This invention relates to electric dictating machines and more particularly to a novel soft speaker assembly for use in connection with dictation transcribing apparatus.

Conventional electric dictating machines used in transcribing records of dictated matter normally include earphones suitably connected to the transcribing apparatus and adapted to be worn by the operator transcribing the dictated matter. Although earphones are useful in cases where, for example, a number of typists are working in a single room, there are many cases where a typist either works alone in a room or works at a location relatively remote from other workers, and in such cases, it is both more comfortable and more convenient for the typist to use a speaker unit, particularly a soft speaker unit such as that disclosed herein.

It is accordingly an object of the present invention to provide a novel soft speaker assembly adapted to be used in connection with transcription from dictating machines. It is another object of the invention to provide a soft speaker assembly in which the speaker unit is adjustably positionable with respect to the transcribing apparatus. It is a further object of the invention to provide a soft speaker assembly of this type having a novel extendible electrical connection between the speaker unit and the transcriber. It is another object of the invention to provide an adjustable connection between the speaker unit and transcriber that performs the dual function of adjustably supporting the speaker unit and establishing a suitable electrical connection between the speaker unit and transcriber. It is a further object of the invention to provide in this adjustable connection a novel arrangement to permit the selective connection of the soft speaker or a set of the usual earphones to the transcriber. It is still further object of the invention to provide a speaker assembly that is simple and sturdy in construction, efficient in operation and inexpensive to manufacture. Other objects of the invention will be in part obvious and in part pointed out hereafter.

The speaker unit of the present speaker assembly falls within the broad class of electro-acoustical translating devices frequently referred to as loud speakers. However, the present speaker unit is adapted to be positioned close to the ear of the operator and accordingly, its sound volume is preferably maintained at a relatively low level. Hence the device may be more aptly described as a soft speaker, and is so referred to herein.

The many objects and advantages of the present invention may best be understood and appreciated by reference to the accompanying drawings which illustrate a speaker assembly incorporating a preferred embodiment of the present invention and wherein:

Figure 1 is a perspective view of the soft speaker assembly of the present invention in its operative relation with respect to the transcriber and operator;

Figure 2 is a top plan view of the pivotal mounting of the speaker assembly;

Figure 3 is a vertical section taken on the line 3—3 of Figure 2 and showing structural details of the pivotal mounting;

Figure 4 is a bottom plan view of the soft speaker assembly of Figure 1 showing the switch box, the face of the speaker unit, and the extendible arm between the switch box and speaker unit;

Figure 5 is a vertical section taken on the line 5—5 of Figure 4 and showing details of the interior of the switch box and the pivotal mounting of the speaker unit;

Figure 6 is a section taken on the line 6—6 of Figure 5 and showing details of construction of the extendible arm;

Figure 7 is a top plan view with portions of the switch box and speaker unit broken away to show the interior construction thereof;

Figure 8 is an enlarged section through a portion of one of the telescoping rods of the extendible arm showing the manner in which the telescoping sections of the rods are joined; and

Figure 9 is a perspective view of the pivoted bracket member on which the speaker unit is mounted.

Referring to the drawings and more particularly to Figure 1, the soft speaker assembly comprises a speaker unit 10 supported by means of the extendible arm, generally indicated at 12, from the switch box 14, which is in turn effectively secured to the transcriber 16 through the ball-and-socket joint 18. In Figures 1, 2 and 3, the housing 20 of the ball-and-socket joint 18 is shown as attached by the bolts 22 to the frame of the transcriber 16. It is evident that the housing 20 may be effectively secured to the transcriber 16 in any other suitable manner such as by being fastened to a frame on which the transcriber rests or by being indistinctly connected to the transcriber through an intermediate supporting member or members which are in turn affixed to the transcriber.

Extending from the lower end of the switch box 14 there is a cable 26 which (see Figure 7).
is provided with a plug 27 adapted to be plugged into a suitable receptacle (not shown) on the transcriber 16 to provide electrical connection between the transcriber output and the switch box. Referring to Figures 1 and 4, the underside of the switch box 14 is provided with a plug receptacle 28 adapted to receive the plug (not shown but similar to plug 27) of a pair of earphones. The switch box 14 contains a single-pole, double-throw snap switch 29 (see Figure 7) having a manually operated arm 30 (shown in Figures 4 and 5) which is operative, as described in more detail hereafter, to selectively connect the earphones or the speaker unit, as desired, to the speaker unit 10.

Still referring to Figures 1 and 4, the extendible arm 12 comprises two telescoping rods 32 and 34, each of which comprises a number of telescoping tubular sections. The method of joining the telescoping sections of rods 32 and 34 is shown in Figure 5. Referring to Figure 5, the outer tubular section 130 is bent inwardly at its end to a joint close to the outer surface of the inner tubular section 132. Secured to the end of section 132 that is within section 130 are a pair of spaced rings 134 and 136 of such size as to provide a snug sliding fit with the inner surface of section 132. The ring 135 acts as a stop to limit extension of the sections and both rings act as guides to maintain the sections in proper axial alignment. In order to ensure adequate electrical contact between the sections 130 and 132, two or more leaf springs 150 are secured to the section 132 between the rings 134 and 136 and are so shaped as to bear resiliently against the inner surface of section 132. Thus it is apparent that the extendible arm 12 performs the dual function of adjustable supporting the speaker unit 10 and at the same time providing an extendible electrical connection between the switch box 14 and the speaker unit 10.

The telescoping rods 32 and 34 are supported in parallel spaced relationship by braces 33 and 48 which are made of a suitable non-conductor such as a plastic. Referring to Figure 6, each brace 33 comprises an upper section 42 and lower section 44, the adjacent faces of which are cut out to form semi-circular recesses to receive the rods 32 and 34. The sections 42 and 44 are held together by means of a bolt 46 and nut 48, and a clearance 50 is provided between the adjacent surfaces of the brace sections 42 and 44. The arms 32 and 34. Due to the clearance 50, tightening of the nut 48 causes the two sections of each brace to exert a resilient pressure on the arms 32 and 34 and thus hold them securely in their desired spaced positions.

As best shown in Figure 5, the speaker unit 10 comprises a generally hemispherical housing 52 that is externally threaded at its periphery to receive an internally threaded, perforated cap 54. Mounted within the housing 52 there is an electro-acoustical translating device 56 of conventional construction having an optional flange 58. The optional flange 58 is clamped between an internal shoulder 60 on cap 54 and a gasket 62 which bears against the peripheral portion of the housing 52. Thus the translating device 56 is supported and centrally positioned within the housing 52.

The speaker unit 10 is mounted for universal movement with respect to the extendible arm 12. At their upper ends, the extendible rods 32 and 34 are secured to a speaker unit support 60 made of a non-conductive material, such as a plastic.
the arm 30 of snap switch 28, the transcriber 16 may be selectively connected to either the speaker unit 10 or the earphones 31.

Referring now to Figure 3 of the drawings, the lower end of switch box 14 is connected by a short rod 100 to the ball 102 of the ball-and-socket joint 18. The socket 20 is of generally cylindrical construction and has a top portion 104 curved to conform with the curvature of the ball 102 and serving to retain the ball in the socket. At its lower end the socket 20 is internally threaded to receive a threaded plug or bushing 106. The ball 102 is urged against the curved portion 104 of the socket by a spring 103 which, at its lower end, bears against the plug 106, and at its upper end bears against a guide piece 110 having an upper surface curved to conform with the curvature of the ball 102. The tension of the spring 103 may be varied by rotating plug 106 thereby regulating the degree of freedom of movement of the ball 102 in the socket 20. The plug 106 has a kef 107 to facilitate such adjustment.

From the foregoing description, it is apparent that the present apparatus is capable of achieving the several objects stated above. The ball-and-socket joint 18, extensible arm 12 and the universal mounting of the speaker unit 10 cooperate to provide a high degree of flexibility of adjustment of the position of the speaker unit 18. Further, the extensible arms 32 and 34 perform the dual function of providing an extensible mounting for the speaker unit and also act as electrical conductors to connect the transcriber output to the speaker unit. Thus the need for a separate flexible electrical connection between the transcriber and speaker unit is eliminated. The snap switch 28 provides a convenient means whereby the operator may change from the earphones to the speaker or vice-versa, as circumstances may require.

Since many embodiments may be made of the present invention and since many changes might be made in the embodiment disclosed herein, it is to be understood that the foregoing description is to be interpreted as illustrative only and not in a limiting sense.

What is claimed is:

1. In dictating machine transcribing apparatus in combination, a transcriber unit, a support positioned in fixed relation to said transcriber unit, an adjustable arm swivelly mounted on said support, a speaker unit supported on said arm, said arm being adjustable to vary the position of the speaker unit with respect to the transcriber and being formed of an electrically conductive material, a first conductor means electrically interconnecting one end of said arm and said transcriber unit and a second conductor means electrically interconnecting the other end of said arm and said speaker unit, whereby electrical signals may be transmitted from the transcriber through said adjustable arm to the speaker unit for translation into sound.

2. In dictating machine transcribing apparatus in combination, a transcriber unit, a support positioned in fixed relation to said transcriber unit, an arm swivelly mounted on said support, a speaker unit supported on said arm, said arm comprising two extensible telescoping rods that are extensible to adjust the position of the speaker unit with respect to the transcriber, said telescoping rods being made of an electrically conductive material, a first pair of conductors electrically connecting said transcriber unit and one end of each of said telescoping rods and a second pair of conductors electrically connecting said speaker unit with the other end of each of said telescoping rods, whereby electrical signals may be transmitted from the transcriber through said adjustable arm to the speaker unit for translation into sound.

3. In dictating machine transcribing apparatus in combination, a transcriber unit, a support positioned in fixed relation with respect to the transcriber and including a socket, an adjustable arm having at one end thereof a ball cooperating with said socket to provide a ball-and-socket mounting for said arm, a speaker unit pivotally mounted on the other end of said arm, said arm being adjustable to vary the position of the speaker unit with respect to the transcriber and being formed of an electrically conductive material, first electrical conductor means electrically interconnecting said transcriber unit and one end of said arm and second electrical conductor means electrically interconnecting said speaker unit and the other end of said arm, whereby electrical signals may be transmitted from the transcriber through said adjustable arm to the speaker unit for translation into sound.

4. In dictating machine transcribing apparatus in combination, a transcriber unit, a support positioned in fixed relation with respect to said transcriber and including a socket, a switch box having a ball affixed thereto that cooperates with said socket to provide a ball-and-socket mounting for said switch box, a speaker unit pivotally connected to said switch box, a pair of elongated telescoping rods connected at their ends to the switch box and speaker unit support respectively and extensible to adjust the position of the speaker unit with respect to the transcriber, said telescoping rods being made of an electrically conductive material, a first pair of conductors electrically connecting said transcriber unit with one end of each of said telescoping rods and a second pair of conductors electrically connecting said speaker unit with the other end of each of said telescoping rods, whereby electrical signals may be transmitted therethrough from the transcriber to the speaker unit for translation into sound, earphone means connected to said switch box, and switch means located in said switch box and electrically interposed between said earphone means, said speaker unit and said transcriber for selectively connecting said transcriber to said earphone means or speaker unit as desired.

5. A speaker assembly adapted to be connected to a dictating machine transcriber to facilitate transcription of a sound record comprising in combination, a telescoping arm having a speaker unit mounted on one end thereof and having at its other end electrical connection means for attachment to said transcriber, said other end of said arm also having secured thereto a ball adapted to cooperate with a socket of said transcriber to provide a swivel joint for said speaker assembly, said arm comprising two elongated telescoping rods that are extensible to adjust the position of the speaker unit with respect to the transcriber, said telescoping rods being made of an electrically conductive material and having at said one end of said arm a pair of conductors
electrically connecting said telescoping rods with said speaker unit, whereby electrical signals may be transmitted from the transcriber through said telescoping arm to the speaker unit for translation into sound.

8. A speaker assembly adapted to be connected to a dictating machine transcriber to facilitate transcription of a sound record comprising, in combination, a switch box having mechanical and electrical connection means for attachment to said transcriber, a speaker unit support, a speaker unit pivotally connected to said support, a pair of elongated telescoping rods interconnecting said switch box and speaker unit support, said rods being extensible to adjust the position of the speaker unit with respect to the switch box and being formed of an electrically conductive material, and a pair of conductors electrically connecting the ends of said rods adjacent to said speaker unit with said speaker unit, said switch box being provided with plug receiving means adapted to receive the plug of earphone means to provide an electrical connection therewith and a manually operated switch electrically interposed between the transcriber, earphone means and speaker unit for selectively connecting the transcriber to either the earphone means or the speaker unit as desired.

FLORIAN J. FOX.
HARRY A. WILLIAMS.

REFERENCES CITED
The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>681,813</td>
<td>Res</td>
<td>Sept. 3, 1901</td>
</tr>
<tr>
<td>2,009,138</td>
<td>Cahill</td>
<td>July 28, 1935</td>
</tr>
<tr>
<td>2,439,816</td>
<td>Anderson</td>
<td>Feb. 19, 1948</td>
</tr>
<tr>
<td>2,481,271</td>
<td>Willey</td>
<td>Sept. 6, 1949</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>56,281</td>
<td>Denmark</td>
<td>Nov. 26, 1921</td>
</tr>
<tr>
<td>121,488</td>
<td>Australia</td>
<td>Feb. 25, 1931</td>
</tr>
</tbody>
</table>