T. H. MACDONALD.

SHAVING MACHINE FOR SOUND RECORDS.

APPLICATION FILED MAY 11, 1909.

990,366. **Patented Apr. 25, 1911.**

Fig. 1.

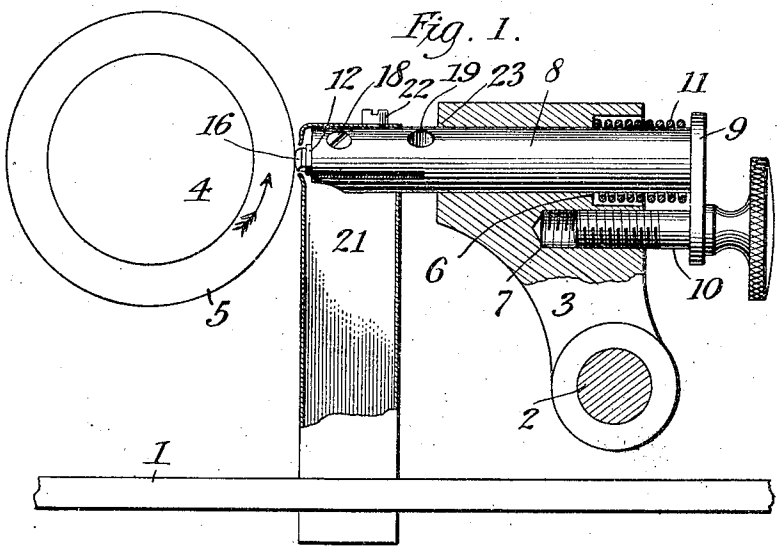


Fig. 2.

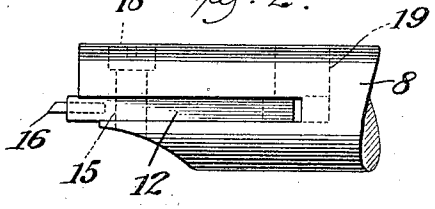


Fig. 4.

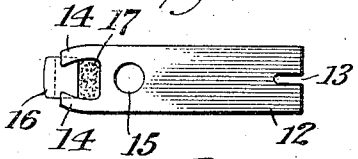


Fig. 3.

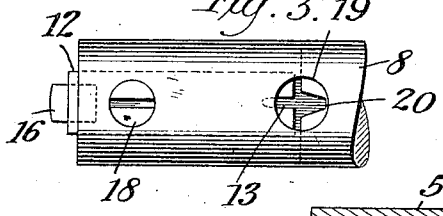


Fig. 5.

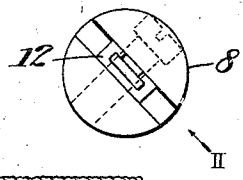
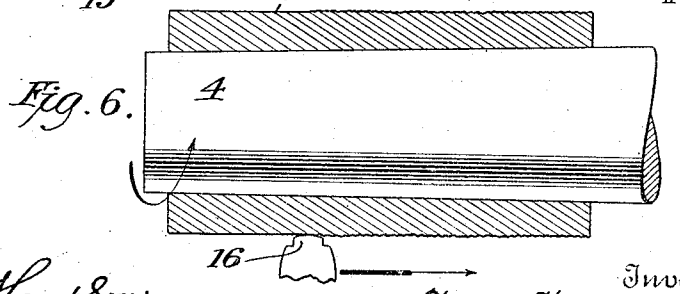


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SHAVING-MACHINE FOR SOUND-RECORDS.

990,366. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed May 11, 1909. Serial No. 495,283.

To all whom it may concern:

Be it known that I, THOMAS H. MACDONALD, a citizen of the United States of America, and a resident of Bridgeport, Connecticut, have invented a new and useful Improvement in Shaving-Machines for Sound-Records, which improvement is fully set forth in the following specification.

My invention relates to certain improvements in graphophone and phonograph shaving-machines, intended for shaving off the surface of a cylindrical sound-record in order to obtain a smooth surface for use in further recording.

The apparatus is especially useful in connection with so-called "dictaphones" or machines for dictation purposes.

One object of the invention is to enable the operator to obtain a very minute and accurate adjustment of the shaving-knife, even while the machine is running, whereby sufficient material will be removed from the cylinder, but no more material than is necessary. By this economy in the material shaved off, the cylinder can be shaved and used a greater number of times. The result of my invention is to prolong the lifetime of a dictation-blank.

Another object of the invention is to prevent clogging of the knife by chips or shavings.

My invention consists of the novel construction and arrangement of parts for accomplishing the foregoing, and further of certain details hereinafter set forth and claimed.

The invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 is an end view, partly broken away, of the parts of a shaving-machine containing my invention; Fig. 2 is a detail, showing the knife-holder carrying the shaving-knife and mounted in the knife-bar, the view being from the direction II of Fig. 5; Fig. 3 is a side view of Fig. 2; Fig. 4 is a plan of the knife-holder and knife; Fig. 5 is a front view of the knife-bar, showing the diagonal position of the knife; and Fig. 6 is a diagram to indicate the direction of the operation.

Referring to the drawings, 1 is a portion of the bed or base-plate of a shaving-machine, which in its rudimentary features is constructed on the usual lines.

2 is the feed-screw which propels the carriage 3 longitudinally, parallel with the revoluble mandrel 4.

5 represents a cylindrical sound-record, placed upon the mandrel in order to be shaved. The carriage 3 has a transverse horizontal bore, countersunk at its rear to provide the shoulder 6. Adjacent to the countersink is a screw-threaded seat 7, parallel to the bore in the carriage. 8 is the knife-bar, having a head 9 at its rear. A lateral projection from this head is apertured to receive freely the shank of the adjusting-screw 10, which screws into threaded seat 7, and has a shoulder bearing against the projection of head 9.

11 is a coil spring, seated in the countersink, and encircling the bar 8; it bears against shoulder 6 and head 9, and tends to force the bar rearward, away from the cylinder 5.

In practice, the head of the adjusting-screw is made comparatively large (say an inch and a quarter in diameter), and the thread of the screw is comparatively fine (say forty threads to the inch), in order to permit very delicate longitudinal adjustment of the knife-bar 8 against the spring 11. The shaving knife is carried by the forward end of knife-bar 8, which latter may be provided with a shaving-box.

The forward end of the knife-bar is slotted longitudinally, the slot preferably extending in a diagonal direction (as seen in Fig. 5), to receive the knife-holder. 12 is this knife-holder, a rectangular plate of brass. At its rear is a notch 13; a groove is milled out at its forward end, leaving on each side wings 14—14; and near its front end is provided the hole 15.

16 is the knife, preferably a slab of sapphire, which preferably is provided with a beveled edge (see Fig. 2) that is curved as seen in Fig. 4. The knife 16 is inserted between wings 14—14, which are then forced down in a press to clamp the knife in place; and shellac 17 is applied to make it more secure. The holder 12 with its knife 16 is inserted in the (diagonal) slot in the forward end of bar 8, where it fits snugly; and a screw 18, through the end of bar 8, passes through hole 15 to secure the holder 12, and to act as a pivot upon which the holder can be rocked in its diagonal plane. There is a transverse hole 19 in bar 8, which exposes

the notch 13 at the rear of holder 12; and opposite this notch is provided a notch 20. By placing the blade of a screw-driver in hole 19, so that one edge thereof enters notch 13 and the other edge enters notch 20, the knife-holder and knife can be rocked on screw 18 as a pivot, by turning the screw-driver axially. This operation adjusts the position of the knife-edge with respect to the surface of cylinder 5. And this rocking-adjustment can be effected without stopping the apparatus.

21 is the shaving-box carried on the forward end of bar 8. It is shown as a long narrow box extending vertically below the knife-bar. This bar 8 enters through the rear wall of box 21, and the edge of the knife 16 protrudes slightly through an aperture in the front wall, which at this point is slightly convexed forward to act as a shield. This aperture is enlarged, below the knife, sufficiently to let chips and shavings pass into the box. Preferably the top of the box may rest upon the bar 8, and a screw, as 22, may hold the box to the bar. The bottom of the box 21 may be left open, to discharge the shavings in a larger receptacle below.

The revolving mandrel 4 carries the cylinder 5 in the direction indicated by the arrow; so that the surface adjacent the knife 16 is traveling upward. In consequence, the chips or other material shaved off the cylinder 5 pass beneath knife 16, and drop into box 21. On account of the upward stress upon knife 16, knife-bar 8 has its prime contact at the point 23, and its secondary contact at the point marked 6,—in other words, the bar is jammed and held firmly in place. The pressure of spring 11 against head 9 tends to accentuate this; and the result of this rigid holding of the bar is to produce a more uniform cut and a smoother surface upon cylinder 5. But at the same time, the bar is readily adjustable longitudinally, to and from the cylinder, and without stopping the operation of the shaving-machine.

Preferably the carriage is fed from the outer (smaller) end of the tapering mandrel, toward its inner (larger) end. In the ordinary recording and reproducing of sound the practice is to revolve the cylinder at a standard surface speed, but in shaving record-cylinders the machine can be run at a far higher speed; consequently there is much greater stress upon the shaving-knife than upon a recorder or reproducer. In recording and in reproducing there is no particular advantage in propelling the stylus from the outer end of the cylinder rather than from its inner end; but if the knife of a high-speed shaving machine should travel toward the outer or free end of the machine, there is a tendency to loosen the cylinder upon the tapered mandrel, with consequent defects in shaving. There is, therefore, a marked difference, resulting in a decided improvement, in feeding the knife of a shaving-machine from the outer to the inner end of the cylinder.

I have described my invention with some particularity but only for the sake of clearness, since modifications may be made in the construction of the parts and in their arrangement, without in any case departing from the spirit of my invention.

Having thus described my invention, I claim:

1. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel for carrying a record-cylinder, and a carriage traveling parallel therewith, of a shaving-knife presenting a curved edge and pivotally mounted upon said carriage for presenting different portions of said curved edge to said cylinder.

2. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel for carrying a record-cylinder, and a carriage traveling parallel therewith, of a shaving-knife lying in a diagonal plane and having a curved edge and pivotally mounted upon said carriage for presenting different portions of said curved edge to said cylinder.

3. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith, of a shaving-knife mounted on said carriage and having its axis at right angles to said mandrel-axis and itself lying in a diagonal plane, and means for pivotally adjusting said knife in said diagonal plane while in operation.

4. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith, of a shaving-knife mounted on said carriage and having its axis at right angles to said mandred-axis and itself lying in a diagonal plane, means for adjusting said knife longitudinally while in operation, and additional means for pivotally adjusting said knife in said diagonal plane while in operation.

5. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith, of a horizontal knife-bar mounted transversely upon said carriage and adjustable longitudinally thereof while in operation, and having a diagonally-arranged longitudinal slot in its forward end, a knife-holder and knife pivotally seated in said slot, and means for adjusting the same pivotally while in operation.

6. A shaving-machine for cylindrical sound-records, comprising a tapering revoluble mandrel, and a shaving-knife carried parallel with the axis of said mandrel and

operating solely in the direction from the smaller to the larger end thereof.

7. A shaving-machine for cylindrical sound-records, comprising the combination of a tapering revoluble mandrel, and a shaving-knife located adjacent that side of said mandrel which is rotating upward and traveling parallel with said mandrel and operating solely in the direction from the smaller to the larger end thereof.

8. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith and provided with a transverse bore and a transverse screw-threaded seat, of a headed knife-bar located in said bore and having at its forward end a diagonally-arranged longitudinal slot, a screw engaging said seat and the head of said bar respectively, and a shaving-knife mounted pivotally in said slot.

9. A shaving-machine for cylindrical sound-records comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith and provided with a transverse bore and a transverse screw-threaded seat, of a headed knife-bar located in said bore and having at its forward end a diagonally-arranged slot, a screw engaging said seat and the head of said bar respectively, a shaving-knife mounted pivotally in said slot, and means for permitting adjustment of said knife upon said pivot while in operation.

10. A shaving-machine for cylindrical sound-records, comprising the combination with a revoluble mandrel, and a carriage traveling parallel therewith, of a horizontal knife-bar mounted transversely upon said carriage and provided with a seat at its forward end, a knife pivotally mounted in said seat and provided with an exposed notch at its rear end, whereby said knife can be adjusted pivotally while in operation.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS H. MACDONALD.

Witnesses:
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