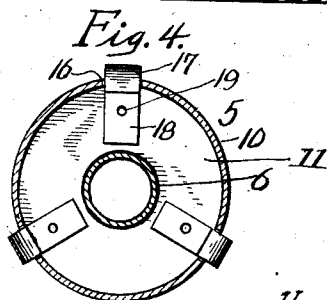
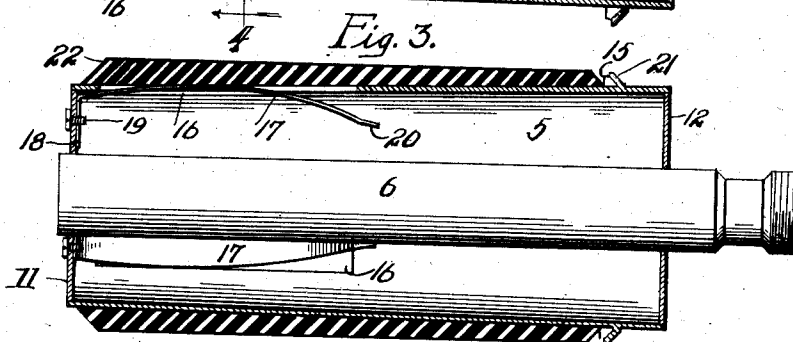
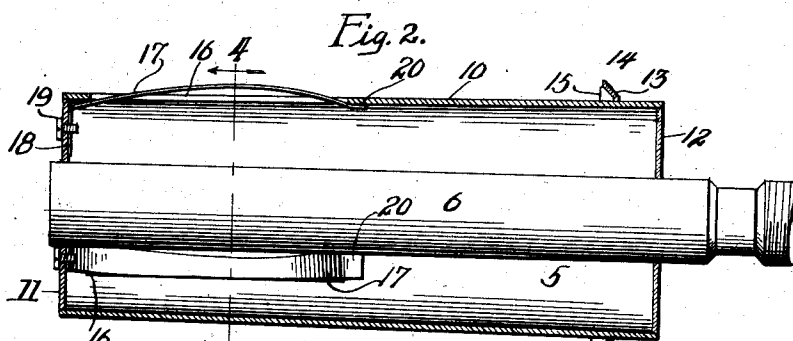
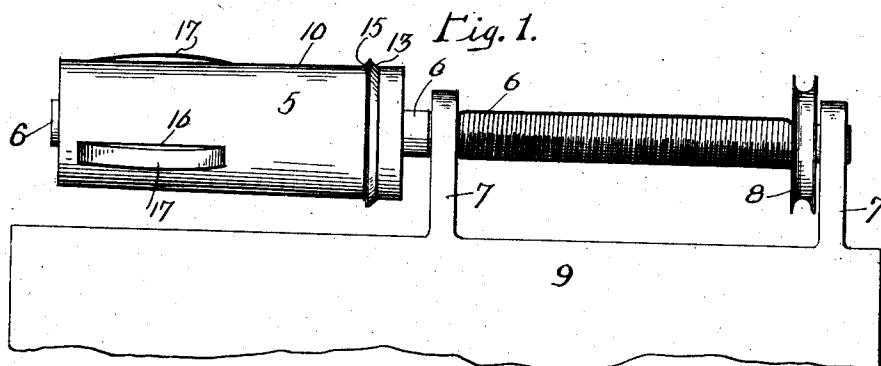


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 MANDREL FOR PHONOGRAPHS.
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973,203.

Patented Oct. 18, 1910.



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MANDREL FOR PHONOGRAPHS.

973,203.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY N. KISTNER, a citizen of the United States, residing at Zion City, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Mandrels for Phonographs, of which the following is a specification.

The present invention relates to a mandrel used in connection with a phonograph, for the purpose of holding a phonographic record. In use, the mandrel is actuated to rotate the record for the purpose of bringing every portion of the record into engagement with the needle of the phonograph.

One object of the present invention is to design a mandrel which will accommodate the record and permit it to be readily slipped thereon and retained in position under various conditions of heat and cold, which varying conditions act upon the substance composing the record to change its size.

Another object of the invention is to form an abutment upon the mandrel to prevent the record from being slipped too great a distance thereon.

A further object of the invention is to form a cushion upon the mandrel, against which the end of the record strikes when it has been forced to the desired distance upon the mandrel.

The invention further consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is an elevation, showing the mandrel in operative position, and showing a portion of the mechanism for operating the needle and mandrel; Fig. 2, a sectional elevation of the mandrel; Fig. 3, a view similar to Fig. 2, showing a record in place upon the mandrel, and showing the abutment formed integral with the body of the mandrel; and Fig. 4, a section on line 4—4 of Fig. 2, looking in the direction of the arrow.

Owing to the peculiar composition of phonographic records, it has been found that the diameter of the same will change under heat and cold, expanding somewhat under heat and contracting somewhat under cold. The mandrel upon which the record is mounted must necessarily be so constructed that when the record is slipped thereon a tight engagement will be maintained between the inner surface of the re-

ord and the outer surface of the mandrel. This is necessary because if the record should slip upon the surface of the mandrel the surface of the record would not pass continuously by the needle, thus, of course, breaking the continuity of the sound coming from the horn of the phonograph. It has been the practice to form the mandrels with a tapered body, and to form the interior surface of the record with a similar taper. Thus, by forcing the record onto the mandrel, the tapered surfaces would co-act with one another to lock the record securely upon the mandrel; but difficulty has been found, because of the variation in size of the record, in placing the record upon the mandrel so that it would not become wedged so tightly upon the surface of the mandrel that the composition of the record would crack or splinter, and thus damage the record so that it could not be used any further for the purpose of reproduction. The mandrel must, of course, be of a size to accommodate the record under its most expanded condition, otherwise the record in the expanded condition would slip upon the surface of the mandrel; and when the contraction takes place the record will have to be forced more or less in order to slip it a sufficient distance upon the mandrel to bring the surface into proper engagement with the needle; and in forcing the record in this manner the sloping surface of the mandrel will act as a wedge and will crack or splinter the end of the record, and, as heretofore stated, mutilate the record so that it will be of no further use. Applicant overcomes this difficulty by forming a resilient contacting surface upon the mandrel, which impinges against the record and holds it sufficiently firm so that no turning of the record, independent of the mandrel, is possible, and yet permits the record which has been shrunk out of normal condition to be placed upon the mandrel without the necessity of forcing the same thereon and splitting the ends thereof; and the abutment prevents the user from forcing the record to a point upon the mandrel where the slope of the outer surface of the mandrel will be greater than the slope of the inner surface of the record and cause the end of the record to become shattered or split.

The mandrel 5 is mounted upon a shaft

6, which extends therethrough and is journaled within suitable brackets 7. The shaft, as shown in Fig. 1, is screw-threaded for a portion of its way, and upon these screw threads is fed the needle-carrying mechanism, in a manner commonly known to all versed in the phonographic art. This needle-carrying mechanism forms no part of the present invention, and is so well known, as to its construction and operation, that a detailed description and illustration thereof are not deemed necessary.

Attached to the shaft 6 is a driven pulley 8, which is suitably connected to any desired form of driving mechanism, and the mandrel, shaft, and auxiliary parts are mounted upon a suitable base or support 9, of the ordinary size and configuration employed in phonographs.

The mandrel 5 of the present invention, as shown, consists of a tapered cylindrical surface 10, supported and held in position by a front wall 11 and a rear wall 12, both of which walls are attached to and rotate with the shaft 6, and both of which walls are attached to the tapered surface 10, so that movement is imparted to the entire mandrel by the rotation of the shaft 6. The mandrel is formed, adjacent to its inner end, with a conical collar 13, which serves as an abutment to prevent the record from being forced too far upon the mandrel; and the conical shape of the collar, as shown, leaves a recess 14 between its inner face and the outer face of the tapered surface 10, into which recess is set a ring 15 of suitable cushioning substance. The tapered surface 10 is provided with a plurality of elongated recesses 16, through each of which projects a flat spring 17, which springs, as shown, are formed to exert an outward spring tension. The springs 17 are secured at one end 18 thereof by means of screws 19, or other suitable fastening devices, which are entered through the front wall 11 of the mandrel body, and the free end 20 of the spring 17 rests against the inner face of the tapered surface 10 adjacent to the inner edge of the recess 16.

In Fig. 3 is shown a modified form of construction, in which a conical collar 21 is formed integral with the tapered surface 10; and in this same figure is shown a phonographic record 22 mounted in operative position upon the mandrel. As will be seen by referring to this figure, the springs 17 will impinge against the inner surface of the record, thus holding it in tight engagement, so that it will be rotated in unison with the rotation of the mandrel; and it will be further seen, by referring to this figure, that the edge of the record abuts against the cushioning substance, so that no danger of cracking or splintering thereof is incurred when it is being positioned. The

record, as shown, fits substantially tight upon the body of the mandrel, but it is obvious that if the record should become expanded through heat action it will still be held in firm engagement with the mandrel by the springs 17, which would then extend farther above the periphery of the tapered surface 10 and impinge against the inner surface of the record, thus holding it in just as tight engagement as it would be under normal conditions, so that, by making the mandrel of a size to accommodate the record under its most contracted condition, no forcing of the record upon the mandrel will be necessary under any conditions, in order to hold it in sufficiently firm engagement to prevent the slipping of the record upon the surface of the mandrel.

I claim:

1. In a device of the class described, the combination of a mandrel body and a resilient member attached to said body, said resilient member impinging against a record mounted upon the mandrel and preventing rotation of the record upon the surface of the mandrel, a hollow outwardly flaring collar upon the mandrel forming an abutment to prevent the record from being forced upon the mandrel beyond a predetermined distance, and an outwardly flaring strip of cushioning substance lying within said collar and presenting a substantially broad, flat, outer surface, said collar forming a retainer for said cushioning substance holding it in position upon the mandrel body, the end of the record striking against the outer surface of said cushioning substance when the record is slipped onto the mandrel, substantially as described.

2. In a device of the class described, the combination of a tapered mandrel body having an elongated slot therein, a flat spring having one end attached to the interior of said mandrel, said spring curving upwardly through said slot and having its free end resting against the wall of the mandrel body upon the interior thereof, said spring presenting an elongated curved surface for impinging against the inner surface of a record mounted upon the mandrel to prevent rotation of the record upon the mandrel, the curved contacting surface of the spring being forced into the interior of the mandrel body by the insertion of a record upon the mandrel, whereby a small engaging surface is presented by the spring when a record of substantially tight fit is placed on the mandrel, and a large engaging surface is presented by the spring when a loose fitting record is inserted on the mandrel, substantially as described.

3. In a device of the class described, the combination of a tapered mandrel body having an elongated slot therein, a flat spring having one end attached to the interior of

said mandrel, said spring curving upwardly through said slot and having its free end resting against the wall of the mandrel body upon the interior thereof, said spring presenting an elongated curved surface for impinging against the inner surface of a record mounted upon the mandrel to prevent rotation of the record upon the mandrel, the curved contacting surface of the spring being forced into the interior of the mandrel body by the insertion of a record upon the mandrel, whereby a small engaging surface is presented by the spring when a record of substantially tight fit is placed on the mandrel, and a large engaging surface is presented by the spring when a loose fitting record is inserted on the mandrel, a hollow out-

wardly flaring collar upon the mandrel forming an abutment to prevent the record from being forced upon the mandrel beyond a predetermined distance, and an outwardly flaring strip of cushioning substance lying within said collar and presenting a substantially broad, flat, outer surface, said collar forming a retainer for said cushioning substance and holding it in position upon the mandrel body, the end of the record striking against the outer surface of the cushioning substance when the record is inserted upon the mandrel, substantially as described.

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