March 29, 1932. A. F. J. WRIGHT 1,851,229

DEVICE FOR SHARPENING GRAMOPHONE NEEDLES

Filed Oct. 23, 1930

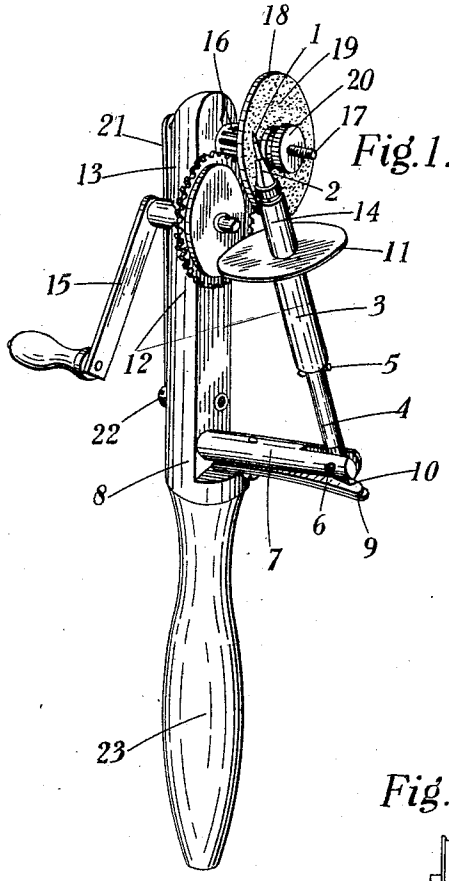


Fig. 1.

Fig. 2.

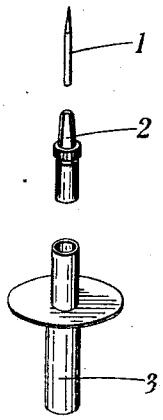
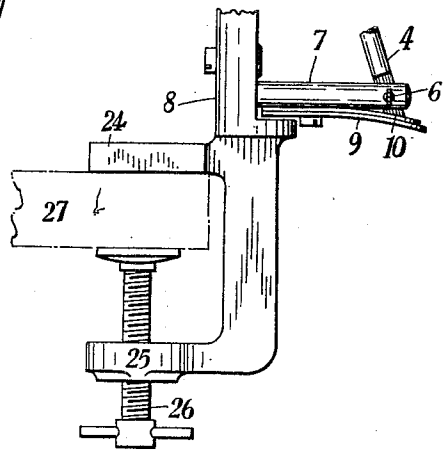


Fig. 3.



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UNITED STATES PATENT OFFICE

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DEVICE FOR SHARPENING GRAMOPHONE NEEDLES

Application filed October 23, 1930, Serial No. 490,728, and in Great Britain January 6, 1930.

This invention relates to devices for sharpening small cylindrical objects such as gramophone needles and particularly needles of relatively soft material and its object is to produce such a device which may be hand operated and simple both in construction and operation.

According to the invention the novel device comprises a rotatably mounted abrasive wheel and a holder for the needle to be sharpened, the abrasive wheel and the needle being yieldingly held in contact with each other and both being rotatable by hand. The abrasive wheel may conveniently be positively driven and the needle frictionally driven and in the preferred construction the abrasive wheel is rotated by hand through a chain of toother wheels, while the needle is rotated by frictional contact of its holder with one of the wheels of the said train. The needle may be held in a chuck which is removably mounted in a rotatable member which may derive its motion from a frictionally driven edge runner and in order to eliminate slipping of the latter it may be resiliently urged into contact with one of the toothed wheels of the train driving the abrasive wheel and this toothed wheel may be provided with an appropriate driving surface, for example, a disc of rubber. Provision may also be made for driving the abrasive wheel at a higher speed than the needle and for renewing it, in which case one of the wheels of the driving train may serve this purpose and may conveniently have a sheet of abrasive material, for example sand paper, emery cloth or the like, removably fixed to its driving face.

In order that the invention may be thoroughly understood and readily carried into effect, an example of construction in accordance therewith will now be described with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of the device with all its parts assembled ready for the sharpening of the needle, and

Figure 2 is a perspective view showing certain component parts drawn apart.

Figure 3 is a fragmentary view showing a modification of the invention to enable the abrasive device to be clamped to a table or the like.

The needle 1 is held in a chuck 2 which is tapered and split so that when it is inserted in the end of a tubular member 3 it grips the needle 1 and is itself firmly held in the member 3. The latter is loosely mounted on a rod 4 fitted with a stop 5 to prevent the member 3 from descending too far and pivoted at 6 in a lateral extension 7 of the holder 8. A blade spring 9 acts on the end 10 of the rod 4, so that a flange 11 which surrounds the tubular member 3 and serves as an edge runner, is held with its circumference in contact with a rubber disc 12 fixed on the face of a toothed wheel 13. The latter is fixed on a spindle 14 mounted to rotate in the holder 8 and having fixed to its other end a crank 15 by means of which it may be rotated by hand.

On rotation of the crank 15 the toothed wheel 13 which meshes with a smaller toothed wheel 16 drives the spindle 17 on which the latter is mounted and at the same time rotates a disc 18 also mounted on the spindle 17, one face of which is covered by a disc of sand paper 19, held against this face by means of a nut 20. The rotation of the toothed wheel 13 also drives the edge runner 11 through the friction between the latter and the disc 12. In this way the chuck 2 and its needle 1 are also rotated and a blade spring 21 pivoted to the holder 8 at 22 bears on the end of the spindle 17, so that the disc 18 and its abrasive covering are pressed into contact with the needle 1. In this way contact is always maintained between the needle and the abrasive, so that the needle can be properly pointed while the angle at which the needle is presented is fixed.

In the example shown in Figure 1 of the drawings, the holder 8 is provided with a handle 23 so that it can be held in one hand while the crank 15 is rotated with the other. It may, however, in some cases be more convenient to make the base of such a shape that it can stand on the table or any flat surface or be clamped to such a surface. In Figure 3 the holder is formed with two lateral and parallel extensions 24 and 25 and the lower extension 25 is drilled and tapped to receive a screw 26.

This is a convenient form of construction for clamping it to a table or the like such as is shown at 27.

The sharpener in accordance with the invention is applicable to the sharpening of all types of gramophone needles of circular cross-section and of all materials, but in each case it is of course necessary to choose the abrasive which would give best results. The sharpener is, however, particularly suitable for the sharpening of soft needles as for instance Burmese colour needles and fibre needles which are worth while re-grinding in view of their greater cost relatively to the more usual steel needles.

The chuck 2 may, of course, be made integral with the member 3, but it is preferred, as is shown in the drawings, to make it a separate element, so as to enable a number of chucks of sizes appropriate to different types of needles to be fitted. These chucks may very conveniently be of the type described in British patent application No. 22,476/30, which are so made that they will fit both the tubular member 3 and the gramophone sound box.

I claim:

1. An abrasive device for pointing small cylindrical objects comprising in combination a supporting frame, an abrasive disc rotatably mounted in said supporting frame, a crank handle also rotatably mounted in said supporting frame, a pillar extending laterally from said supporting frame, a rod pivotally fixed to said pillar, a tubular carrier for the object to be pointed rotatably mounted on said rod, gearing mounted in said supporting frame and connecting said crank handle to said abrasive disc and to said carrier, resilient means acting on said rod to ensure engagement of said carrier and said gearing and means for yieldingly urging said abrasive disc and the object to be pointed into contact with each other.

2. An abrasive device for pointing small cylindrical objects comprising in combination a supporting frame, an abrasive disc rotatably mounted in said supporting frame, a crank handle also rotatably mounted in said supporting frame, a pillar extending laterally from said supporting frame, a rod pivotally fixed to said pillar, a tubular carrier for the object to be pointed rotatably mounted on said rod and having a disc shaped enlargement at an intermediate point in its length, gearing mounted in said supporting frame and connecting said crank handle to said abrasive disc, gearing also connecting said crank handle and said carrier, resilient means for engaging said enlargement and said gearing and means for yieldingly urging said abrasive disc and the object to be pointed into contact with each other.

3. An abrasive device for pointing small cylindrical objects comprising in combination a supporting frame, a rotatable spindle mounted with axial play in said supporting frame, a toothed wheel fixed to said spindle, an abrasive wheel removably fixed to said spindle, a second spindle rotatably mounted in said supporting frame, a toothed wheel mounted on said second spindle and meshing with said toothed wheel on said first spindle, a manually-operable crank fixed to said second spindle on the side of said supporting frame remote from said toothed wheels, a pillar extending laterally from said supporting frame, a rod pivotally to said extension, a tubular carrier mounted on said rod, a chuck for gripping the object to be pointed removably mounted in said carrier, a spring pivoted to said supporting frame and bearing on the end of the said first spindle on the side of the supporting frame remote from said abrasive wheel, a rubber disc secured to the face remote from said supporting frame of said toothed wheel on said second spindle and making contact with a disc shaped enlargement of said tubular carrier and a spring pivoted to said extension and bearing on said rod.

In witness whereof I hereunto subscribe my name, this 9th day of October, 1930.

ALBERT FREDERICK JAMES WRIGHT.