

Oct. 10, 1944.

S. E. WERNER

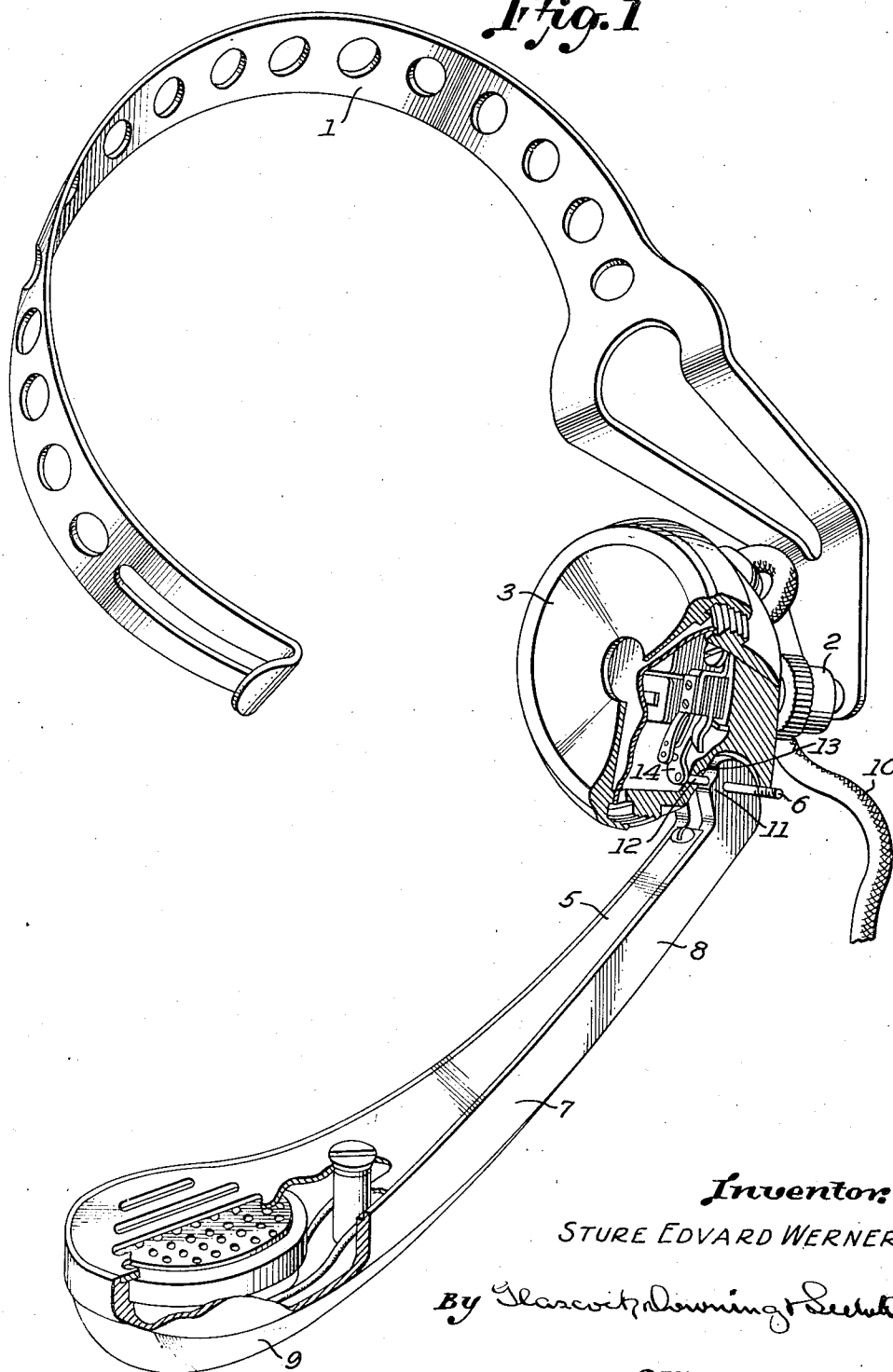
2,360,027

HEAD TELEPHONE SET

Filed Oct. 21, 1940

2 Sheets-Sheet 1

Fig. 1



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Fig. 2

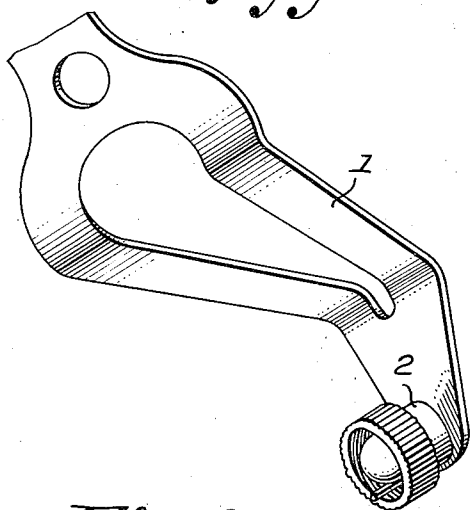


Fig. 3

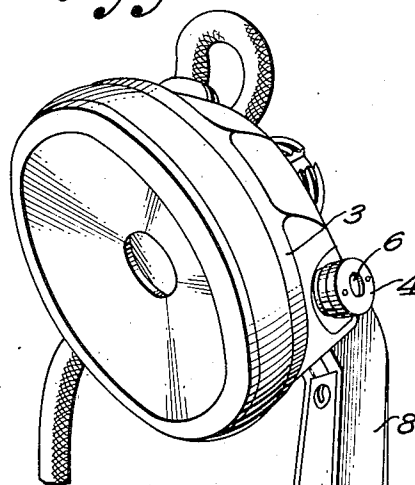


Fig. 4



Fig. 5



Fig. 6



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UNITED STATES PATENT OFFICE

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HEAD TELEPHONE SET

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2 Claims. (Cl. 179-156)

The present invention has reference to a microtelephone set for persons who telephone to a large extent and who therefore apply the microtelephone and the telephone on the head more permanently.

A breast plate transmitter together with a head telephone is a set which is used to a large extent by telephone operators. The set, however, is very disadvantageous, partly because the same consists of two parts, and thus is inconvenient to put on and take off, and partly because the microphone is not hygienic, because it presses on the breast causing the operator to transpire, soils the clothes, the long mouth piece further bringing about bad transmission characteristics of the microphone. The long mouth piece is also disturbing when writing. Toll operators can therefor only with difficulty use such arrangements.

It has been proposed to avoid the above mentioned difficulties by arranging the whole set on a head clip, the microphone being then arranged rotatably on a bent tube which by means of a ball joint is connected to the telephone, the same being in its turn rotatably arranged at the head clip. This arrangement, however, provides several inconveniences. It thus requires three movements in order to adjust the microphone in relation to the mouth of the speaker: a movement of the tube around the ball joint in the plane of the ear; a movement in a plane perpendicularly to the same through the ear and the mouth and a rotation of the microphone around the tube for the adjustment to the most advantageous transmission position. Due to the fact that the microphone is fully free to move in every plane it is very difficult to push the microphone to and from the speaking position. Another inconvenience of this prior arrangement is that the telephone can not be adjusted in accordance with the ear plane, if a further cardan joint is not included in the apparatus. The long bent tube further strikes against the shoulder when the operator drops her head and therefore also disturbs her writing.

The present invention has for its object to avoid the said inconveniences and consists of apparatus wherein a head microtelephone is provided with a microphone which is rotatably mounted on the telephone by means of a bearing which is arranged in such a way that rotation of the microphone in relation to a telephone only can take place in one plane. Thus when putting on the set a restricted guidance of the microphone from the telephone is obtained in such a

way that the microphone takes a position in a plane through the speaker's mouth and ear which plane may be said to be almost perpendicular to the ear plane. In order to adjust the microphone at a suitable distance from the mouth it is thereupon only necessary to rotate the microphone in the ear-mouth plane around the bearing in the telephone. The three movements in the known arrangement thus are reduced to only one.

In an embodiment of the invention the telephone is connected with a clip which is to be applied on the head of the speaker by means of a joint for instance a ball joint which makes it possible to rotate the telephone in relation to the clip in several planes. The ball joint in accordance with the invention thus performs, due to its arrangement between the telephone and the head clip, a number of tasks. The ball joint provides for the adjustment of the telephone to the ear and enables the microphone to be brought in a plane through the ear and the mouth perpendicular to the ear plane in substituting the ball joint of the known construction with a rotatable joint. In accordance to the invention the rotatable joint at the microphone in the known construction is avoided and the whole microphone part can be made in one piece thus enabling the use of mouldable material.

By making the ball joint easily disengageable the head set also may be used as an ordinary microtelephone. This and other advantages of the invention will appear more in detail from the following description which is made in connection with the accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of a head clip and a microtelephone embodying the invention.

Fig. 2 is a perspective view of a portion of the clip.

Fig. 3 is a perspective view of the microtelephone disengaged from the head clip.

Fig. 4 is a diagrammatic perspective view showing the manner in which the head set is supported by an operator when writing.

Fig. 5 is a similar view showing the microtelephone supported on a different side of the head.

Fig. 6 is a perspective view illustrating the manner in which the microtelephone may be adjusted.

As may be seen from Figs. 1, 2 and 3 an embodiment of the invention consists of a head clip 1, a telephone 3 applied to the same by means of a ball joint 2 and a microphone part 7 joined to the telephone 3 by means of bearings 4 and a

pin 6. The telephone may be constructed in a known manner. The telephone housing may be formed of suitable material such as a resinous compound, the walls being provided with the above mentioned bearings 4. The microphone part 7 is formed in the shape of a spoon and may be formed of a suitable resinous compound or other moulded material. The part 7 is preferably hollow in the shaft portion 8 and an integral part 9 forms a cup. The whole microphone part is at its concave side covered by means of a thin plate 5 of insulating material whereby a closed housing for the microphone capsule and for the conductors between the same and the telephone is obtained. The telephone cord 10 is attached to the telephone box and the conductors to the microphone are suitably conducted from the telephone box to the microphone and it is possible either to use a flexible conductor at the joint between the telephone and the microphone parts or a construction with slip rings.

Due to the curved cup form it is possible to make the microphone box beveled in relation to the microphone shaft 8 so as to avoid the breath of the speaker being thrown back from the microphone which has proved to be very disturbing. The microphone part by means of resinous compound is electrically insulated and thus prevents electrical shocks from reaching the operator. It has a curved form which can follow the form of the face. The cupshaped part 9 constitutes a good resonance chamber for the microphone box. Good transmission characteristics are thus obtained as compared with microphones with funnels, or microphones which are standing free, the sound being damped in the first mentioned case, while there is no resonance chamber for a microphone in the second case. Further the whole set has been found to be very light. A comparison with the lightest of the known head microphones shows a diminishing of the weight by 10-15%. Due to the fact that the head microphone is formed as a head microphone the application of the same is simplified,

the microtelephone being also usable as a normal microtelephone, the ball joint being therefore made easily disengageable.

It is suitable to make the joint between the telephone and the microphone parts self-locking, so as to make it possible to adjust the microphone in different positions in relation to the telephone and thus also at different distances from the mouth of the speaker. The joint is according to the invention also formed so as to actuate an electrical contact. The arrangement may be such that the microphone part, as shown in Fig. 1, when rotated also swings a cam 11 which by means of a pin 12 in the telephone box wall 13 actuates a contact arrangement 14 in the telephone box. The contact arrangement may then be electrically connected in the same way as a normal switch hook contact or it may be arranged only to break the microphone circuit. A head telephone set which is arranged in this manner may also be doubled so as to allow the service of two telephone connections by the operator by pushing out the one or the other microtelephone.

Other embodiments of the invention may be made without departing from the scope of the invention.

I claim:

1. In a telephone head set, a head clip, a telephone box, a joint between said clip and said box permitting adjustment of the telephone box in relation to the head clip in several planes, a microphone part containing a microphone capsule, and a joint between said microphone part and said telephone box limiting adjustment of the microphone part to movement in relation to the telephone box in one plane only, said plane being perpendicular to the ear-plane.

2. A microtelephonic head set in accordance with claim 1 in which the joint between said clip and said box consists of a disengageable ball joint, the axis of said ball joint being perpendicular to the ear plane.

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