C. A. KRAMER.

PARTY LINE LISTENING-IN DETECTING DEVICE.

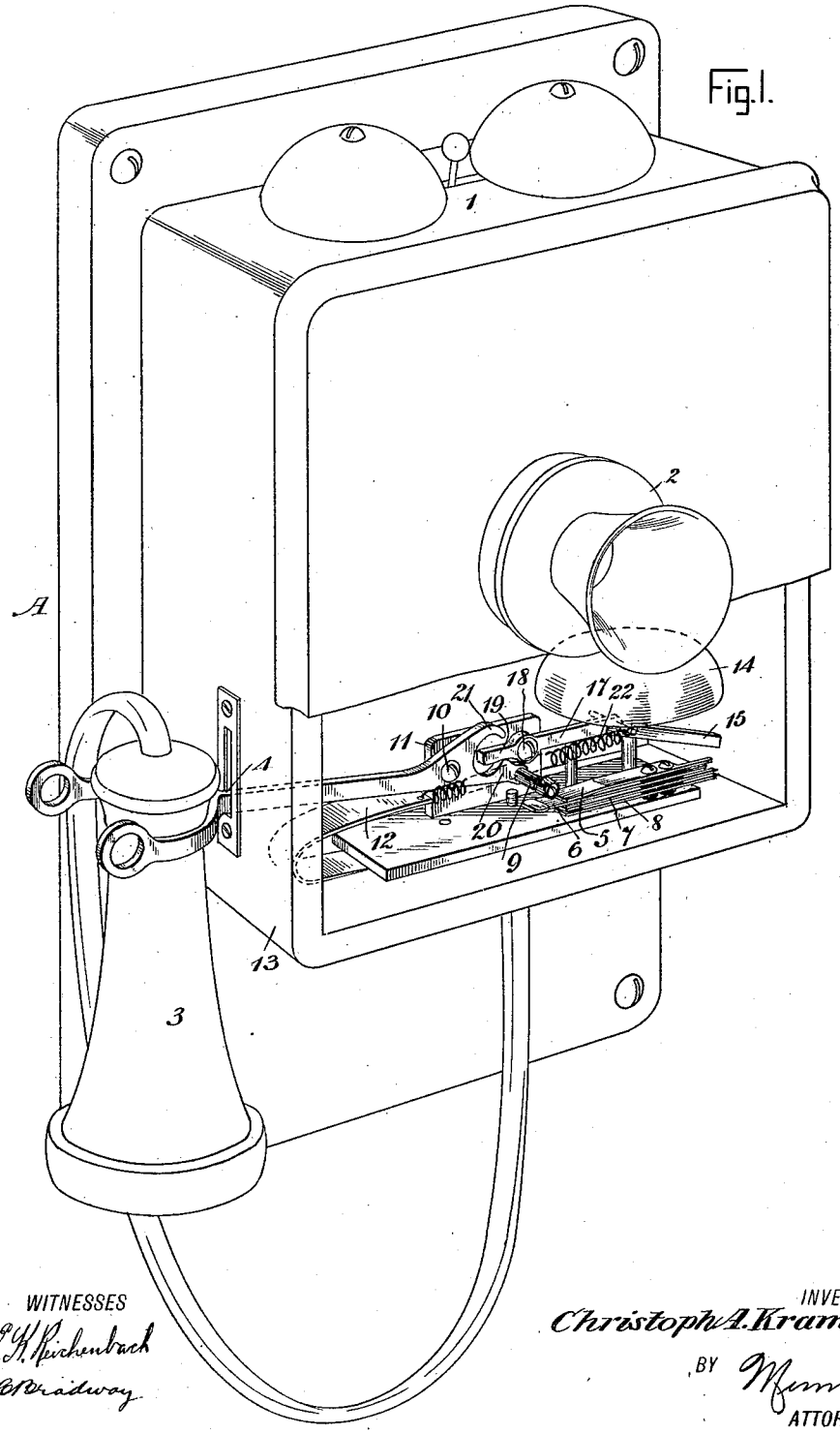
APPLICATION FILED MAR. 6, 1914.

1,130,522.

Patented Mar. 2, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

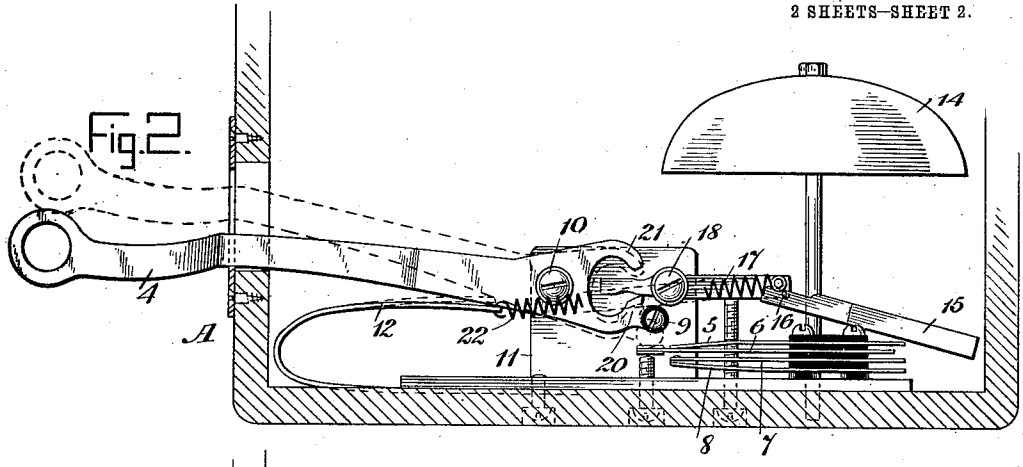


Fig. 3.

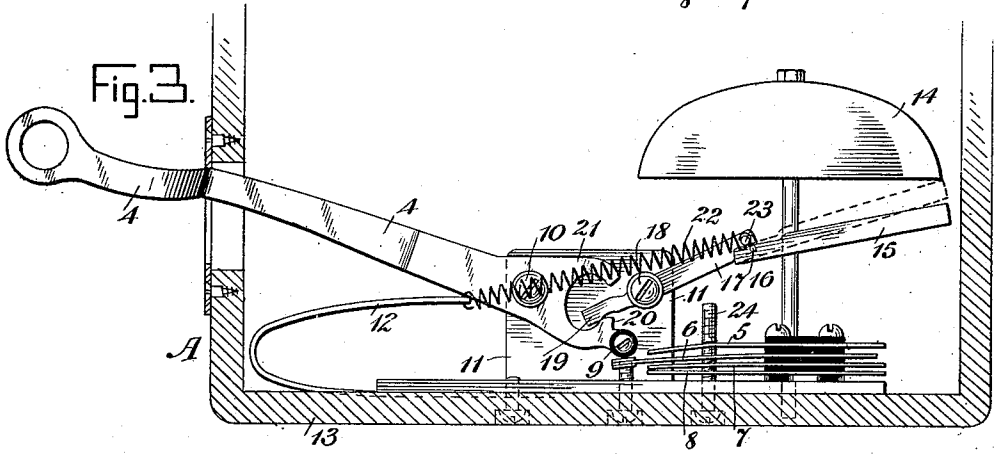


Fig. 4.

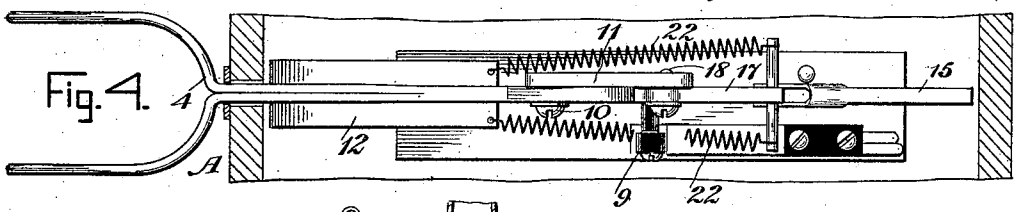
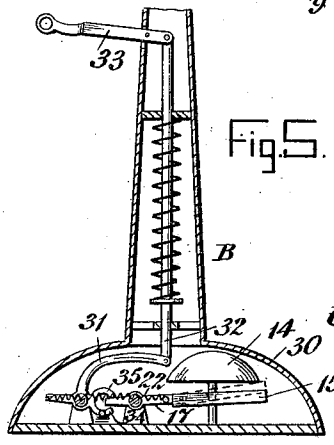


Fig. 5.



WITNESSES

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PARTY-LINE LISTENING-IN-DETECTING DEVICE.

1,130,522. Specification of Letters Patent. Patented Mar. 2, 1915.

Application filed March 6, 1914. Serial No. 822,884.

To all whom it may concern:

Be it known that I, CHRISTOPH A. KRAMER, a citizen of the United States, and a resident of Spokane, in the county of Spokane and State of Washington, have invented a new and Improved Party-Line Listening-In-Detecting Device, of which the following is a full, clear, and exact description.

This invention relates to party-line telephone systems, and more particularly to an indicating or detecting device for each subscriber's telephone set, whereby it is possible to detect any party listening in to a conversation.

The invention has for its general objects to improve and simplify party-line listening-in detecting apparatus so as to be reliable and efficient in use, comparatively inexpensive to manufacture and install, and so designed as to be in the nature of a mechanical attachment adapted to be applied to any telephone set without changing the present standard design.

More specifically, the invention has for its objects to provide an indicating or detecting device for each telephone set, which produces acoustic vibrations when the receiver is removed from the switch fork, whereby such acoustic vibrations act on the transmitter of the telephone set to vibrate and transmit sounds over the line for the purpose of indicating to the calling subscriber that some one other than the called subscriber is connected with the line and can listen to the conversation, it being understood that indicating devices of the various telephone sets on the party line will be acoustically different, so that it is possible to determine whether any other than the called subscriber is connected with the line. When the party attempts to listen in, the indicating device, which may be a bell, will set up a train of sounds through the telephone line which will persist for an appreciable period of time, and when the calling subscriber hears these sounds he will request the listening party to hang up his receiver, which if done will abruptly stop the train of sound vibrations through the line. If the listening subscriber does not comply the calling subscriber will be made aware of this fact by a train of sounds continuing until the vibrations die out.

The indicating or detecting device is purely mechanical and has no direct connection with the electrical circuits of the telephone system, so that present principles of line and instrument installation are in no sense altered.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts such as will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, and wherein similar characters of reference indicate corresponding parts in all the views, Figure 1 is a perspective view of a wall telephone set with a part of the box front broken away to illustrate the detector attachment; Fig. 2 is a vertical sectional view showing in elevation the parts of the detecting device in normal position by full lines, and showing by dotted lines the parts just prior to their operation by the receiver fork; Fig. 3 is a similar view showing the fork fully raised and the hammer just before striking the bell; Fig. 4 is a plan view of Fig. 2 with the gong removed; and Fig. 5 is a sectional view of a desk telephone set with the attachment applied thereto.

Referring to the drawing, A designates an ordinary wall telephone set that includes a ringer 1, a transmitter 2, a receiver 3 and a switch fork 4. The fork 4 controls the ringing circuit contacts 5 and 6 and the talking circuit contacts 7 and 8, such contacts being arranged to be brought into closed circuit position by means of an insulating stud 9 carried by the inner end of the fork 4 which is fulcrumed at 10 on the frame or support 11. The outer end or arm of the fork is urged upwardly when the receiver is removed, by means of a bowed leaf spring 12 fastened in the bottom portion of the box 13 of the telephone set.

The detecting attachment in the present instance is shown as a bell 14 which produces the acoustic vibrations, and the hammer 15 of this bell is adapted to be actuated by the movement of the telephone fork 4 when the receiver is removed. The hammer is in the form of a bar connected by a pivot 16 at one extremity to the extremity of a spring-actuated lever 17, which lever is fulcrumed at 18 on the support or bracket 11. The short arm 19 of the lever 17 is disposed between two spaced lugs 20 and 21 on the inner part of the telephone fork 4, whereby

a lost motion connection is provided between the fork and the lever 17. Helical extension springs 22 are disposed at opposite sides of the lever 17 and fork 4, and these springs are each connected at one end with the free end of the fork-actuating spring 12, and at the opposite end with the outer extremity of the long arm of the lever 17.

The relation of the parts is such that when the telephone fork is down, the bell hammer 15 will also be down, as shown in Fig. 2, and the springs 22 will lie below a dead center line passing below the fulcrum of the lever 17 from the end of the spring 12 to the point 23 where the springs 22 are connected with the lever 17. The springs 22, therefore hold the long arm of the lever 17 downwardly against a stop in the form of a screw 24 in the bottom of the telephone box 13, it also being noted that the lug 21 of the telephone is separated from the arm 19 of the lever 17. When the telephone receiver is removed the lifting spring 12 thereof moves upwardly and carries the springs 22 with it, and simultaneously with this operation the lug 21 of the telephone fork engages the lever 17 and tilts the same, so that the springs 22 pass above the dead center line above referred to, and thereupon the springs 22 come into play and snap the lever 17 quickly in an upward direction. This imparts considerable momentum to the pivoted hammer 15, which swings upwardly and strikes the bell a heavy blow. It will therefore be seen that it is the springs 22 that directly actuate the hammer 15, while the movement of the telephone fork simply moves the springs to position where they can act, and consequently the hammer will operate with the same force irrespective of whether the telephone fork is slowly or quickly released by the removing of the receiver. This single striking of the gong sets up sound vibrations which act, through the air, on the telephone transmitter, which in turn sets up electric vibrations in the telephone line which can be heard by the calling subscriber who is thereby made aware of the fact that someone is listening in. These sound vibrations persist for a considerable period of time on the telephone line, but they are abruptly interrupted if the listening-in subscriber cuts out his telephone at the request of the calling subscriber, but if this is not done the sounds will continue until the vibrations die down to an inaudible point. Obviously, the gongs in the various telephone sets of a party-line will have different tones so as to be readily distinguishable. When the telephone receiver is returned to the switch fork the parts are restored from the position shown in Fig. 3 to that shown in Fig. 2.

In Fig. 5 the same indicating or detecting device is embodied in the base 30 of the desk telephone set B, and the corresponding parts are numbered as in the previous figures. Instead of the fork 4 a lever 31 fulcrumed in the base 30 is connected by a rod 32 with the receiver fork 33. This lever has spaced lugs 34 and 35 which correspond to the lugs 20 and 21 of the fork 4 of the wall telephone set. When the receiver is removed from the fork 30 the bell 14 is sounded, as in the manner described hereinbefore.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired as are within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a listening-in detecting device, the combination of a transmitter, a receiver, a receiver-holding means including a pivoted element, a lever, a lost motion connection between the lever and element, a hammer pivotally carried by the said lever, a bell arranged to be struck by the hammer, and spring means for actuating the lever after the same has received an initial movement by the said element, whereby the spring means causes the striking stroke of the hammer.

2. In a listening-in detecting device, the combination of a telephone transmitter, a receiver, a receiver-holding means, an element associated with and receiving an initial movement from the holding means, a hammer on said element, a bell arranged to be struck by the hammer, and means for imparting a final sudden movement to the said element after the same starts to move by the said holding means, whereby such sudden movement imparts momentum to the hammer to strike the bell.

3. In a listening-in detecting device, the combination of a telephone transmitter, a bell associated therewith to receive sound vibrations from the bell, a swinging element, a hammer carried by and loosely mounted on the element, a spring connected with the element to normally hold the latter in a position with the hammer retracted from the bell, said spring acting as an actuator for the hammer-carrying element after the hammer has moved a predetermined extent, and a movable telephone receiver holder for imparting an initial movement to the said element to a point where the said

spring becomes operative as an actuator for the said element.

4. In a listening in detecting device, the combination of a telephone transmitter, a bell associated therewith, a receiver fork, members on the said fork, a pivoted lever having one extremity disposed between the members whereby the lever is initially moved by one member or the other as the receiver fork moves to and from normal position, means operating on the lever to hold the same in either extreme position and to actuate the lever after the same has been moved by the members of the fork to a predetermined position, and a hammer pivotally mounted on the lever and arranged to strike the said bell.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTOPH ANTON KRAMER.

Witnesses:

JOSEPH BOEHME,

S. G. WASHINGTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."