music roll spindle comprising a suitably supported barrel member, a bushing rotatably mounted therein, and roll-socket engaging means carried by the bushing and positioned without the barrel, said bushing being provided with a roll-end-face engaging shoulder projecting laterally beyond said socket engaging member.

12. A music roll spindle including a shaft, a barrel member secured thereon, means rotatably mounted within the barrel and carrying a tapered roll socket engaging member, said last named member projecting from the barrel and being resiliently urged relatively to said rotatably mounted means, into contact with the roll socket.

13. A music roll spindle comprising a shaft, a barrel member secured thereon, and a plug rotatably mounted within the barrel member, said plug carrying a plurality of radially movable members to engage the side wall of the roll socket.

14. A music roll spindle comprising a shaft, a barrel member secured thereon, and a plug rotatably mounted within the barrel member, said plug carrying expansible means to engage the side wall of the roll socket.

15. A music roll spindle comprising a shaft, a barrel member secured thereon, a plug mounted within the barrel and carry-

ing a plurality of resilient members and roll engaging means on said members.

16. A music roll spindle comprising a shaft, a barrel member secured thereon, a hollow bushing within the barrel and a plug mounted within the bushing and carrying roll engaging means.

17. A music roll spindle comprising a shaft, a barrel member secured thereon, a hollow bushing within the barrel, a plug mounted within the bushing, a roll-end-face engaging member on the bushing and a roll-socket engaging member carried by the plug.

18. A music roll spindle comprising a shaft, a barrel member secured thereon, a hollow bushing within the barrel, a plug mounted within the bushing, a roll-end-face engaging member on the bushing and a roll-socket engaging member carried by the plug, said roll-end-face-engaging member comprising a shoulder projecting over the end face of the barrel member.

19. A non-driving spindle comprising a shaft, said shaft having mounted thereon means to engage the end face of a music roll, and a spring pressed roll socket engaging member movable relatively thereto in a direction to snugly engage the roll socket.

20. In combination, a shaft, a barrel member secured thereon, a hollow bushing within the barrel member, a member, mounted within said bushing, having a tapered roll-socket engaging head and resilient means to urge said head into engagement with the socket wall.

21. A music roll spindle having a tapered roll socket engaging portion rotatable relatively thereto and a spring mounted in the spindle to urge the same in a radial direction into engagement with the side wall of the roll socket.

22. A music roll spindle having means to engage the end face of the music roll, and means movable relatively to said first means and resiliently urged into engagement with the roll socket.

23. In combination, a music roll, a longitudinally movable spindle having roll positioning means engaging the roll at one extreme of its overall length and a roll socket engaging member resiliently urged relatively thereto into engagement with the walls of the roll socket.

24. In combination a music roll, a longitudinally movable spindle, having roll positioning means engaging the roll at one extreme of its overall length and a tapered roll-socket engaging member movable with respect to said roll positioning means to tightly engage the roll socket.

In witness whereof, I have hereunto set my hand on this 30th day of April, 1921.

STANLEY L. FISHER.