No. 832,562. PATENTED OCT. 2, 1906.

A. VAN WAGENEN.

TELEPHONE CALL BOX.

APPLICATION FILED JULY 30, 1903. RENEWED MAR. 3, 1906.

Fig. 3,

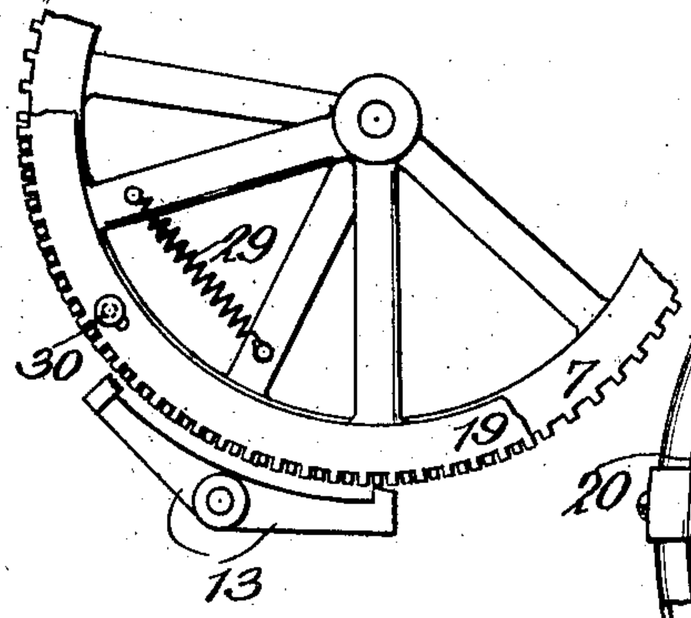


Fig. 1,

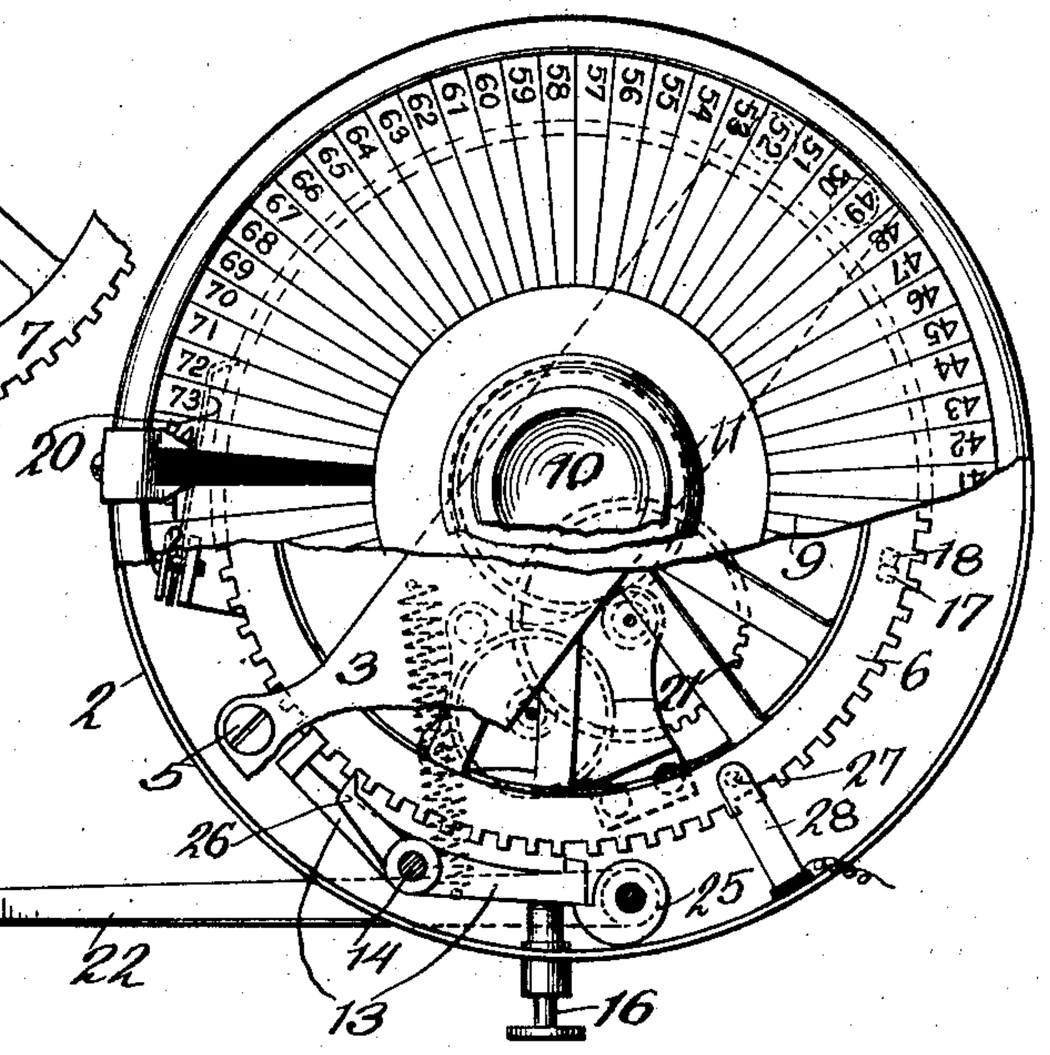


Fig. 4,

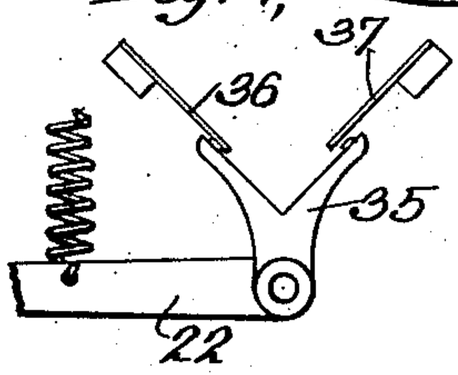


Fig. 2,

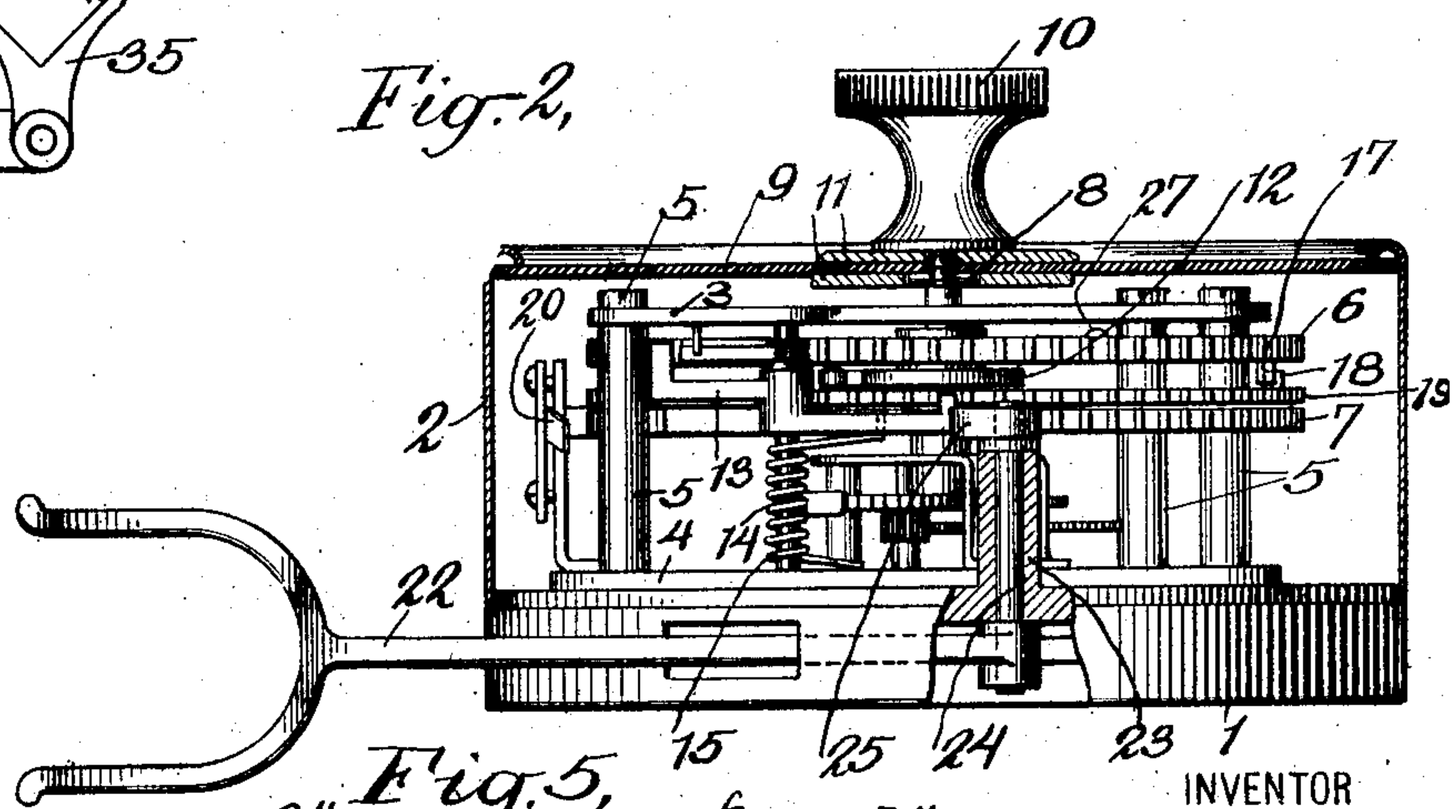
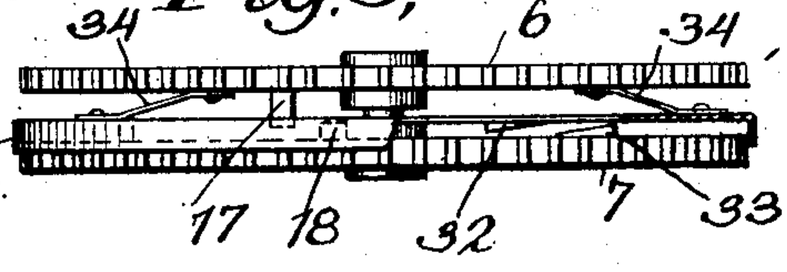


Fig. 5,



WITNESSES:

~~Mary E. Lowes.~~

Anna J. Molter.

INVENTOR

Anthony Van Wagenen

BY

Chapin Hayward & Marble

ATTORNEYS

UNITED STATES PATENT OFFICE.

ANTHONY VAN WAGENEN, OF SIOUX CITY, IOWA.

TELEPHONE CALL-BOX.

No. 832,562. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed July 30, 1903. Renewed March 3, 1906. Serial No. 304,052.

To all whom it may concern:

Be it known that I, ANTHONY VAN WAGENEN, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Telephone Call-Boxes, of which the following is a specification.

My invention relates to telephone call-boxes or calling-transmitters such as are used in automatic telephone systems for operating automatic central-station switches; and my invention consists in novel automatic releasing mechanism for permitting the contact mechanism of the call-box to return to normal upon the completion of a call, and so to restore the corresponding central-station switch to normal.

The objects of my invention are to insure the return to normal condition upon the completion of a conversation of the contact mechanism of the call-box and the central-station switch controlled thereby, to avoid the necessity of manually operating the call-box to return its contact mechanism to normal upon the completion of a conversation, and to make the mechanism by which the above objects are accomplished simple, free from liability to derangement, compact, and inexpensive.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of my invention is illustrated, and will then point out the novel features in claims.

In the said drawings, Figure 1 shows a face view and partial vertical section of my improved call-box or calling-transmitter. Fig. 2 shows a side view of the mechanism of such transmitter, the case being sectioned and a portion of the bottom plate broken away. Fig. 3 is a detail view showing a portion of the contact-wheel and of the guard-wheel which operates in conjunction therewith. Fig. 4 is a detail view showing electric contacts operated by the receiver-hook. Fig. 5 is a detail view showing an alternative form of guard for preventing premature locking of the contact-wheel.

The mechanism of my improved call-box, except as to the improved automatic releasing mechanism, is in general similar to that shown in the patent granted to me on June 17, 1902, No. 702,751, and comprises a base-plate 1, adapted to be secured to any suitable support, a cylindrical case 2, and a frame comprising a top plate 3, a bottom plate 4, and suitable pillars 5, which frame is secured to the base-plate 1 and carries the contact mechanism. Said contact mechanism comprises a dial-wheel 6 and a contact-wheel 7, both revolubly mounted upon a central revoluble stud 8, and a revoluble dial 9, secured to said stud by means of a nut 10 and suitable clamping-disks 11. The dial and contact wheels are provided with peripheral teeth corresponding in number and spacing to the divisions of the dial. The dial-wheel 6, which is fast to the stud 8 and revolves with it, is functionally a part of the dial, being, in fact, merely a convenient means for locking the dial in the various positions in which it may be set. Contact-wheel 7 is mounted to revolve upon stud 8 and is connected to dial-wheel 6 by a spiral spring 12, which tends to cause the contact-wheel to follow rotation of the dial-wheel in a clockwise direction.

A double locking-pawl or escapement-pawl 13 is provided for locking the dial-wheel and contact-wheel at suitable times. It is mounted upon a stud 14, and its construction is such that it engages the teeth of the dial-wheel in one position and engages the teeth of the contact-wheel in the opposite position, but does not engage both wheels simultaneously. A spring 15 tends to hold said pawl in engagement with the dial-wheel. A button 16, carried by the case 2, when pressed in engages one end of the escapement-pawl and causes the same to engage the teeth of the contact-wheel and to release the dial-wheel.

The dial-wheel 6 is provided with a downwardly-depending stud 17, normally engaged by a corresponding stud 18, which in the form of instrument shown in Fig. 2 is carried by a guard-plate 19 in proximity to the contact-wheel and functionally a movable section of said wheel; but when the form of guard shown in Fig. 5 is employed said stud 18 is carried by the contact-wheel itself. A contact-brush 20 is provided for making contact successively with the teeth of the contact-wheel as the said wheel rotates. The usual regulating gear-train 21 is provided for regulating the speed of the contact-wheel.

The automatic release, which forms the subject-matter of the present invention, is operated by the ordinary receiver-hook 22, which forms a portion of the instrument, be-

ing mounted in a bearing-post 23 upon the base-plate 1 of the instrument. The axle 24 of the receiver-hook is provided with a latch 25, which when the receiver-hook rises presses the locking-pawl 13 into engagement with the contact-wheel 7 and holds it in engagement with such wheel until the telephone-receiver is replaced upon its hook.

The operation of the instrument is as follows: To establish connection with another subscriber of the system, the subscriber presses in the button 16 of his instrument, thus releasing the dial-wheel nd locking the contact-wheel, and then rotates the dial, by means of the nut 10, until the number of the subscriber to be called is opposite a suitable pointer carried by the case of the instrument. In so rotating the dial-wheel while the contact-wheel is held stationary the spring 12, connecting said wheels, is wound up. The subscriber then releases the button 16, whereupon the locking-pawl 13 engages the dial-wheel, locking the dial in the position to which it has been set and releasing the contact-wheel, whereupon the contact-wheel moves forward under the action of the spring 12 until its stud 18 encounters the corresponding stud of the dial-wheel. The contact-wheel is then held stationary. The subscriber then removes his telephone-receiver from the receiver-hook 22, which hook then rises under the tension of its spring and the latch 25 presses the locking-pawl 13 into engagement with the contact-wheel 7, thus holding it in the position which it has just reached and releasing the dial-wheel. The subscriber then rotates the dial back to the zero or normal position, in which position the dial will be held by the pawl 26 used to prevent backward rotation of the dial and conversation may begin. To insure the return of the dial to normal before attempt is made to begin conversation, the dial-wheel may carry a contact-point 27, which engages a contact-brush 28 only when the dial is in the normal or zero condition, these two contacts being included in a talking-circuit (not shown) of which wires 29 and 30 form parts. As the contact-wheel rotates, as above described, the contact-brush 20 makes contact successively with the teeth of said contact-wheel, thus producing an intermittent current in a switching-circuit, (not shown,) by which the central-station switch is operated and the desired connection established. Upon the completion of the conversation the subscriber return his receiver to its hook, and as soon as the said hook descends the contact-wheel is released and rotates under the action of the spring 12 until its stud 18 again encounters the stud 17 of the dial-wheel, the contact-wheel being then in normal position and the central-station switch having been restored to normal position.

It is desirable to provide means for preventing interruption of the rotation of the contact-wheel by the pawl 13 in case the subscriber after setting his dial to the number of the subscriber to be called should remove his receiver from its hook before the contact-wheel has caught up with the dial-wheel, thus permitting the receiver-hook to rise and press the pawl 13 toward the contact-wheel. For this purpose I may use guards such as shown in Figs. 2 and 3 and Fig. 5. The guard shown in Figs. 2 and 3 is a guard-plate 19, toothed like the contact-wheel and functionally a part of it and connected to the contact-wheel by a spring 29. This guard-plate carries the stud 18, which engages with the stud 17 of the dial-wheel. When these two studs are in contact, the teeth of the guard-plate are in registry with the teeth of the contact-wheel; but as soon as the dial-wheel is advanced in operating the instrument to make connection with another subscriber the guard-plate is drawn forward with respect to the contact-wheel by spring 29 through the space of half a tooth, which is the extreme limit of such travel allowed by a stop 30, working in a slot in the guard-plate. With the parts in this position if the pawl 13 is pressed against the contact-wheel by the latch 25 it cannot enter between the teeth of such wheel, being prevented by the teeth of the guard-plate, against which said pawl also presses. As soon as the pin 18 encounters the pin 17 the teeth of the guard-plate will be moved back into registry with the teeth of the contact-wheel, and pawl 13 can then engage and lock the contact-wheel.

In the alternative arrangement shown in Fig. 5 the dial-wheel 6 carries a guard-ring 31, adapted to fit over the upper portion of the contact-wheel, so preventing the pawl 13 from engaging said wheel. Normally said guard is held clear of the contact-wheel by wedges 32 and 33, one carried by the guard-ring, the other by the contact-wheel; but when the dial-wheel is advanced with respect to the contact-wheel these wedges no longer engage and the guard-plate descends so as to cover the upper portion of the contact-wheel and prevent the pawl 13 from engaging therewith. This guard, however, does not cover enough of the contact-wheel to interfere with the action of the contact-brush 20.

At least two sets of wedges placed diametrically opposite are preferably employed to produce a balanced action. To prevent interference with the relative rotation of the dial and contact wheels, the wedges of one set should have a smaller radius than those of the other set. In order that the guard 31 may move up and down with little or no friction, it is preferably supported by springs 34, which also tend to press it down.

It is obvious that the invention herein described is susceptible of many and varied modifications without departing from its

spirit and scope, and therefore I do not limit myself to the particular details of construction herein illustrated and described.

Use of the receiver-hook to operate means for holding and releasing the contact-wheel does not prevent use of that hook for operating the usual automatic switches. In Fig. 4 one arrangement of switch-points which may be employed is shown. The hook is provided with a forked extension 35, coacting with contact-brushes 36 and 37 in the usual manner.

What I claim is—

1. In a telephone call-box, the combination with an indicator, a contact member capable of motion with respect thereto, means for driving said contact member, locking means for said contact member, independent of said indicator, capable of locking said contact member in various positions corresponding to different positions of the indicator, and a latch for holding said locking means in engagement with said contact member, of means for releasing the contact member.

2. In a telephone call-box, the combination with an indicator, a contact member capable of motion with respect thereto, means for driving said contact member, locking means for said contact member, independent of said indicator, capable of locking said contact member in various positions corresponding to different positions of the indicator, and a latch for holding said locking means in engagement with said contact member, of a receiver-hook arranged, when operated, to release said contact member.

3. In a telephone call-box, the combination with a hand-operated member, a contact member capable of motion with respect thereto, a spring for driving said contact member connecting the same and said hand-operated member, locking means for said contact member capable of locking the same in various positions, and a latch for holding said locking means in engagement with said contact member, of means for releasing said contact member.

4. In a telephone call-box, the combination with a hand-operated member, a contact member capable of motion with respect thereto, a spring for driving said contact member connecting the same and said hand-operated member, locking means for said contact member capable of locking the same in various positions, and a latch for holding said locking means in engagement with said contact member, of a receiver-hook arranged, when operated, to release said contact member.

5. In a telephone call-box, the combination with an indicator, a contact-wheel, a spring connecting the same, and locking means arranged to lock the indicator or contact-wheel alternatively, in various positions, of a latch arranged to hold said locking means in engagement with said contact-wheel, and means for releasing said contact-wheel.

6. In a telephone call-box, the combination with an indicator, a contact-wheel, a spring connecting the same, and locking means arranged to lock the indicator or contact-wheel alternatively, in various positions, of a latch arranged to hold said locking means in engagement with said contact-wheel, and means automatically operated for releasing said contact-wheel.

7. In a telephone call-box, the comb nation with an indicator, a contact-wheel, a spring connecting the same, and a double locking-pawl, spring-actuated in one direction, arranged to lock the indicator or contact-wheel alternatively, in various positions, of a latch arranged to hold said locking means in engagement with said contact-wheel, a receiver-hook provided with means tending to raise it, and means operated by said hook when depressed for releasing said contact-wheel.

8. In a telephone call-box, the combination with an indicator, a contact-wheel, a spring connecting the same, and a double locking-pawl, spring-actuated in one direction, arranged to lock the dial or contact-wheel alternatively, in various positions, of a receiver-hook provided with means tending to raise it, and a latch operated by said hook, which, when the hook rises, holds the locking-pawl in engagement with the contact-wheel.

9. In a telephone call-box, the combination with contact mechanism comprising a contact member adapted for continuous rotation in one direction, without return motion and means for driving the same, and means for arresting said contact member in various different positions, of a locking device independent of said arresting means adapted to lock said contact member when arrested in any of such positions, and means for releasing said contact member therefrom.

10. In a telephone call-box, the combination with contact mechanism comprising a toothed contact member adapted for continuous rotation in one direction, without return motion and means for driving the same, and means for arresting said contact member in various positions, of a locking-pawl adapted to engage and hold said contact member when so arrested, and means for releasing said contact member therefrom.

11. In a telephone call-box, the combination with mechanism comprising a movable member adapted for continuous rotation in one direction, without return motion, means for arresting the same in various positions, and locking means, independent of said arresting means, adapted to lock said member when arrested in any of such positions, of means preventing engagement of said locking means with said movable member during motion of the latter.

12. In a telephone call-box, the combination with mechanism comprising a movable member adapted for continuous rotation in one direction, without return motion, means for arresting said member in various positions, a receiver-hook provided with means tending to raise it, and locking means independent of such arresting means, and operated by said hook, arranged when said hook rises to lock said member in the position in which it may then be held stationary, of means for preventing engagement of said locking means with said movable member during motion of the latter.

13. In a telephone call-box, the combination with contact mechanism comprising a toothed member, a receiver-hook provided with means tending to raise it, and means operated by said hook for holding said toothed member in different positions, of means for preventing engagement of said holding means with said toothed member during motion of the latter.

14. In a telephone call-box, the combination with contact mechanism comprising a toothed member, a locking-pawl therefor, a receiver-hook provided with means tending to raise it, and means operated by said hook tending to press said pawl into engagement with said toothed member as said hook rises, of a guard for preventing engagement of said pawl with said toothed member during motion of the latter.

15. In a telephone call-box, the combination with a dial, a contact-wheel, a spring connecting the same, said dial and contact wheel having engaging projections, and a locking-pawl for said contact-wheel, of a receiver-hook provided with means tending to raise it, means operated by said hook tending to press said pawl into engagement with said contact-wheel as the hook rises, and a guard for preventing engagement of said pawl with said contact-wheel during motion of the latter.

16. In a telephone call-box, the combination with a dial, a toothed contact-wheel, a spring connecting the same, said dial and contact-wheel having engaging projections, and a locking-pawl for said contact-wheel, said contact-wheel having a correspondingly-toothed guard-plate, carrying the projection which engages with the projection of the dial, and provided with means for holding the teeth of the guard-plate out of registry with the teeth of the contact-wheel when said projections are not in engagement, of a receiver-hook provided with means tending to raise it, and means operated by said hook tending to press said pawl into engagement with the contact-wheel, said pawl adapted to engage both the contact-wheel and its guard-plate.

17. In a telephone call-box, the combination with a movable indicator adapted for continuous rotation in one direction, without return motion, contact mechanism, a spring connecting the indicator and contact mechanism, means for locking the contact mechanism after a connection-signal has been transmitted, and means for automatically releasing said contact mechanism, of contacts adapted to be included in a circuit of the telephone system, operated by the indicator and which are joined only when the indicator is in normal position.

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

ANTHONY VAN WAGENEN.

Witnesses:

J. M. LYNCH,

C. E. GANTT.