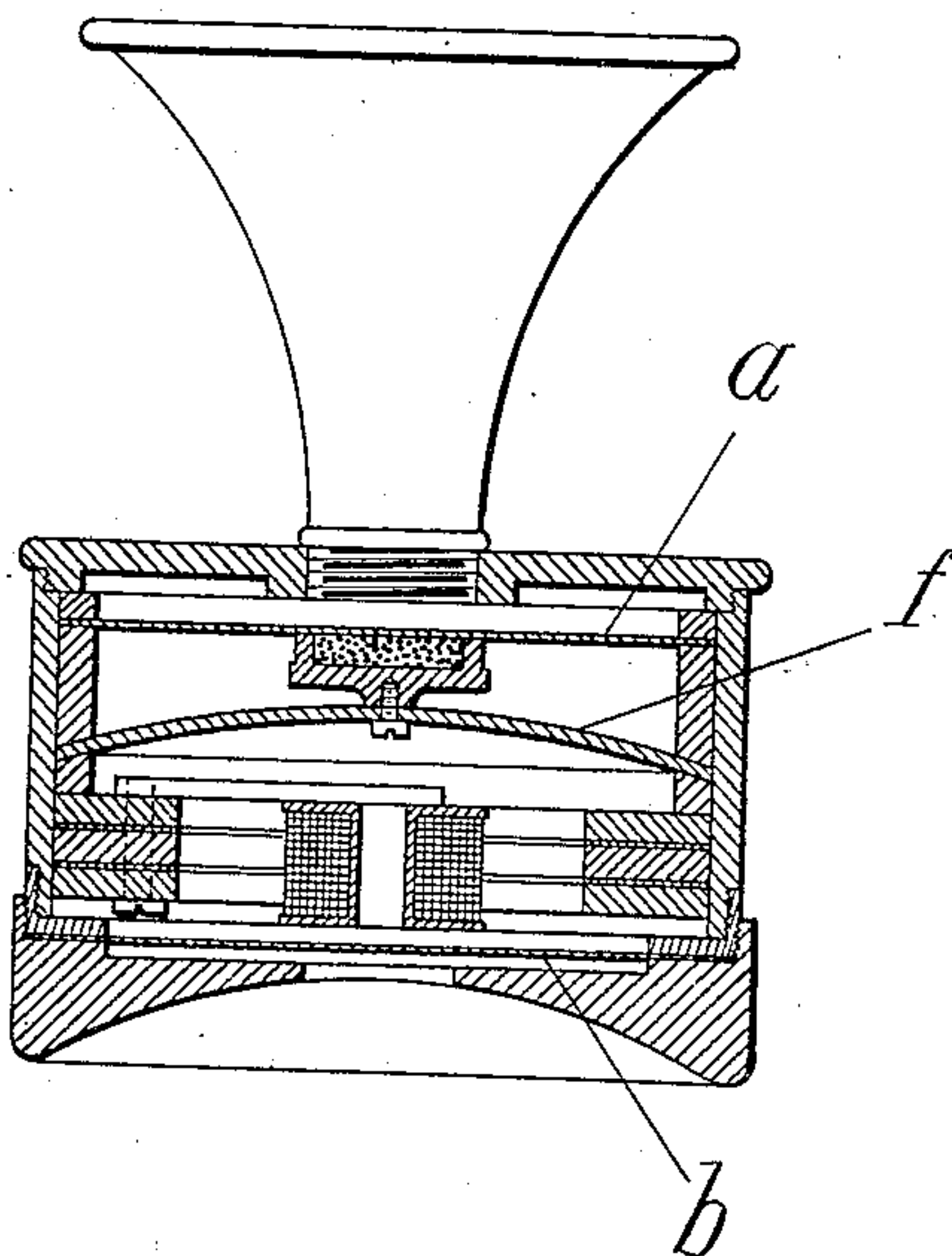


No. 832,135.

PATENTED OCT. 2, 1906.

C. E. LJUNGMAN, R. O. P. BERGLUND & W. A. W. E. HJORTH.  
COMBINED TELEPHONE RECEIVER AND MICROPHONE.

APPLICATION FILED FEB. 14, 1906.



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# UNITED STATES PATENT OFFICE.

CARL ERNST LJUNGMAN, ROBERT OTTO PERCIVAL BERGLUND, AND  
WALTER AXEL WILHELM EMANUEL HJORTH, OF STOCKHOLM,  
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## COMBINED TELEPHONE-RECEIVER AND MICROPHONE.

No. 832,135.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed February 14, 1906. Serial No. 301,025.

*To all whom it may concern:*

Be it known that we, CARL ERNST LJUNGMAN, ROBERT OTTO PERCIVAL BERGLUND, and WALTER AXEL WILHELM EMANUEL HJORTH, subjects of the King of Sweden, residing at 8 Mäster-Samuelsgatau, Stockholm, Sweden, have invented new and useful Improvements in a Combined Telephone-Receiver and Microphone, of which the following is a specification.

In telephone apparatus where the microphone and the receiver are both inclosed within the same casing, it has been proposed to prevent sounding and singing of the receiver by locating the microphone-diaphragm in an inclined position in relation to the diaphragm of the receiver, the oscillations of the receiver-diaphragm as a result not being transmitted perpendicularly to the microphone-diaphragm, and consequently not, or but little, influencing the latter. It has been found, however, that the desired result cannot always be obtained by making the microphone-diaphragm inclined in this manner, and this has led to the invention of another device, which has proved capable under all conditions to prevent the sounding or singing of the receiver. This device, which in the accompanying drawing is shown in section as applied to a microtelephone, consists in arranging between the microphone-diaphragm *a* and the receiver-diaphragm *b* a curved screen or disk *f*, of either conducting or non-conducting material and preferably of parabolical shape, though it may have any other curvature. This disk introduced between

the diaphragm has proved to prevent entirely the transmission of the oscillations of the receiver-diaphragm to the microphone-diaphragm. For this purpose, however, the screen or disk, as proved by experiment, has to be curved and must not be plane. It has, moreover, been found advantageous to place the curved disk in such a manner that its concave surface will face the receiver-diaphragm. Good results, however, have also been attained with the disk in the reverse position.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a telephone apparatus with receiver and microphone within the same casing, a curved screen or disk *f* arranged between the diaphragms of the microphone and of the receiver.

2. In a telephone apparatus with receiver and microphone within the same casing, a screen or disk *f* arranged between the diaphragms of the microphone and the receiver said screen or disk being symmetrically curved from the center.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CARL ERNST LJUNGMAN.

ROBERT OTTO PERCIVAL BERGLUND.

WALTER AXEL WILHELM EMANUEL HJORTH.

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