

The Book
of the
FIBRE
NEEDLE

by H. B. Davey.

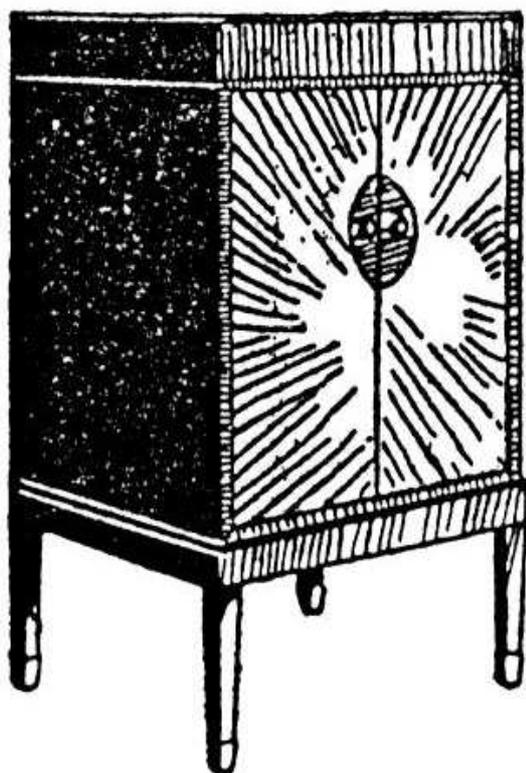
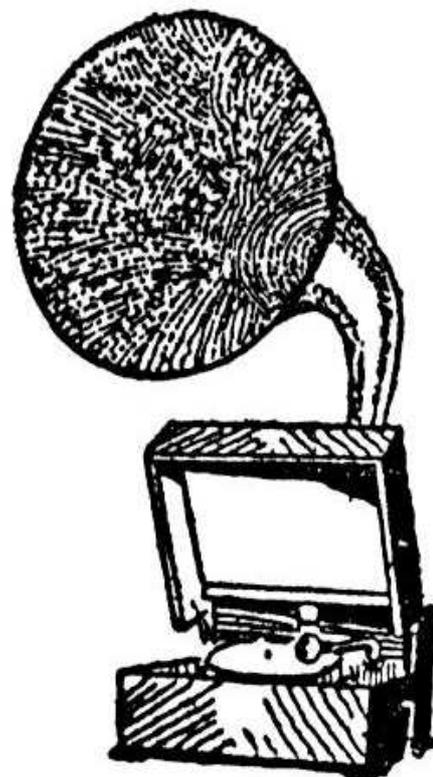
E.M.G. HAND-MADE GRAMOPHONES, LTD.
11, Grape St., New Oxford St., London, W.C.2.

Copyright.

Price 3d.

The famous E.M.G. HAND - MADE GRAMOPHONE

has been rightly named "The Musicians' Gramophone." It is a prized possession in the homes of leading music critics, and is the instrument to which the experienced gramophile inevitably turns for reproduction that is *completely* satisfying, and, moreover, these perfect results are obtained with fibre needles, which means your records will last for ever. The model illustrated (Mark X) is our latest and most perfect production. The cost is £30 in Oak, £32 in Mahogany and £35 in Walnut. Other horn models at £18 and £20.



The Cabinet Model, Mark VII, at £40 in Oak, (£45 in Mahogany and £48 in Walnut) combines with a beautiful exterior and an amplifying system which gives an equally fine result to the external horn machines. The cabinet work is of the highest standard and is made to tone with furniture of any period. Smaller instruments in Table Models are made and sell at prices ranging from £12 12s. 0d. Fullest particulars post free.

The BOOK *of the* FIBRE NEEDLE

by

H. B. DAVEY

E.M.G. HAND - MADE GRAMOPHONES, LTD.

THAT the use of fibre needles offers advantages which make well worth while the little extra care which their successful use requires has long been the considered opinion of expert gramophone amateurs and of musicians. We of this company have given our practical endorsement to this view from the earliest days.

The three principal advantages which result from the use of fibre needles are these:-

(1) There is no perceptible wear on the record when the needles are properly used, and the number of times a record can be played without any deterioration whatever has never yet been determined.

(2) It is possible to obtain a bright and accurate rendition of the highest recorded frequencies without any spurious resonances of hard and painful quality - such as have given a wealth of unpleasant meaning to the expression "steeliness."

(3) Surface noise is relieved of all its harsh or more grinding elements and what remains can be reduced to the absolute minimum consistent with the proper reproduction of the upper register.

The drawback to the use of fibre needles is the liability of the points to break down on very powerful recordings if the relevant conditions are not favourable.

It is just these conditions which it is our purpose here to discuss in the hope that we may thereby assist those among our customers who have taken only recently to the use of fibre needles, and all who are prepared at least to try them as the only sure means of getting full value for money from their records.

(1) **The NEEDLE.** It is clear that only a good clean point will track the grooves properly and a good point can only be cut upon a clean unbroken edge. Therefore glance at that edge of the triangular needle on which the point is to be cut and see that it is not bruised. Our own fibre needles are made by a special process which ensures that the



“Alto” Cutter 4/6

edges are cut clean and retain all their natural strength unimpaired. For cutting fibre needles we recommend the ALTO CUTTER. Insert the needle gently into the triangular slot on the cutter so as not to bruise the edge, press gently home against the stop, and make the cut. At first make a practice of examining the point cut. It should be a perfect wedge-shaped point. The point should not be split nor should there be any trace of a "tail" clinging to it. For examining a point we recommend the use of a watch-maker's glass, or failing that any fairly high power magnifying glass. If your cutter will not cut a clean point get another. If we supplied the cutter we will of course change it without question. When you have acquired the knack of cutting and have got confidence in your cutter the examination may become more and more cursory until it is finally dropped altogether.

.

It is best to play a fibre needle with $\frac{1}{2}$ " to $\frac{3}{8}$ " projecting from the socket. The longer the needle the easier is the work for the point. Remember this when playing difficult records for the first time. The shorter the needle the crisper is the reproduction. Shorter projecting lengths than $\frac{3}{8}$ " should only be

used with light recordings, or by the expert who has confidence in his sound-box, his needle, and his record.

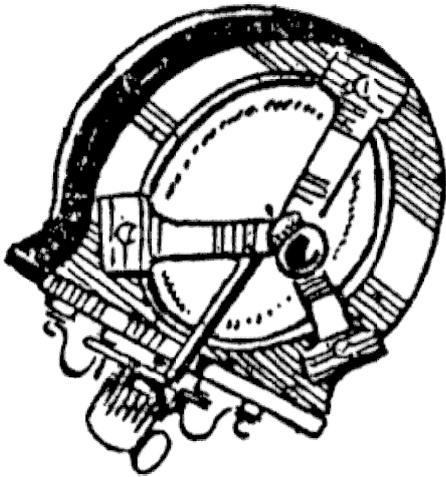
.

A final important factor in the successful use of fibres is the conditions under which they are stored. They are particularly susceptible to damp and humid atmosphere and the drier the air in which they are kept, therefore, the better the points stand up to wear. We have given this question very careful thought and we have designed an artistic yet efficient container which we hope soon to have ready for the market. This container will be air-tight and supplied with a chemical filling to ensure dry air. Full particulars are available and will be supplied on request.

.

In the soundboxes supplied by us, the triangular slot into which the needle is inserted is pierced right through the stylus plate. Of course the needle should not be pushed in so far that the butt-end touches the shell of the soundbox. This would obviously hamper its freedom of movement and spoil the reproduction.

(2) The SOUND-BOX



A sound-box made for steel needles, even though it be provided with a triangular slot to take a fibre needle, is very unlikely to give good reproduction with the latter. Moreover, the points are very likely to break down. There is no cure except to get a sound-box made and tuned for fibre needles. We make a speciality of supplying just such sound-boxes and scores of remarkable testimonials bear witness to our success.

The needle and stylus bar should make an angle of about 50 degrees with the record but a certain amount of latitude is permissible. It should be remembered that the alteration of this angle will also alter the amount by which the needle point overlaps the centre of the turntable and that this will affect the track alignment error. This is a matter of some importance and is discussed in the next paragraph and is clearly shown in the tables (pages 8 and 9).

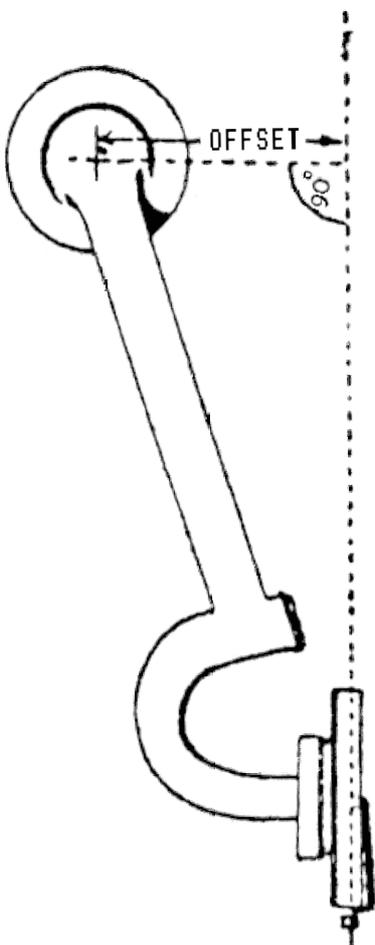
The attachment of the sound-box to the tone arm should be airtight and should provide a certain amount of flexibility. This is suitably arranged in our own sound-boxes, but with others, some such device as the well-known "lifebelt" is indicated.

Once more it must be remembered that the addition of this india-rubber extension to the tone-arm will increase the offset of the soundbox and consequently affect the track alignment for better or worse.

The weight of the needle point actually pressing on the record should be between 4 and 6½ ounces. If the gramophone has a big horn the heavier weight is indicated. A lesser weight than this is apt to cause periodic unsteadiness in the reproduction and muzziness in loud passages.

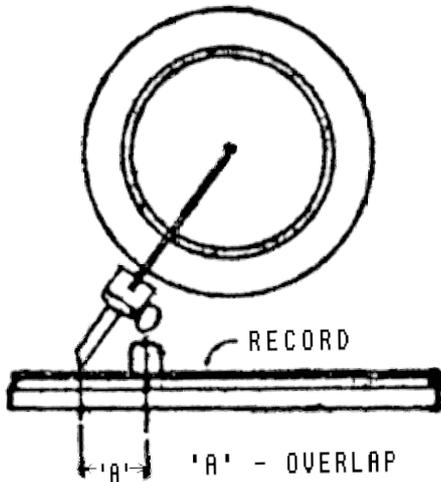
(3) The TONE ARM.

The tone-arm must swing absolutely free on its pivot if fibre needles are to be used with success. Any device such as certain types of



automatic stop which hinder this free movement are better disconnected. The design of the tone-arm must be such as will make it possible to secure a reasonably low track alignment error. The fundamental requirement in the design of the tone-arm is that the plane of the diaphragm of the soundbox when projected backwards should pass to the right of the pivot of the tone-arm.

The optimum amount for this offset is $3\frac{3}{4}$ " measured from centre of the tone-arm pivot and at right-angles to the plane of the diaphragm. The offset should not be less than 2" if a track alignment error



of less than 6 degrees is to be secured and the offset should never be greater than the optimum value. Once the best offset has been secured with or without the use of a "life-belt" the amount of track alignment error will still depend upon the amount by which the needle point

overlaps the centre of the motor spindle. The correct overlap varies both with actual offset obtained and with the distance between the tone-arm pivot and the motor spindle. The overlap can be adjusted in large measure by moving the motor nearer to or further from the tone-arm base, and in small measure by varying the stylus angle, as mentioned in the previous paragraph. In using the latter method our table on page 8 should be consulted. For the former method use the table on page 9. The best procedure to secure good track alignment is first to get as good an offset value as can conveniently be arranged, and then to adjust the overlap by reference to our appended tables, or with the aid of a Wilson track alignment protractor, until the lowest error is obtained. On our models this error is reduced to $2\frac{1}{2}$ degrees.

Table of Best Overlaps

	Actual offset in Inches						IDEAL OFFSET	
	1"	1½"	2"	2½"	3"	3½"	3¾"	
Centre of turntable spindle to centre of Tone Arm back pivot.	8"	<i>-.39</i>	<i>-.20</i>	0	.18	.41	.60	.71
	8½"	<i>-.37</i>	<i>-.18</i>	0	.17	.39	.56	.67
	9"	<i>-.35</i>	<i>-.17</i>	0	.16	.37	.53	.64
	9½"	<i>-.33</i>	<i>-.16</i>	0	.15	.35	.50	.61
	10"	<i>-.32</i>	<i>-.15</i>	0	.14	.33	.47	.58
	10½"	<i>-.30</i>	<i>-.15</i>	0	.13	.31	.44	.55
	11"	<i>-.28</i>	<i>-.14</i>	0	.12	.30	.42	.52
	11½"	<i>-.27</i>	<i>-.13</i>	0	.11	.29	.41	.50
	12"	<i>-.26</i>	<i>-.12</i>	0	.11	.28	.40	.49

NOTE: A "minus" overlap means that the needle point falls short of the centre of the motor spindle by the amount shewn in *Italics*.

Overlap shewn in inches
Accurate to 1/100"

Table of Best Overlaps

	Actual offset in Inches						IDEAL OFFSET
	1"	1½"	2"	2½"	3"	3½"	3¾"
8"	<i>-.36</i>	<i>-.18</i>	0	.20	.45	.65	.79
8½"	<i>-.34</i>	<i>-.17</i>	0	.18	.42	.62	.74
9"	<i>-.32</i>	<i>-.16</i>	0	.17	.40	.58	.70
9½"	<i>-.30</i>	<i>-.15</i>	0	.16	.38	.55	.66
10"	<i>-.29</i>	<i>-.14</i>	0	.15	.36	.52	.63
10½"	<i>-.28</i>	<i>-.13</i>	0	.15	.34	.49	.60
11"	<i>-.27</i>	<i>-.12</i>	0	.14	.32	.47	.57
11½"	<i>-.26</i>	<i>-.11</i>	0	.13	.31	.45	.54
12"	<i>-.24</i>	<i>-.11</i>	0	.12	.30	.43	.51

NOTE: A "minus" overlap means that the needle point falls short of the centre of the motor spindle by the amount shewn in *Italics*.

Overlap shewn in inches
Accurate to 1/100"

(4) **The GRAMOPHONE.** Whilst every feature about the acoustic design of a gramophone will actually affect the stresses to which the needle point is subjected, such features can not usually be altered at will by the amateur. It remains only for the owner to see that his machine stands firm and level.

.

The object of levelling the machine is to relieve the tendency of the tone-arm to swing inwards or outwards when playing. It is therefore desirable to check this by causing the needle to rest upon the plain surface of a rotating record both outside and inside the recorded area and to notice if it has a tendency to swing in either direction. The tendency can then be neutralised by giving the machine a slight cant in the required direction.

.

The motor also should be looked to. To give the best conditions for the needle point it should pull evenly and be free from serious vibration.

(5) The RECORD.

Badly kept or ill-used records are the commonest source of failure to get successful results with fibre needles. Records when received from the makers have a good deal of dust upon them. The best way to clean them is to brush them with a circular movement following the grooves with a soft brush stiff enough to reach the bottom of the grooves. We supply a suitable brush for this purpose. Once the record has been got clean it should be kept clean. It should be kept in an envelope or an album, or between the separator cards of a record storage cabinet. It should be handled only by the edges and centre. The fingers



*E.M.G. Record
Brush 1/6*

should not be allowed to touch the recorded surface. The spindle hole of many records will be found to be too large to fit snugly over the motor spindle. When this is the case the record has sufficient play to move slightly on the "pile" of the turntable covering. Moreover, a record which is

badly centered - commonly called a "swinger" - will tend to take up at once its worst position, that which exaggerates its inherent swing.

Both the slight stirring above referred to, and this swing are injurious to good reproduction and impose an extra strain on the needle point. Both



Centrelock 1/3

these difficulties can be overcome by the use of the “Centrelock” which slips over the motor spindle and ensures that the record is correctly centered and locked in that position.

A record peculiarly difficult to play with fibres may be eased in two ways. The simplest is to dust a little “Aladdinite” over the record, brush it well whilst rotating on the turntable and play through with a long fibre having a good clean point. If this fails the record may be dusted again with the “Aladdinite” and played through once with a soft steel needle. Another good plan is to run the point of a soft lead pencil (B or BB) in the groove of the rotating record, pressing quite slightly. This leaves a little graphite in the grooves of the record which serves as a useful dry lubricant. These processes may also be helpful with records that are difficult to play because they have been slightly worn by steel needles, but it should be remembered that records badly worn with steel may be impossible to play with fibres.

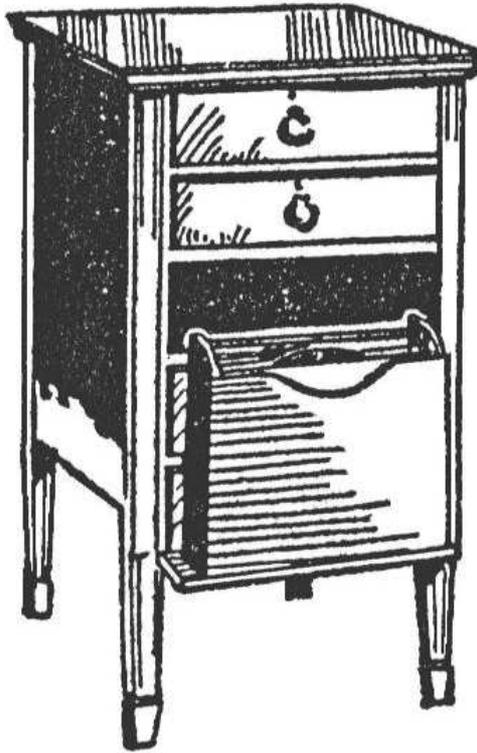
Lastly a warped record will not play properly with any kind of needle. To prevent warping, records should be stored flat, either in a suitable record storage cabinet or in envelopes piled up. If the records are stored in albums piled on top of one another it is essential that the albums be packed out with solid strawboard placed under the covers until the thickness of the contents equals the thickness of the metal back of the album.

Attention to the details outlined above very soon becomes habitual and a little patience is amply rewarded by **better reproduction and by records that last for ever.**



A preparation that helps users to play steel played or difficult records with Fibres. Price 2/- box. Full instructions and pad for application are enclosed.

The PERFECT RECORD STORAGE CABINET



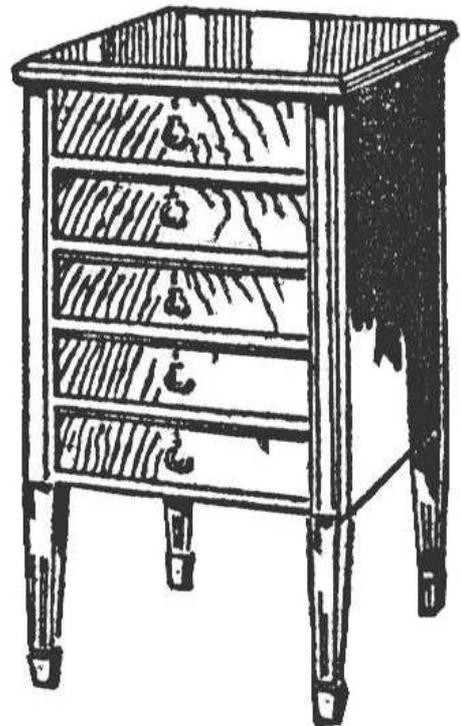
The E.M.G. is the ideal storage Cabinet for the man who cares for his records - and who realises what an important part is played by the method of storage adopted on the life and condition of his collection.

The E.M.G. Record Storage Cabinet accomodates 128 records in drawers; each drawer having a separate lock. The records *lie flat* immune from warping and divided from each other by plain non-abrasive cards, which are supplied at no extra cost. This arrangement allows the maximum elasticity from an indexing point of view and any desired system may be used.

High	40"	Oak	£12 12 0
Wide	21½"	Mahogany	} £13 10 0
Deep	24"	or Walnut	

By means of an ingenious and thoroughly reliable hinge device the drawers pull out and then swing downwards, presenting the records *on edge* right in front in the full light, immediately accessible whether the first or the last record in the drawer is required. There is no peering or groping in dark recesses with this Cabinet. The top will accommodate the largest E.M.G. Table Gramophone. To customers order the top can be supplied with a surrounding ledge to prevent a gramophone placed on top of it, from slipping.

Also made in double capacity size at £18 0s. 0d. Oak. £18 18s. 0d. Mahogany or Walnut; and an album storage model with drawers and shelves £15 15s. 0d. in Oak and £16 10s. 0d. Mahogany or Walnut.



Published by
E.M.G. HAND-MADE GRAMOPHONES, LTD.
 11, Grape St., New Oxford St., London, W.C.2.
