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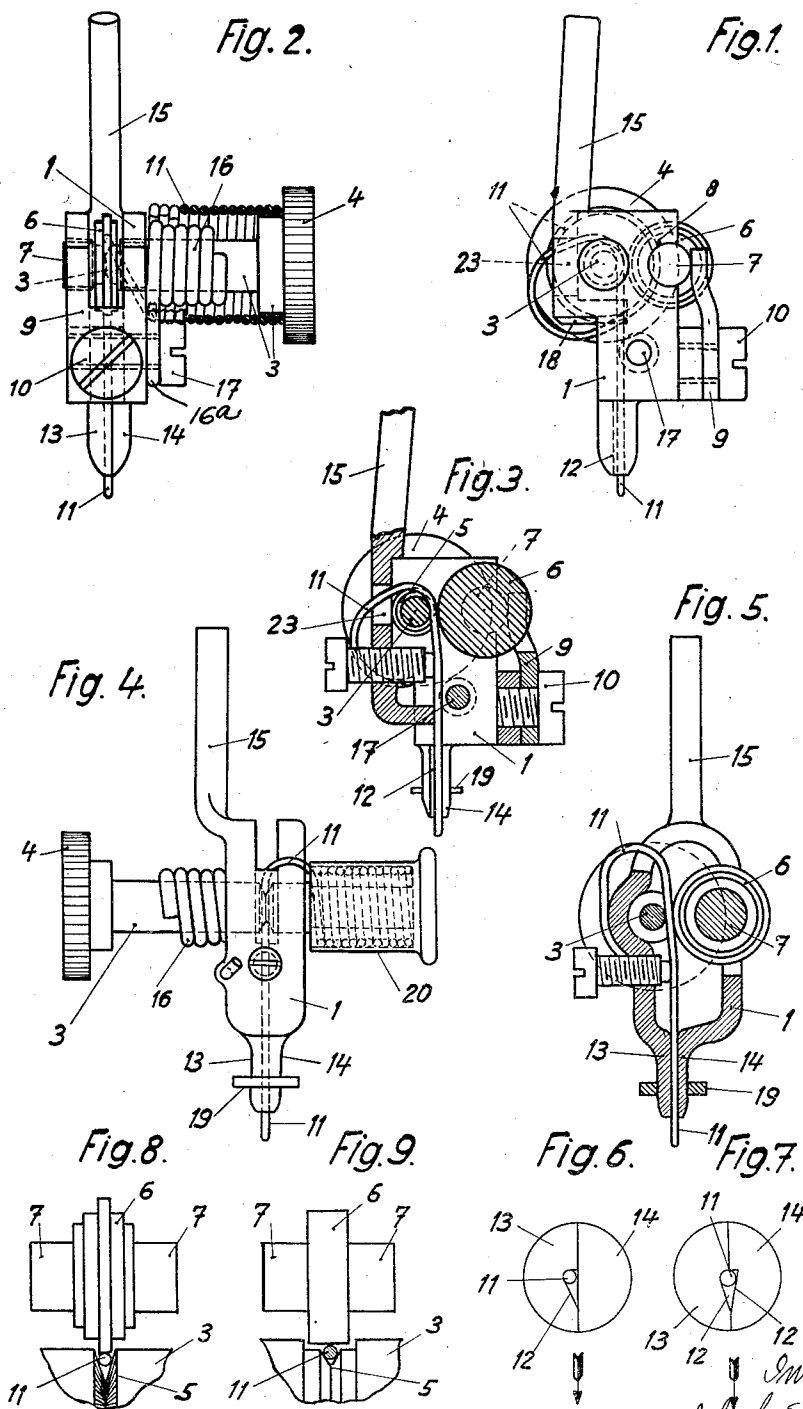
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1,786,232

NEEDLE HOLDER FOR THE SOUND BOXES OF TALKING MACHINES

Filed April 13, 1927

2 Sheets-Sheet 1



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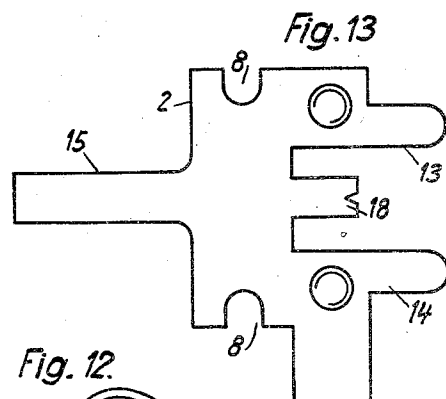
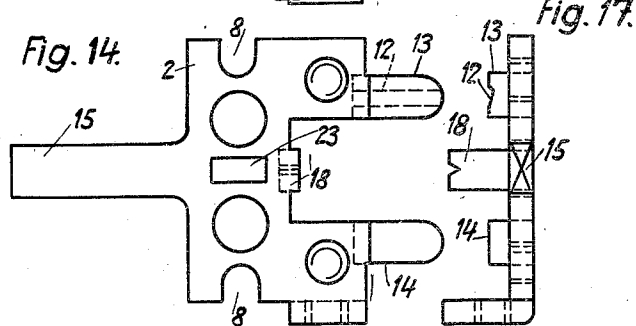
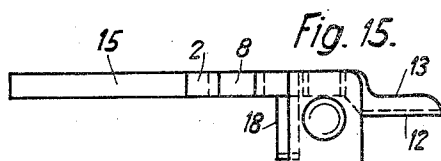


Fig. 16.

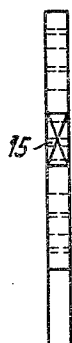
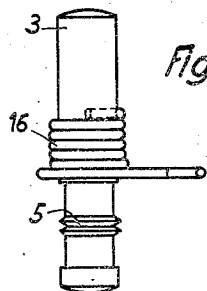
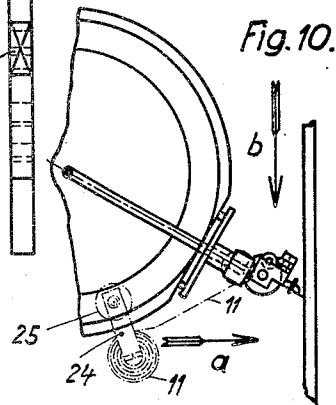
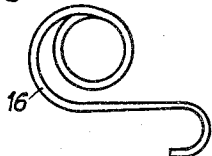


Fig. 12.



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UNITED STATES PATENT OFFICE

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NEEDLE HOLDER FOR THE SOUND BOXES OF TALKING MACHINES

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This invention relates to needle holders for the sound boxes of talking machines and has for its object to provide a needle holder for a stylus wire.

5 The new needle holder is provided with a feed roller capable of being turned by hand for feeding forward the stylus wire and a spring loaded disc for pressing the stylus wire against the feed roller. The new needle holder differs in this from the known stylus
10 needle holders which are provided with feed rollers for gripping the stylus wire which travels in small guiding tubes or are provided with jaws for clamping the stylus wire in the outlet groove, that the stylus wire is held in a V-shaped groove in the feed roller for securing it against slipping back at three
15 gripping points and that it can be moved forward and backward by means of the feed roller. The stylus wire projects between opposed points of support, the object of which is to straighten it into an outlet groove leading through the vibrating point of the needle casing. For transmitting the stylus vibrations to the needle casing in as perfect a
20 manner as possible, the stylus wire is firmly held in the said groove by the weight of the sound box carrying the needle casing and by the resistance of the record acting on the point of the stylus wire.

In the accompanying drawings, two constructional examples of the invention are shown,

Fig. 1 being a side elevation of one constructional form,

Fig. 2 a front view of Fig. 1, partly broken away,

Fig. 3 a vertical transverse section of the second constructional form,

Fig. 4 a plan view of Fig. 3,

Fig. 5 a vertical section through the second form,

Figs. 6 and 7 enlarged views from below of the vibrating point of the needle casing,

Fig. 8 and 9 two examples of a plate of feed rollers to an enlarged scale,

Fig. 10 a side elevation showing the needle holder in the operating position,

Fig. 11 a view of the feed roller with the securing spring,

Fig. 12 a detail view of the spring, Figs. 13 and 14 views of the completely and partly developed needle casing,

Fig. 15 a side view of Fig. 14,

Fig. 16 a plan view of Fig. 13, and

Fig. 17 a plan view of Fig. 14.

The new needle holder comprises a needle casing 1 produced by stamping and bending from sheet steel and rendered capable of vibrating by being tempered. The casing 1 has an opening 23 through which the stylus wire extends.

In the needle casing a roller 3 is journaled, in which is a V-shaped groove 5 (Figs. 8, 9 and 11). The groove 5 has an acute angle and may, for instance, be rolled in by means of a roller having a corresponding profile. The groove 5 which may have a roughened surface is of such dimensions that the stylus wire 11 rests against its sides. The roller 3 is provided with a knurled head 4. The sides of the V-shaped groove 5 are preferably made so steep that the relatively small pressure of a disc 6 bearing against the stylus-wire will sufficiently clamp the wire 11. The journals 7 of the disc 6 run in recesses 8 in the casing, the disc being pressed by two resilient tongues 9 against the stylus-wire 11, so that the latter is held firmly in the groove 5 between three clamping points and is thereby secured against being pushed back. The stylus-wire 11 can be advanced or withdrawn by turning the roller 3, causing the disc 6 to turn as well. The disc can either engage in the groove 5, as shown in Fig. 8, or can press against the stylus wire above the groove 5, as shown in Fig. 9. The resilient tongues 9 bearing against the journals 7 of the disc 6 are fixed to the casing 1 by means of a screw 10.

In the first constructional form of needle holder shown, the stylus-wire 11 is wound around the roller 3 between the knurled head 4 and the casing 1 (Figs. 1 and 2), but may be wound on an extension of the roller 3, as shown in the second constructional form (Figs. 3, 4 and 5).

In the latter case the stylus wire 11 wound on the extension of the roller 3 is covered by a casing 20.

The stylus-wire passes from the feed roller 3 between two oppositely located points of support formed by the tongue 18 and the screw 17 into an outlet groove 12 provided in the vibrating point 13, 14 of the needle casing. Between said tongue and screw 17, 18 the stylus-wire is straightened, being held rigidly in the groove 12 by the weight of the sound box which carries the needle casing and the resistance of the record acting on the point of the stylus wire. Through the stylus-wire being held firmly in this manner as perfect a transmission of the tone-vibrations as possible to the needle casing and through it to the sound box bearing the casing is assured.

According to Fig. 6 the groove 12 is in the extension 14 of the point of the casing. One lateral surface of the groove 12 is inclined thus forming an acute angle for firmly holding the stylus wire forced into it. In Fig. 10 the arrow *b* indicates the direction or motion of the record and the arrow *a* the direction of pressure of the second box.

In the constructional form shown in Fig. 7 the stylus-wire 11 is held in two grooves 12 provided in the two extensions 13, 14 of the point of the needle casing. The extensions 13, 14 in each case form parts of the casing 1 which is stamped out of a single piece.

In the constructional form shown in Fig. 3, the stamped point 13, 14 is reduced by milling and thereby made capable of vibrating more easily.

The casing 1 both in the first and in the second constructional form is fixed to the sound box in a known manner by means of an arm 15 which is integral with the casing.

For preventing the stylus wire 11 being withdrawn too far in the groove 12 a safety spring 16 is provided. This spring allows of the stylus wire 11 being fed forward to any desired extent and of the stylus wire being withdrawn within certain limits. Owing to the possibility of varying the length of the stylus wire point, the records can be played with varying degrees of tone strength. In no case however can the stylus wire 11 be withdrawn to such an extent that it would leave the groove 12.

The safety spring 16 is wound round the roller 3 so as to fit closely to it. The first convolution of the spring 16 is led away from the roller 3 in an increasing spiral to the casing 1, having this end provided with a coil 16^a through which a screw 17 extends so that said end is fixed to the casing by said screw, the other end of the spring being fixed to the roller 3. The stylus-wire 11 can be fed forward unhindered, as already stated, and can be withdrawn until the spring 16 bears against the roller 3. This withdrawal of the stylus-wire 11 is quite sufficient for effectively varying the strength of tone. The screw 17 in addition to securing one end of the

spring 16 also holds the parts of the casing 1 firmly together, so that the two halves of the vibration extensions 13, 14 are pressed against one another, which ensures an accurate transmission of the vibrations.

When the extensions 13, 14 of the casing have been pointed for reducing their mass, a ring 19 is preferably used for holding them together (Fig. 3).

The stylus-wire 11 may be rolled up on a shackle 24 (Fig. 10) which may be releasably attached to the sound box by means of a clamping screw 25. The stylus wire wound on the shackle 24 is introduced through the opening 23 into the casing 1.

What I wish to secure by U. S. Letters Patent is:—

1. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination a casing, a stylus wire arranged on said casing, a hand operated feed roller rotatably mounted in said casing, a spring loaded disc for pressing the wire against the roller, said roller having a V-shaped groove to receive the wire, and said casing having an outlet groove for the wire.

2. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination a casing, a stylus wire arranged on said casing a hand operated feed roller rotatably mounted in said casing, a spring loaded disc for pressing the wire against the roller, and said casing having an outlet groove, means to automatically prevent the reverse movement of the wire, said means comprising a safety spring formed of helical convolutions and wound closely on the feed roller, the first convolution bearing away from the surface of the feed roller said convolution allowing the roller to be turned in the reverse direction to the feed direction within certain limits.

3. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination a casing, a stylus wire arranged on said casing, a hand operated feed roller, rotatably mounted in said casing, a spring loaded disc for pressing the wire against the roller, the feed roller, adapted to receive the wire, an outlet groove in said casing having an outlet groove for the wire, and means arranged between said feed roller and the outlet groove to straighten the wire.

4. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination, a casing, a stylus wire arranged on said casing, a hand operated feed roller, rotatably mounted in said casing, a spring loaded disc for pressing the wire against the roller, said roller having a V-shaped groove to receive the wire, said casing having an outlet groove for the wire, and means arranged between said feed roller and the outlet groove to straighten the wire, said

means comprising a point of support projecting in the path of said wire.

5 5. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination a casing, a stylus wire
10 arranged on said casing, a hand operated feed roller rotatably mounted in said casing, a spring loaded disc for pressing the wire against the roller, said roller having a V-shaped groove to receive the wire, said casing having an outlet groove, said outlet groove being wedge-shaped, to grip the wire.

15 6. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination, a casing, a stylus wire arranged on said casing, a hand operated feed roller rotatably mounted in said casing a spring loaded disc for pressing the wire against the roller, said casing having an outlet groove for the wire, said needle casing
20 comprising a shank for fixing it to the sound box, and parts for straightening the wire, each of such parts comprising a single piece of sheet steel.

25 7. A needle holder for a stylus wire for the sound boxes of talking machines comprising in combination, a casing, a stylus wire arranged on said casing, a hand operated feed roller rotatably mounted in said casing, a
30 spring loaded disc for pressing the wire against the roller, said roller having V-shaped groove, adapted to receive the wire, said casing having an outlet groove and also having parts cut away for reducing its cross-sectional area, to obtain maximum vibration
35 frequency.

In witness whereof I affix my signature.
JAKOB EIGENHEER.

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