(No Model.) 3 Sheets—Sheet 1.

H. A. CUTMORE.

SPEAKING TUBE.

No. 484,516. Patented Oct. 18, 1892.

Fig. 1.

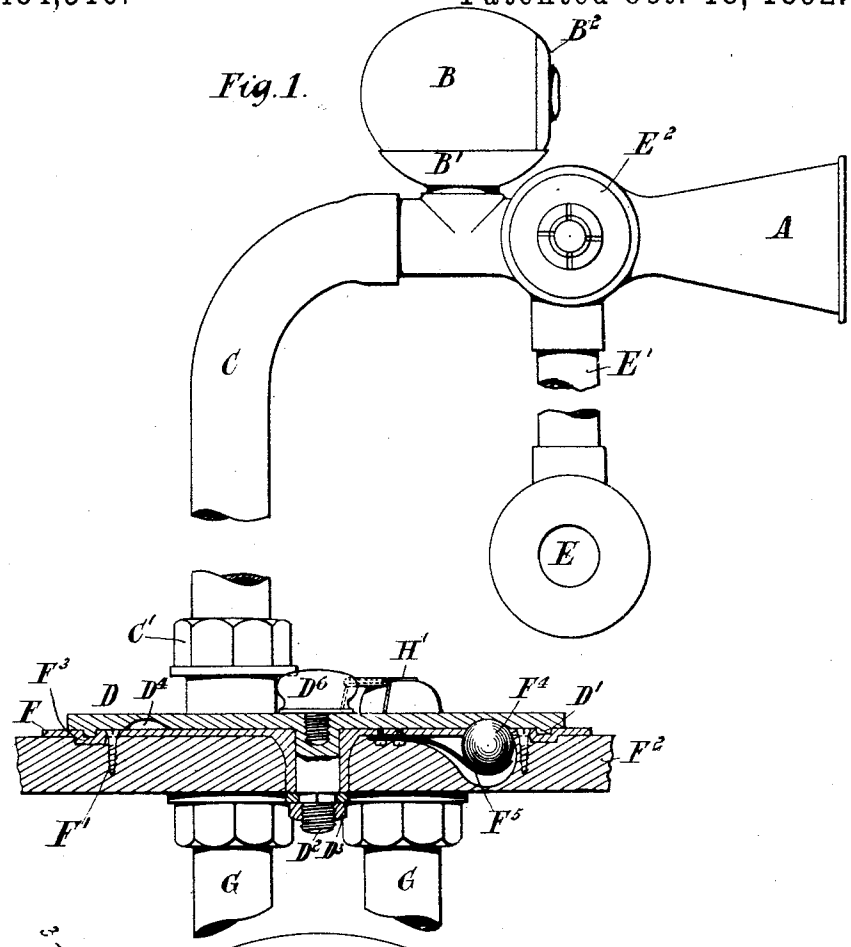
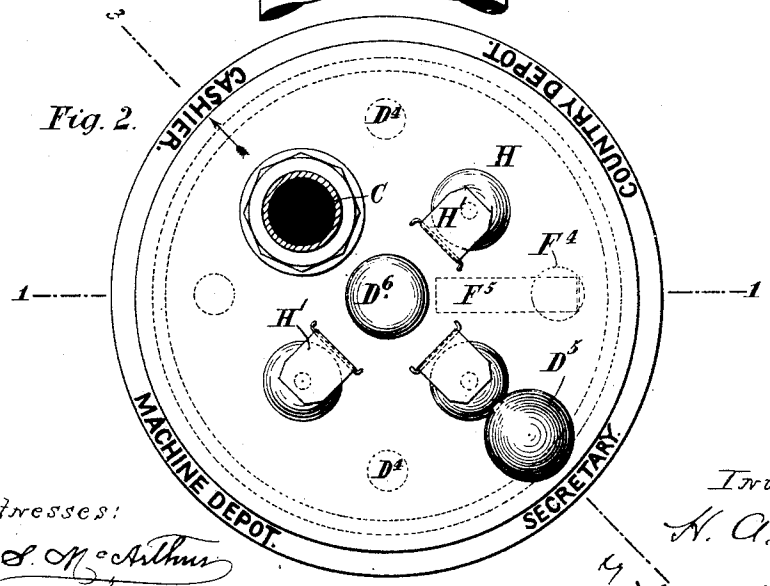


Fig. 2.



Witnesses:
H. S. McArthur
Alle R. Dobson

Inventor:
H. A. Cutmore
by Fitz J. Freeman
Atty

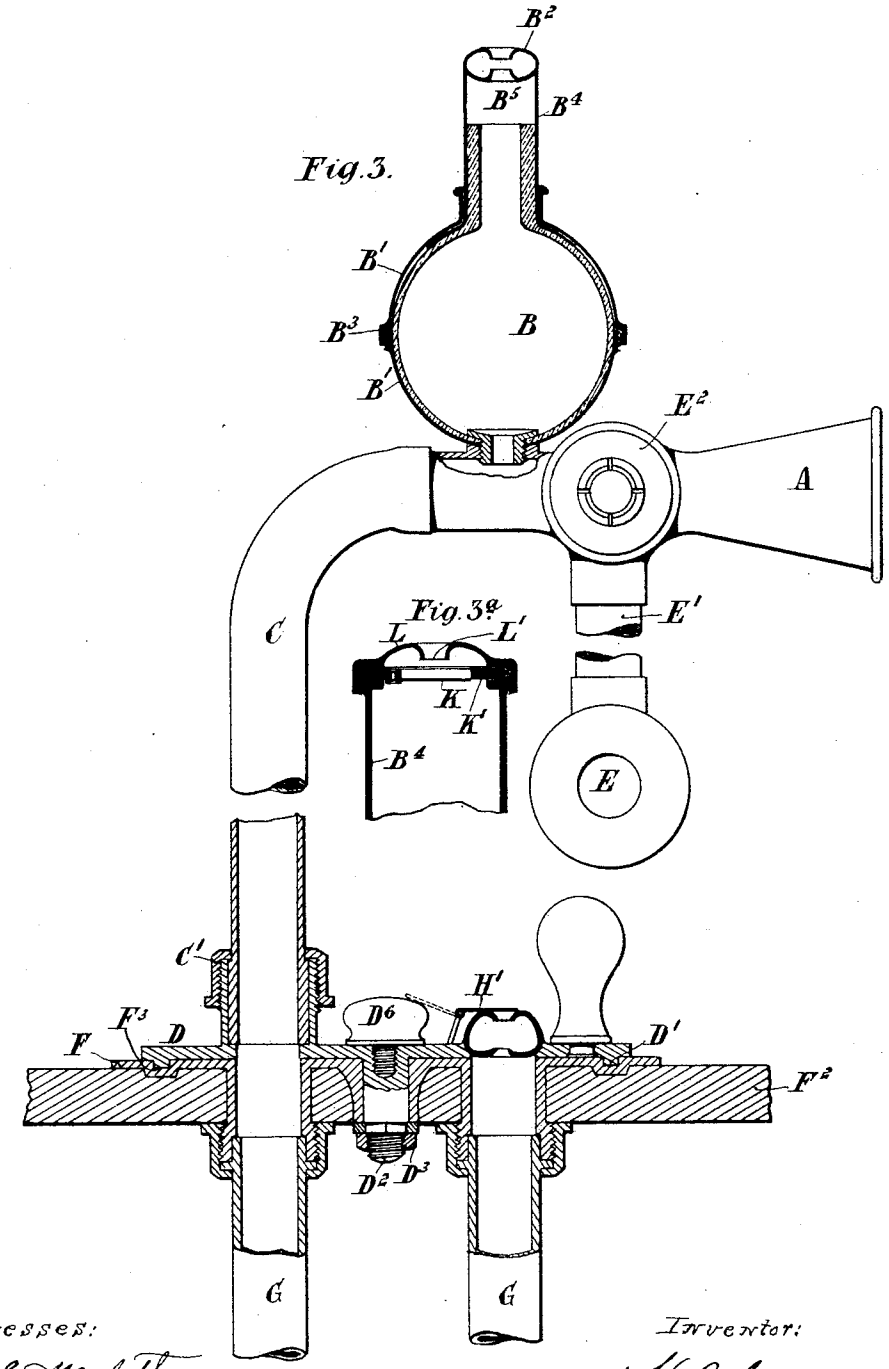
(No Model.) 3 Sheets—Sheet 2.

H. A. CUTMORE.

SPEAKING TUBE.

No. 484,516. Patented Oct. 18, 1892.

Fig. 3.



Witnesses:
H. S. McArthur
Alla N. Dobson

Inventor:
H. A. Cutmore
by Foster Freeman
Attys

(No Model.) 3 Sheets—Sheet 3.

H. A. CUTMORE.

SPEAKING TUBE.

No. 484,516. Patented Oct. 18, 1892.

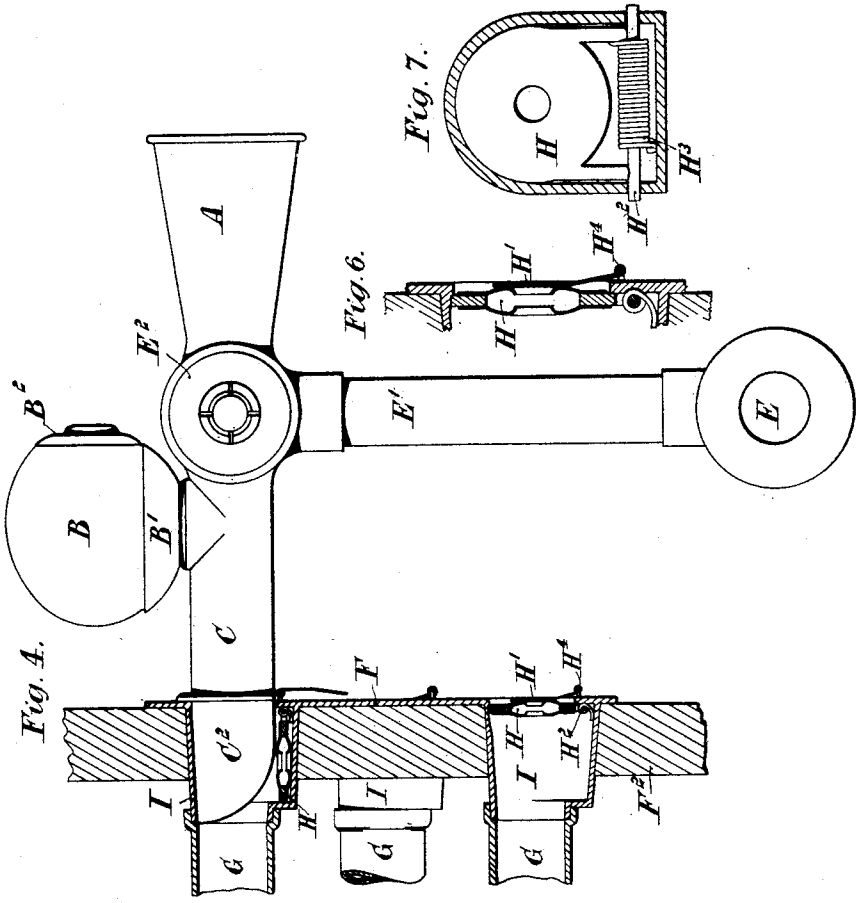


Fig. 4.

Fig. 6.

Fig. 7.

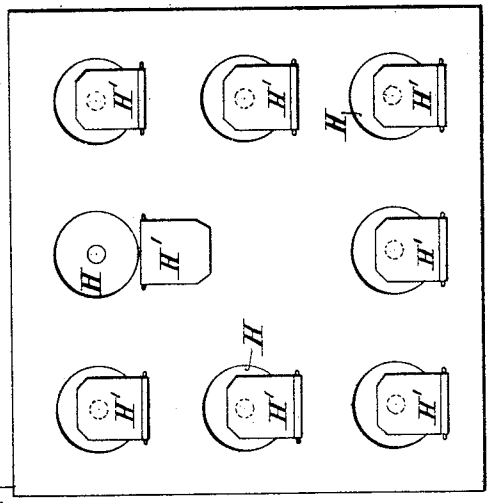


Fig. 5.

Witnesses:

H. S. McArthur

Allen R. Dobson

Inventor:

H. A. Cutmore

by Foster Freeman

Attys

UNITED STATES PATENT OFFICE.

HAHNEMANN ADOLPHUS CUTMORE, OF LONDON, ENGLAND.

SPEAKING-TUBE.

SPECIFICATION forming part of Letters Patent No. 484,516, dated October 18, 1892.

Application filed April 22, 1891. Serial No. 389,998. (No model.)

To all whom it may concern:

Be it known that I, HAHNEMANN ADOLPHUS CUTMORE, a subject of the Queen of England, residing at London, in England, have invented certain new and useful Improvements in or Relating to Speaking-Tubes or other Pneumatic Call or Indicating Devices, of which the following is a specification.

This invention relates to improvements in or connected with speaking-tubes, and will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, upon line 1 1 of Fig. 2 and Fig. 2; a plan of a speaking-tube apparatus with a switch-plate by which a single mouthpiece is adapted to communicate with tubes leading to various apartments. Fig. 3 shows the same switch-plate apparatus, but with a modified call or signaling device, and the section of the switch-plate being taken upon the line 3 3 of Fig. 2. Fig. 3^a is a section of a particular form of call. Fig. 4 is an elevation, with the switch-plate in section, of a similar device adapted for a vertical switch-plate, Fig. 5 being a front elevation of this switch-plate. Fig. 6 is a vertical transverse central section, and Fig. 7 an interior view of the local signaling device.

Like letters represent like parts throughout the drawings.

Commencing with Figs. 1, 2, and 3, A is the mouthpiece, and B the compressible bulb of the general signaling device for communicating with the various tubes. This portion of the apparatus is connected by a bent rigid tube C with the switch-plate D. E is the ear-piece connected by, preferably, a flexible tube E′ with the plug of a two-way cock E^2, and so arranged that when the ear-piece is lifted up and applied to the ear of the speaker with his mouth in front of the mouthpiece the plug of the cock E^2 is so turned as to establish communication between the mouthpiece A and the pipe C, whereas when the ear-piece E hangs down, as in Figs. 1 and 3, the cock is closed and communication between A and C is cut off.

The switch-plate shown in Figs. 1, 2, and 3 consists of a fixed circular plate F, secured by screws F′ or other equivalent means to the wooden or other plate or support F^2, which may lie in a horizontal plane and be supported on the top of a pillar or column or may be placed upon the wall in a vertical plane. The fixed plate F has an annular groove F^3, in which fits the annual projection D′ of the switch-plate D, so that the latter when held against the plate F, as by means of the screw D^2 and nut D^3, makes an air-tight joint between the two plates. The switch-plate is provided with a number of recesses D^4, corresponding with the number of communication-tubes G, connected to the fixed plate F, and into these recesses a ball F^4, held by a spring F^5 against the back of the plate F, so as to project a small distance through it, enters, thus forming a check upon the switch-plate D and to a limited extent locking it in each of the positions required. The switch-plate D may be conveniently turned by the handle D^5 around its center, thus carrying the tube C and mouthpiece arrangement around till it corresponds with the tube G, which communicates with the required apartment. Thus in Fig. 2 the tube C is shown in the position to correspond with that tube G which communicates with the cashier, and to enable the operator always to bring the mouthpiece conveniently to him the tube C is connected by any suitable swivel arrangement C′ with the switch-plate D. In these drawings the knob D^6 is merely for purposes of ornament and to support the indicating devices H′ when in the position shown in dotted lines in Fig. 3, but, if preferred, may be used for securing the plates D and F together.

The switch-plate D is provided with whistles or other signaling devices H, so arranged that when the pipe C coincides with one pipe G the signaling devices H will correspond with all the other pipes of the switch-plate. By this arrangement a signal can be given from the other end of any one of the pipes G; but to indicate which of these it is which has signaled an indicating device H′, and here shown as consisting simply of a hinged flap or plate adapted to close the opening in the whistle or to fall back upon the knob D^6 when a signal is given, may be employed. This arrangement of indicating device, while suitable for use with a horizontal switch-plate, would not do for a vertical plate unless the plate itself were a fixture, as in Figs. 4 and 5. After the

flap has been thrown back it may be replaced in its normal position by the operator. Should the signal be given through the pipe G, with which the pipe C corresponds, an audible signal will be made through the general signaling device B, which thus serves the double purpose of giving such a signal from the remote station or, upon compression and blocking the whistle with the finger, of conveying a signal to any of the remote stations with which the apparatus communicates.

The signaling device B in Fig. 1 consists simply of the rubber ball B, carried in the cup B′ and communicating with the pipe C, and any convenient form of whistle or signaling device B^2, which upon the passage of a puff of air will give an audible signal. When using this apparatus to send a signal to the remote station, the whistle B^2 is closed by the finger or thumb of the operator and the ball B compressed, thus moving the air in the pipe and giving the signal through a similar apparatus B or H at the remote station. In Fig. 3 the signaling device is almost identical with that above described; but for purposes of protection the ball B is entirely inclosed in a metal case B′, formed in two parts, screwed together or jointed at B^3. The whistle is carried upon the pipe B^4, which enters the top cover B′, while the ball B is provided with an extension-pipe B^5, extending some distance up the tube B^4, which tube is preferably extended inside to prevent it escaping from the cover B′ and to prevent it from damaging the ball B. In use the finger or thumb is placed upon the whistle B^2 and the pipe B^4 forced in, thus compressing the ball B and delivering the signal to the remote station, as in Fig. 1.

The special signal device illustrated in Fig. 3^a is composed of a free or beating reed K, carried in a slotted plate K′ and covered with a cap L, having a central aperture L′, the cap being screwed onto the tube B^4, as clearly shown in the figure. This reed gives a musical call much preferable to the whistle, and, if desired, more than one reed may be used, so as to give a chord instead of a single note. The reed can be changed for one of a different tone.

In Fig. 4 the objects and general operation of the device are the same, but are modified so as to suit a vertical plate F, which may be secured to the wall or board or plate F^2, as before. In this case the tube C, instead of being carried upon the revolving switch-plate D, is provided with a tapered extension C^2, which fits into any one of a series of sockets I, carried by the plate F, and each communicating with its appropriate pipe G. With this arrangement, since it is necessary that each pipe G or socket I should be provided with its own signaling device and that such device should be moved out of the way when the pipe C is placed in any of the sockets I, the arrangement indicated in Figs. 4, 6, and 7 may be employed. Here the signal device H is pivoted at H^2 and controlled by a spring H^3, so that normally it adopts and retains the position indicated in Fig. 6, closing the entrance to the socket I and ready to give a signal. Upon the insertion of the extension C^2 of the pipe C, which extension is preferably rounded, as shown in Fig. 4, it is pressed back into the recess in the socket I, provided for it, as indicated in the upper portion of Fig. 4, where the extension C^2 is shown in position in the socket I, the signal device H lying snugly in its recess. Upon the withdrawal of the pipe C the spring H^3 will return the pivoted signal H to its normal position, as in Fig. 6, or the lower part of Fig. 4. Fig. 7 is a back or interior view of the signal H, showing the general arrangement. The pivot H^4 of the indicating-flap H′ in Figs. 4 and 6 is brought forward, so that the flap when in the position shown in the latter figure and in the lower part of Fig. 4 is overbalanced so as to lie naturally against the signal device H, closing it until turned over into the position shown in the top of Fig. 4 by the puff of air when the signal is given. As with the former arrangement the signal from that pipe G, with which the mouthpiece is in communication, will be given through the signal device B and not through H. When the pipe C is withdrawn from the socket I and the signal device H is returned to its normal position, the flap H′ may be returned to the position of Fig. 6 by the operator.

In Fig. 5 the top central flap H′ is shown as fallen down after a signal has been given, and the pipe C is not shown in this figure, and it will be understood that it can be entirely removed from the plate, from which it may hang by a chain or cord, as required, and placed in any of the sockets I, each of which may bear its appropriate designation, as in the case of the switch-plate as shown in Fig. 2 and which is there marked with the four references, "Cashier," "Machine Depot," "Secretary," "Country Depot."

In Fig. 2 only four pipes G are shown, and in Fig. 5 eight are shown; but it will be understood that any required number may be employed with either of the devices.

I claim—

1. In speaking-tube apparatus, the combination, with the mouth and ear piece and series of tube-terminals G, of an adjustable switch plate or disk moving over the terminals, the disk having a series of signal devices corresponding to the terminals, substantially as described.

2. In speaking-tube apparatus, the combination, with a series of tube-terminals G, of an adjustable switch plate or disk moving over the terminals and having a series of signal devices corresponding to the terminals and a mouth and ear piece branch attached to the disk, substantially as described.

3. In speaking-tube apparatus, the combination, with two or more tube-terminals G and fixed plate F, of a rotatable plate or disk D, having recesses D^4, adapted to receive a

spring-controlled check-ball F^4, substantially as described, and illustrated in the accompanying drawings.

4. In speaking-tube apparatus, the combination, with a series of tube-terminals G, of an adjustable switch plate or disk moving over the terminals, a mouth and ear piece branch connected to the disk, a signal device connected to the branch, and a series of signal devices carried by the disk and corresponding to the tube-terminals, substantially as described.

5. In speaking-tube apparatus, the combination, with two or more tube-terminals G, of a rotatable plate or disk having signal devices corresponding to the terminals and a mouth and ear piece carrying branch, the said branch being connected to the disk by a swivel-joint, substantially as described.

6. In speaking-tube apparatus, the combination, with two or more tube-terminals G, of an adjustable switch plate or disk having a mouth and ear piece carrying branch and provided with a series of hinged doors corresponding to the tube-terminals, substantially as described.

7. In speaking-tube apparatus, the combination, with two or more terminals G, of an adjustable switch plate or disk carrying the mouth and ear piece and provided with a series of audible signal devices and hinged doors corresponding with the tube-terminals, substantially as described.

8. In speaking-tube-signal apparatus, the combination, with the mouth and ear tube, of a collapsible ball B, having a tube extension B^5, a divided casing B′, surrounding the ball, and a signal-carrying tube B^4, having its end extending into the casing of the tube, substantially as described.

In witness whereof I have hereto set my hand in the presence of the two subscribing witnesses.

HAHNEMANN ADOLPHUS CUTMORE.

Witnesses:
ALFRED J. BURK,
HARRY B. BRIDGE.