

UNITED STATES PATENT OFFICE.

EDWIN T. GREENFIELD, OF NEW YORK, N. Y., ASSIGNOR OF ONE HALF TO
THE HOLMES BURGLAR ALARM TELEGRAPH COMPANY, OF SAME PLACE.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 316,260, dated April 21, 1885.

Application filed October 6, 1884. (No model.) Patented in England March 1, 1883, No. 1,120, and in France March 6, 1883, No. 154,110.

To all whom it may concern:

Be it known that I, EDWIN T. GREENFIELD, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Telephones, of which the following is a specification.

The same has been patented to me in the following countries: Great Britain, No. 1,120, dated March 1, 1883, and France, No. 154,110, dated March 6, 1883.

My invention consists in the combination, for a telephone-exchange system, of a number of subscribers' service-lines and a multiple receiver located at a central office, and having a number of diaphragms and electro-magnets and a sound-passage common to all.

It further consists in the combination, for a telephone-exchange system, of a number of subscribers' service-lines and a multiple receiver located at a central office and having a number of diaphragms, and a corresponding number of electro-magnets arranged opposite the centers of the diaphragms and severally provided with a plurality of coils.

It further consists in the combination, for a telephone-exchange system, of a number of subscribers' service-lines and a multiple receiver at a central office supported over the place occupied by the operator, and having a sound-passage terminating in a head-piece provided with sound-passages adapted to lead to the ears of the operator.

It further consists in the combination, for a telephone-exchange system, of a number of subscribers' service-lines and a multiple receiver at a central office supported over the place occupied by the operator, and having a head-piece for the operator secured with a swiveling connection to the receiver.

In the accompanying drawings, Figure 1 is a side view of a multiple telephone-receiver embodying my improvement. Fig. 2 is a vertical section of the multiple receiver. Fig. 3 is a horizontal section of the multiple receiver. Fig. 4 is a transverse section of certain parts of the multiple receiver.

A designates wires forming part of the serv-

ice-lines of subscribers of a telephone-exchange. They extend to the electro-magnet belonging to one of the diaphragms of the multiple receiver. Preferably, the subscribers' telephone-instruments will be normally connected in pairs or groups with the multiple receiver. The multiple receiver is supported by rods or other suitable means, B, from a support above a table provided with a switch-board, at which the operator sits. It comprises a number of diaphragms, C, and appurtenances attached to a common body-piece, C'. This body-piece has one vertical passage, C², and a number of radial passages, C³, communicating therewith. At the ends of these passages are chambers C⁴, containing electro magnets C⁵ and the diaphragms C. It will be seen that the electro-magnets C⁵ are opposite the centers of the diaphragms C. The chambers C⁴ communicate with the passages, and the diaphragms are arranged close to the passages. Sounds emitted from any of the diaphragms will pass through the passages to the lower end of the vertical passage C². At the said lower end is a flexible tube, C⁸, which may be made of india-rubber and is connected to a head-piece, C⁶. The stem of this head-piece is tubular, and the flexible tube has fastened to its lower end a gasket, a, which is connected by a union coupling with the stem of the head-piece. In this way a swiveling connection is provided between the flexible tube and the head-piece.

The head-piece comprises branch pipes b, terminating in sections of flexible material c, provided with ear-pieces d. Between the ear-pieces preferably extends a strip of flexible material—such as metal or hard india-rubber, e—adapted to fit the head of the operator. The operator sits at the switch-board with this head-piece applied to his head, and hears any orders which may be given to him by the subscribers. The flexible tube whereby the head-piece is connected to the vertical passage C² and the swiveling connection of the head-piece with the said flexible tube afford provision for motions of the head of the operator. The flexible terminal sections of the head-piece

conduce to the same result. The operator never needs to change his position to listen at the multiple receiver when it is thus arranged.

The electro-magnet belonging to each diaphragm is intended to have several—as here shown, it has three—separate and independent coils of wire. This feature of it may be seen best in Fig. 4. Each coil, preferably, has a pair of subscribers' wires connected to it; hence every one of the electro-magnets and its diaphragm in this example of my invention serves for six subscribers. The ends of these coils are connected with binding-screws on the head-piece of the multiple receiver, and to these binding-screws are secured the wires A. Attached to this head-piece is a drum, C', which surrounds and incloses the body-piece C' and the chamber C⁴.

When the operator hears an order, he learns which subscriber is giving the order by the subscriber calling out his number. In such case the operator has merely to make the necessary connections to place the subscribers in communication. When the two subscribers are connected by the operator, they are notified of the fact that they are connected.

It will be seen that by my improvement I provide a multiple receiver which is at once simple and compact, and which will be supported in position for use and will leave the operator's hands free.

I do not wish to claim here anything which is shown in my Letters Patent No. 252,294, bearing date January 10, 1882, or which is shown in my Letters Patent No. 256,432, bearing date April 11, 1882.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. For a telephone-exchange system, the combination of a number of subscribers' service-lines and a multiple receiver located at a central office and having a number of diaphragms and electro-magnets and a sound-passage common to all, substantially as specified.

2. For a telephone-exchange system, the combination of a number of subscribers' service-lines and a multiple receiver located at a central office having a number of diaphragms and a corresponding number of electro-magnets arranged opposite the centers of the diaphragms and severally provided with a plurality of coils, substantially as specified.

3. For a telephone-exchange system, the combination of a number of subscribers' service-lines and a multiple receiver at a central office supported over the place occupied by the operator, and having a sound-passage terminating in a head-piece provided with sound-passages leading to the ears of the operator, substantially as specified.

4. For a telephone-exchange system, the combination of a number of subscribers' service-lines and a multiple receiver at a central office supported over the place occupied by the operator, and having a head-piece for the operator secured with a swiveling connection to the receiver, substantially as specified.

E. T. GREENFIELD.

Witnesses:

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