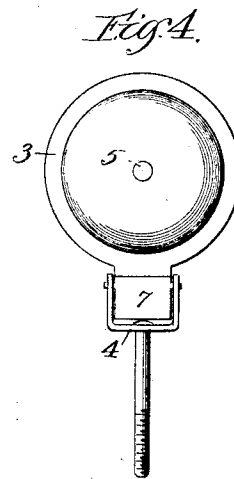
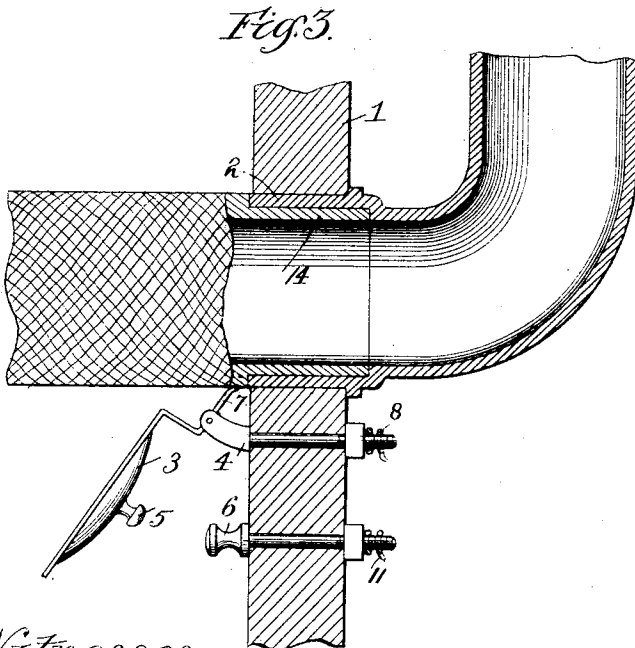
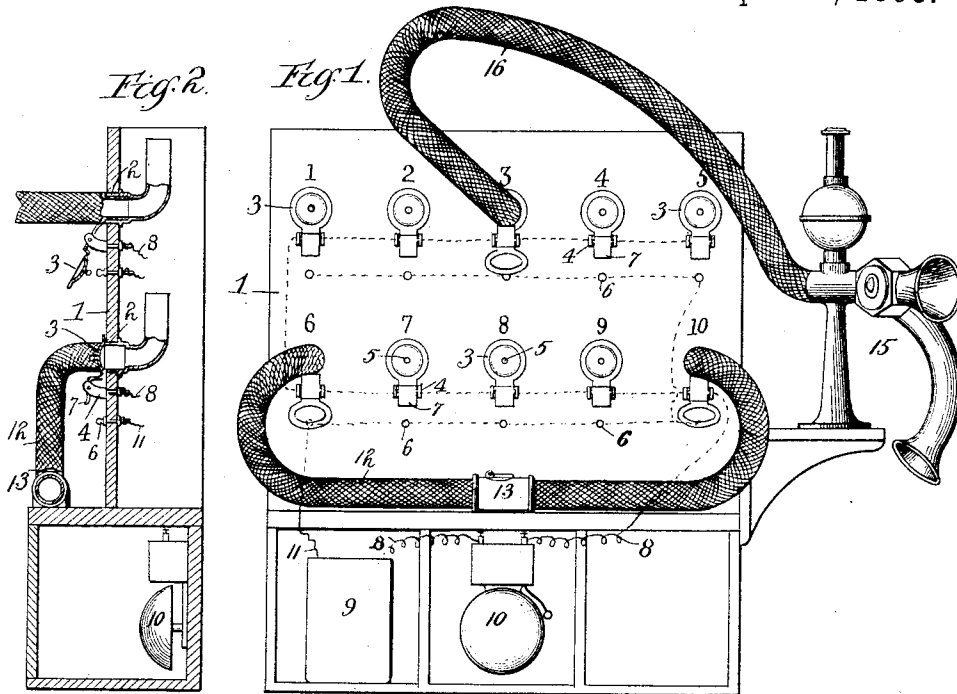


(No Model.)

W. J. FROST.
SPEAKING TUBE EXCHANGE.

No. 538,509.

Patented Apr. 30, 1895.



Witnesses.

Wm. M. Rheem
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by Wm. Johnson
Att'y.

UNITED STATES PATENT OFFICE.

WALTER J. FROST, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE RAU MANUFACTURING COMPANY, OF SAME PLACE.

SPEAKING-TUBE EXCHANGE.

SPECIFICATION forming part of Letters Patent No. 538,509, dated April 30, 1895.

Application filed April 14, 1894. Serial No. 507,576. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. FROST, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Speaking-Tube Exchanges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in speaking tube exchanges.

The object of the invention is to provide simple and efficient means whereby oral communication can be had between any two rooms of a building, or between any number of rooms connected in pairs, with the utmost facility and dispatch, the speech being conducted simultaneously, and audible only to the occupants of the rooms so connected. I attain this object by the novel combination, construction and arrangement of parts hereinafter described and set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of a speaking-tube exchange embodying my invention. Fig. 2 is a central vertical section through Fig. 1. Fig. 3 is an enlarged sectional detail view of a terminal tube, with the connecting tube inserted therein, showing also the terminal cover in a lifted position and the bolts with the circuit-forming wires connected thereto. Fig. 4 is a plan view of one of the terminal covers and the supporting-bolt to which it is pivotally attached.

Referring to the drawings, 1 designates the switch-board or cabinet, formed of a non-conducting substance or material, in which all the tubes from the several rooms to be connected, terminate. Said switch-board is located at a point in the building, or system, most convenient for running the tubes therefrom to the various rooms, and, with regard to the attention required for its operation.

2 are the tube terminals, which as represented are elbows formed of cast metal, the inner ends of which are attached to the speaking tubes, while the outer terminal ends pass

through perforations in the switch-board, and project a slight distance beyond the front face thereof.

3 are terminal indicator covers. Said covers are pivotally attached or hinged to the heads of bolts 4, secured to the switch-board, and in their normal position are adapted to close the tube terminals. Said covers have outward central projections 5 formed thereon, which projections—when the covers are thrown down—strike against the heads of bolts 6, secured to the switch-board directly underneath the bolts to which the covers are attached. Said covers are formed with an outward extending end 7, which—when the cover is in its lowest position, in contact with one of said bolt heads—projects above the bottom of the terminal tube opening, in such manner, that when a cylindrical body is inserted in the tube opening, it will push said extended end down, and will lift the cover up out of contact with the bolt head, to the position shown in Fig. 3. The screw ends of the bolts to which the covers are attached, project from the inside of the switch-board, and are all connected together by a circuit forming wire or conductor 8, connecting therewith an electrical battery 9, and bell 10, and in like manner the lower bolts are connected together, and to the battery and bell by the wire 11, the arrangement for ringing the bell being that in ordinary use, and operated by closing the circuit in the usual manner, and which is accomplished by contact of the cover with the head of the lower bolt, the circuit being broken by lifting the cover therefrom.

12 is a flexible tube, centrally secured to a projecting shelf of the switchboard, and is provided at its center with a flap covered whistle 13, and at its ends with sockets or thimbles 14, which are adapted to be inserted into the terminal tube openings, to connect any two of said openings or tubes. Any desired number of said flexible tubes may be arranged side by side, and of varying lengths, suited to the size of the switchboard and to the number of rooms, so that private conversation can be carried on between any number of pairs of rooms at the same time, and which is a desired object.

15 represents a transmitting, receiving and signaling apparatus, and which, as it is of a well known type and already patented, needs no description. Said apparatus is secured at
 5 any convenient point in relation to the switchboard, and has attached thereto a flexible tube 16, the free end of which is adapted to be inserted into the tube terminals, and to lift the terminal covers to stop the alarm.
 10 One of said apparatuses is located in each room, and attached to the speaking tube connecting the exchange therewith.

From the foregoing description, the mode of operation will be readily understood. The
 15 occupant of one room desiring to communicate with that of another, pushes down the collapsible signal device attached to the transmitter, compressing the air in the speaking tube with sufficient force to throw down the
 20 exchange terminal cover of the tube, which in falling closes the electric circuit, thereby ringing the bell, and directing attention to the fallen cover, and open terminal tube, into which the attendant inserts the flexible tube
 25 attached to the exchange transmitter, thereby lifting the cover, breaking the circuit and stopping the bell. The attendant then ascertains the number of the room with which communication is desired, after which the trans-
 30 mitter tube is removed, and the ends of the flexible connecting tube are inserted. The two rooms being thus connected, the occupant of the room desiring to communicate, sends a signal from his transmitter to the connected
 35 room,—or which, if preferred,—may have been sent thereto by the attendant before the connection is formed, when the occupants of the connected rooms may converse at will, and when done a signal sent from either or both
 40 of the rooms will sound the whistle in the connecting tube, the flap cover of which will be blown over, thereby, and the attendant notified that communication is no longer desired, the particular rooms being indicated by the
 45 blown over whistle flap of the connecting tube,

which tube is then removed and the terminal covers returned to their normal position. The numbers of the respective rooms are represented upon the switchboard as shown in the drawings.

I am aware that it is not new, to blow over a hinged terminal cover by means of an air current forced through a speaking tube. I am also aware, that a sliding indicator cover for the tube terminal, has been blown from a rest or support, and allowed to drop by gravity, a sufficient distance to expose the numerals representing the number of the room, and in thus dropping to close an electrical circuit to ring a bell, after which it is required to be
 55 pushed down by hand to expose the tube opening and to stop the bell. I do not, therefore, claim such as my invention. In my invention, the tube opening is fully exposed when the bell rings, and the bell is automatically stopped by the insertion of the flexible
 60 tubes, the arrangement being exceedingly simple and not liable to derangement.

Having thus described my invention, I claim—

The combination in a speaking-tube exchange, of a cover pivotally attached to the exchange switchboard, and adapted in its normal position to cover or close the terminal tube end, and to be blown down therefrom, to
 70 ring a bell or sound an alarm as described, said cover provided with an end portion which projects above the bottom of the tube opening when the cover is in a down position, and by which the cover is adapted to be au-
 75 tomatically lifted up to stop the alarm, by the insertion of a connecting tube into the terminal tube opening, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER J. FROST.

Witnesses:

GEORGE A. SWARTWOUT,
 A. ALBERTA BESSOR.