

May 28, 1940.

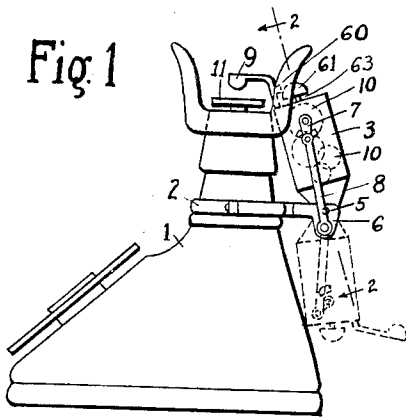
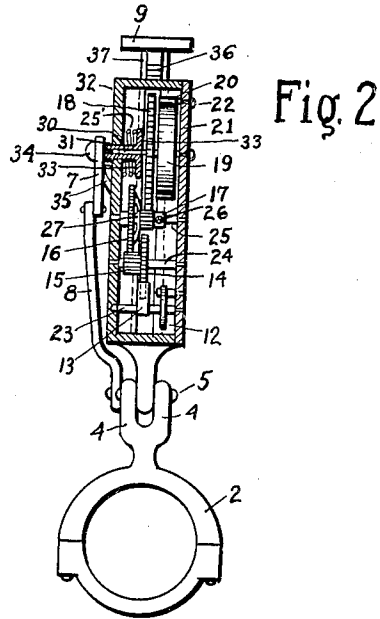
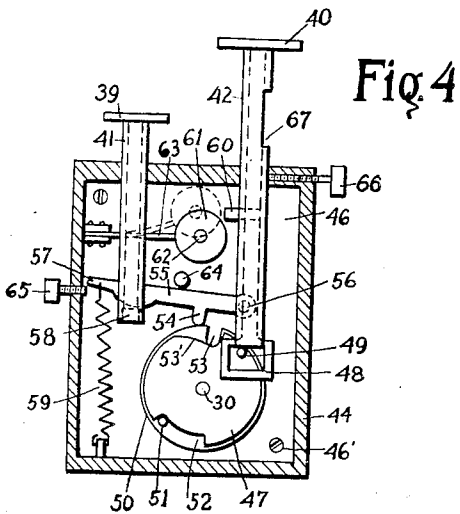
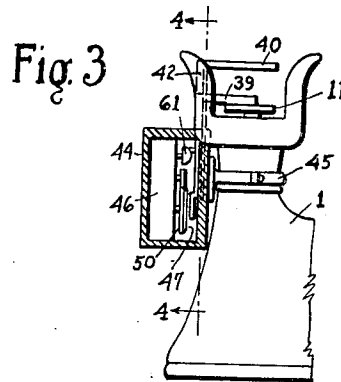
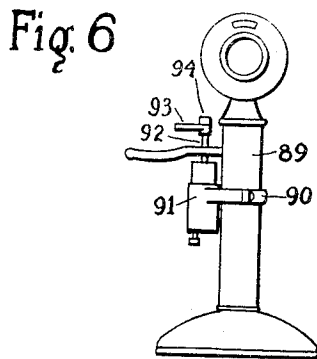
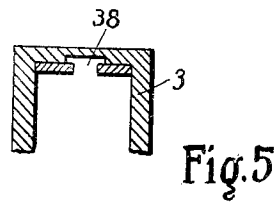
B. N. GOTTLIEB

2,202,149

TIMING DEVICE FOR TELEPHONES

Filed Aug. 30, 1937

2 Sheets-Sheet 1



BERNARD N. GOTTLIEB, INVENTOR.

BY

Jacob D. Leint

ATTORNEY.

May 28, 1940.

B. N. GOTTLIEB

2,202,149

TIMING DEVICE FOR TELEPHONES

Filed Aug. 30, 1937

2 Sheets-Sheet 2

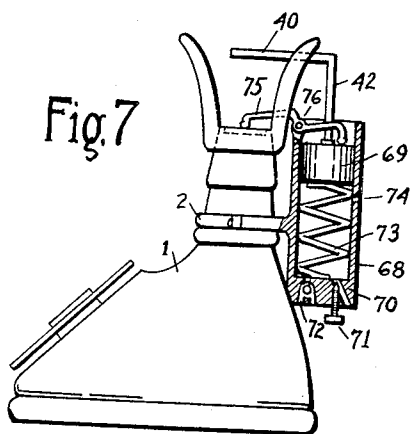


Fig. 7

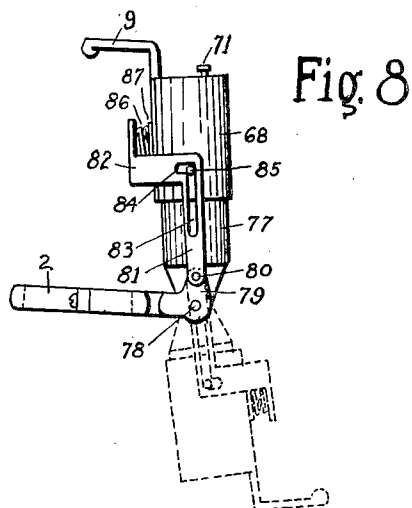


Fig. 8

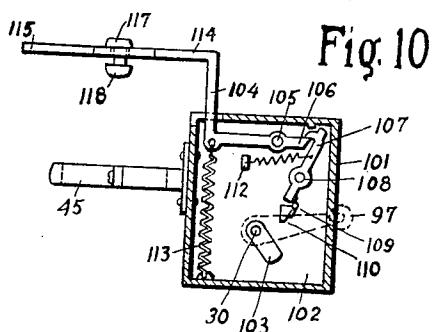


Fig. 10

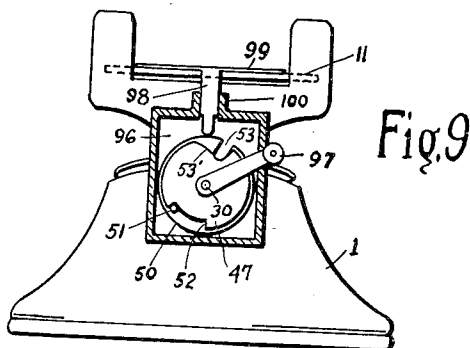


Fig. 9

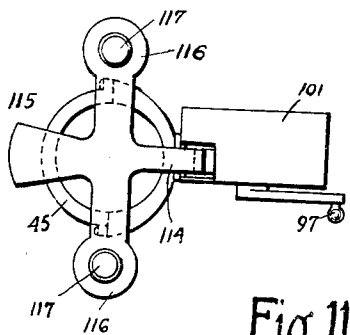


Fig. 11

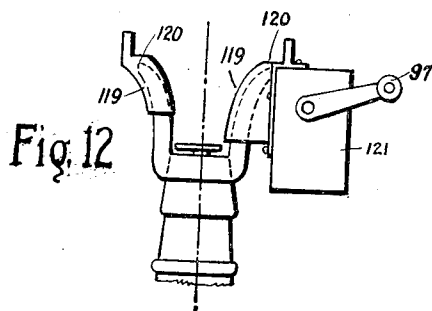


Fig. 12

BERNARD N. GOTTLIEB, INVENTOR.

BY

Jacob D. Levitt.

ATTORNEY.

UNITED STATES PATENT OFFICE

2,202,149

TIMING DEVICE FOR TELEPHONES

Bernard N. Gottlieb, Brooklyn, N. Y.

Application August 30, 1937, Serial No. 161,594

14 Claims. (Cl. 179—158)

This invention relates to new and useful improvements in the application of timing devices to telephone systems, and especially to a group of two or more telephones in an extension system.

With the growing use and popularity of telephones there is also developing the use of more than one telephone on one line. A subscriber will subscribe to one line or telephone listing, within his office or home he will have two or more telephone instruments connected to this line, and incoming and outgoing calls may be received and made from any one of them. Only one call can be made or received at any one time; that is, when one of the subscriber's telephone sets is being used, the remaining telephones can only be used for listening in. No further calls can be received or made until the conversation has been concluded and all the receivers have been replaced on their hooks.

The difficulty and trouble which my invention eliminates will be explained in connection with the combined office and residence of a medical doctor. His experience is typical for residences and small offices in general:

In addition to the telephone on his office desk, the doctor will have a telephone extension in his living and bedroom. He may even have one in his bathroom and garage. Suppose he receives a call while he is in the bedroom. He is asked a question which he cannot fully answer until he has consulted some records and other references in his office. He cannot replace the receiver on its hook, for that will disconnect the party at the other end of the line. He must lay the receiver down alongside the telephone in the bedroom, go down to his office, look up the records, and then continue the conversation by using the office telephone. When he is thru with the call he replaces the receiver on its hook, but, his line cannot receive or make further calls until the receiver in the bedroom has been returned to its proper place. Therefor he must make a trip back to the bedroom for that.

If the call should happen to be an emergency one, and after he has consulted his references he forgets, or decides to ignore the fact that his bedroom receiver is off the hook, and goes out, his telephone will give the busy signal to all incoming calls to the detriment perhaps of additional professional business.

It is within the experience of many owners of extension telephone systems to have wondered why certain expected calls have not come in, or after trying to make an outgoing call to no avail conclude that their line was out of order,

only to learn subsequently that the receiver of one of their extension telephones was not in its proper place.

In urban centers where the private home will usually consist of two floors and a basement, and where the kitchen or the office may be in the basement and the bedrooms are on the second floor, it is a hardship to walk down from the second floor to the basement to conclude a telephone conversation and then to climb back up again to replace the first receiver. To sick people and older ones with weak hearts, such a procedure is a distinct detriment to health.

It is an object of this invention to provide means whereby after a predetermined interval of time a telephone, with its receiver off the hook, will be automatically reconnected into its enunciator circuit.

Returning to the doctor's office again: It very often happens that the nurse answers a call intended for the doctor, and the doctor being busy, she asks the caller to wait. She lays the receiver down alongside the telephone instrument, and then she or the doctor or both forget about it completely to the great annoyance, to say the least, of the person making the call.

It is another object of this invention to provide means whereby, after the passage of a predetermined interval of time in which a telephone is placed in the conversation circuit, a signal will be given.

It is a further object of this invention to provide means which will automatically first give a signal and then return the telephone to its enunciator circuit when the receiver has been removed from the instrument for a given length of time.

The outstanding features of this invention reside in the novel adaptations of timing devices, which are old per se, to the objects in view. These features are in and of themselves improvements in the timing-device art.

Other objects and features will become apparent from the following description and the accompanying drawings in which similar reference numerals indicate similar parts, and in which:

Fig. 1 is a representation of a preferred form of my invention attached to a desk telephone.

Fig. 2 is a section taken along line 2—2 of Fig. 1 showing the clockwork mechanism.

Fig. 3 shows a telephone with my self-winding timer attached.

Fig. 4 is a section taken along line 4—4 of Fig. 3 showing the operating mechanism.

Fig. 5 is a section of the wall in Fig. 2 illustrating how the operating arm is slidably supported.

Fig. 6 shows a simple adaptation of a timing device to a telephone for the object in view.

Fig. 7 shows a pneumatic counterpart of the device shown in Fig. 4.

- 5 Fig. 8 shows a pneumatic counterpart of the device shown in Fig. 1.

Fig. 9 is another adaptation of a timing device for the purposes in view.

- 10 Fig. 10 is a variation of the device shown in Fig. 9.

Fig. 11 is a view looking downwardly on Fig. 10.

Fig. 12 is still another variation in the application of a timing device to return a telephone into its ringing circuit.

- 15 Referring to Fig. 1: 1 is a telephone to which, by means of clamp 2, is attached the timing-device casing 3. The casing end of the clamp 2 is bifurcated and between these two bifurcations 4, 4, (see Fig. 2) the casing 3 is pivotally supported by means of pin 5. One of the bifurcations 20 4 has a rigid arm 6 extending downwardly, and pivotally linking this arm with a crank 7 protruding from the side of the casing 3 is the connecting lever 8. Protruding from the free end of the casing 3 is the actuating L shaped arm 9. In the figure the full lines show casing 3 in its operative position and the dashed lines show it in its extreme inoperative position. In the former portion of the drawing the circles 10 represent the gear-train of a clockwork mechanism which is housed within the casing 3.

- In swinging the casing from extreme inoperative position to operative position crank 7, by reason of linkage 8, rotates substantially in a semi-circle with respect to the casing, thereby winding the clockwork and moving the actuating arm 9 outwardly. In its upper position the clockwork begins to unwind and thus retract arm 9. Eventually the latter contacts the telephone plunger 11 and draws it down to close the telephone enunciator circuit. The effect is as if the telephone receiver had been replaced on its support.

- In practice this device would be attached to one or more of the telephones in an extension system. Upon receiving a call on one of these instruments and desiring to continue on another, it is necessary only to flip casing 3 into the operating position. The clockwork mechanism, thru 50 the medium of arm 9, will depress the telephone switch 11 after a predetermined interval of time sufficient to allow one to get to another instrument in the system. The receiver of the first telephone may be replaced into its proper place at 55 leisure subsequently.

- Fig. 2 is a section along line 2—2 of casing 3 in Fig. 1 and illustrates a preferred type of clockwork mechanism required. The casing 3 has been extended in a horizontal position with respect to its mounting so that the shape of clamp 2 may be clearly shown. In the figure, 12 is a hair spring, 13 is the scape, 14 is the escapement wheel, 15, 16, and 17 are intermediate gears and pinions, and 18 is the main gear to which one end of the coil spring 19 is attached. The other end 20 of spring 19 is fixed to the cover plate 21 of casing 3 by means of pin 22. The axles or shafts 23 of the hair spring 12, shaft 24 of gear 14 and pinion 15, and shaft 25 of gear 16 and pinion 17 are all rotatively supported by the sides of the casing 3. Shaft 24, gear 14 and pinion 15 are keyed together. Pinion 17 is keyed to shaft 25 by set screw 26. Between pinion 17 and gear 16 is the circular spring washer 27 which forces gear 16 75 (which in the absence of the said washer is free-

ly rotatable about shaft 25) against shoulder 28 of shaft 25. The combination of pinion 17, gear 16 and washer 27 is in effect a slip clutch.

The main shaft or main stem to which gear 18 is rigidly fixed has one end rotatively supported 5 by the side 21 of the casing 3, the other end 30 is rotatively housed in bushing 31 which is itself rotatively supported by the side 32 of the casing 3.

Bushing 31, on the inside of casing 3, terminates in the clutch disc 33. To the outer end of 10 bushing 31, fixed against rotation by screw 34, is fastened crank arm 7. Between the side 32 of the casing and disc 33 is positioned spring 25. Just below bushing 31 in the plane of crank 7 on the outside of side 32 is the boss with the inclined surface 35.

For practically the entire rotation of casing 3 from inoperative to operative position clutch plate 33 is grasping gear 18, and thus the gear and the spring 19 are wound or unwound by movements of crank 7; crank 7 must necessarily rotate by reason of its linkage to arm 6 by rod 8. When the casing about reaches its operative position, crank 7 strikes and rises up on boss 35 and thereby withdrawing the clutch 33 from contact with 25 gear 18. Subsequently gear 18 begins to unwind against the resistance of the gear-train and escapement.

Gear 18 is in mesh also with rack 36 which is integral with arm 9 and thus arm 9 moves correspondingly with gear 18. It moves outwardly when the spring 19 is being wound, and is retracted when the latter unwinds. The stem 37 of arm 9 to which rack 36 is attached is guided by a T shaped slot 38 in a side of the casing 3 adjacent gear 18. (See Fig. 5.)

In Figs. 3 and 4 is shown a modification of this timing device, as applied to telephones in an extension system, in which the mechanism is automatically wound and is always in operative position, and in which a manually operated latch must be employed to make it inoperative.

In Figs. 3 and 4: 39 is the actuating arm corresponding to arm 9 of Figs. 1 and 2, and 40 is the winding arm. The stem 41 of arm 39 and stem 45 42 of arm 40 are slidably positioned in slots similar to those shown in Fig. 5 in the cover 43 of the casing 44 of the device. Integral with the cover 43 is clamp 45 which is similar in construction to clamp 2 (with the swivel connection omitted) and by means of which the device is fastened to the telephone 1. 46 is the housing for a clockwork mechanism similar to that shown in Fig. 2, except that bushing 31 and its accessories are omitted, and end 30 of the main or winding stem protrudes through the said housing so that disc 47 55 may be rigidly fastened to it. Housing 46 is fastened to the casing 44 by screws 46'. Stem 42 of the winding arm at its lower end widens out and contains the horizontal slot 48. The vertical width of said slot is equal to the travel of switch lever 11 of telephone 1. Protruding into slot 48 from disc 47 is stud 49. The portion of disc 47 between stud 49 and shaft 30 is in effect a lever arm which upon being rotated by depressing arm 65 40 winds the clockwork within housing 46. As the clockwork unwinds disc 47 turns with it and lifts arm 40 back to its original position.

Between housing 46 and disc 47, freely rotatable about stem 30, is disc 50. Stud 51 protruding 70 into the plane of disc 47 within the peripheral notch 52 thereof limits the rotation of the two discs, with respect to each other, to the length of the said slot. Disc 50 is slightly larger in diameter than disc 47, and both have coinciding de-

pressions 53 and 53' to receive the detent 54 of the follower 55. Follower 55 is pivoted at 56 and its free end 57 extends over and beyond a protruding lug 58 on stem 41. The detent 54 is kept in contact with disc 50 by spring 59 exerting tension on the free end 57. Spring 59 is anchored by usual means to housing 46.

The device works in the following manner: As shown in Figs. 3 and 4, the receiver of the telephone is off its hook, the clockwork is unwinding, and discs 47 and 50 are rotating counter-clockwise. In another instant depressions 53 and 53' will coincide with detent 54 which will drop thereinto and simultaneously end 57 of the follower will strike lug 58 and force it down. This will bring arm 39 against switch lever 11 and thus the telephone will be returned to its enunciator circuit.

When subsequently the receiver is put into its proper place its weight alone will depress arm 43 and thus rewind the clockwork mechanism. As the mechanism is rewound disc 47 rotates clockwise. Disc 50 remains stationary until lug 51 strikes a side of peripheral slot 52, and then the two discs rotate together. While disc 47 has been rotating the angular distance equal to the length of slot 52 the side of the depression 53', which acts as a cam, has lifted detent 54 out of depression 53 and thereafter, for the remainder of the winding operation the detent rides disc 50.

Arms 39 and 40 are made of a light material such as aluminum so that when the receiver is lifted off of switch 11 of the telephone 9, the spring which actuates switch 11 is strong enough to lift arms 39 and 40 also, so that the operation of the telephone itself is not interfered with. In other words, there is free play in the stems 41 and 42 of both arms equal to the displacement of switch 11. The moment the receiver is removed the clockwork mechanism begins to unwind and arm 40 to move upward. Disc 50, by reason of the friction between it and detent 54 does not start rotating until its stud 51 strikes the other end of peripheral slot 52. Thus the cycle starts repeating itself. The clockwork herein described is intended to operate arm 39 after the elapse of a fixed period of time. It is well within the mechanical skill of one skilled in the art to design a clockwork in which the interval of time may be varied at will.

It may be desirable to have the device give a signal before the telephone switch arm 11 is depressed. For this reason I have supplied stem 42 of the winding arm with an extending lug 50 so positioned that after the stem has travelled two-thirds of its way upward it strikes bell 61. Bell 61 is attached by pin 62 to the cantilever spring 63. As the lug 60 continues to move upward, bell 61 is also displaced upward and to the left (shown by the dotted lines), eventually the said bell slips past lug 60 and the momentum gained in swinging back to position brings the said bell sharply against lug 64. The impact rings the bell.

It is essential that the device be rendered inoperative at the will of the person using the telephone. To control arm 39 I supply screw 65 in the wall of casing 46. When this screw is turned all the way in, it lies in the path of end 57 of the follower 55 and prevents the spring 59 from forcing detent 54 into depression 53 and thus arm 39 cannot be drawn down. Screw 66 can control winding arm 40 by having its end moved into the plane of notch 67 in the stem 42. The notch length is substantially equal to the

total displacement of plunger 11 of telephone 1, and it is so positioned on the stem that when the screw 66 engages it it limits the movement of the stem to the movements of the plunger 11. It can be seen that when screw 65 is in operative position the device will only give a signal. When screw 66 is in operative position the entire device is inoperative.

This scheme for giving signals can be incorporated in the device shown in Fig. 1. Referring to Fig. 1, 61 is the bell supported by the cantilever spring 63 protruding from casing 3, and 60 is the operating lug on the back of stem 37. The bell is sounded on its swing back after displacement by lug 60 by impinging on casing 3.

In Fig. 7 I show in section a pneumatic counterpart of the mechanism shown in Figures 3 and 4. Clamp 2 fastens the cylinder 68 to the telephone instrument 1. The winding arm 40 and its stem 42 are anchored, by well known means, to the piston 69. Intermediate the piston and the base 70 of the cylinder 68 is the spring 73. In the base 70 is the needle valve 71 and the ball valve 72. The latter is so designed that air may be expelled from the cylinder by downward motion of the piston with ease, but seals itself on the upward travel of the piston. When the telephone receiver is replaced to its position on the telephone its weight depresses arm 40 and therefore piston 69. When the receiver is removed, the piston moves up rapidly for the instant in which the ball valve seals itself. This instant is sufficient to permit arm 40 to travel the full length of the displacement of switch 11. Thereafter the piston moves up slowly under the influence of spring 73. The speed is regulated by the setting of the needle valve 71. When the piston 69 has passed relief hole 74 the suction is relieved and the piston finishes its travel rapidly and in doing so it actuates lever 75 to depress switch 11. Lever 75 is pinned to the wall of cylinder 68 by pin 76 and is so balanced that in the absence of pressure from the piston it exerts no load on switch 11.

In Fig. 8 I show the pneumatic counterpart of the mechanism shown in Fig. 1. 2 is the clamp by which it is attached to the telephone 1, 9 is the actuating arm, which in this case is an integral part of the cylinder 68. The needle valve is shown at 71 and the ball valve which is adjacent thereto is not visible. The piston 77 is hollow and the spring which tends to keep piston and cylinder together is positioned therein. The free end of piston 77 is pivoted to clamp 2, between bifurcations similar to those shown in Fig. 2, by pin 78. Integral with both these bifurcations and extending upwardly are arms 79. Rotatively pinned to these arms 79 by pins 80 are slotted bars 81. These bars extending upwardly, one on each side of the piston, are rigidly connected together by the saddle bar 82; actually all three being stamped out of one piece of metal. The slots 83 in bars 82 terminate in short slots 84 at right angles to themselves at their lower ends. Lugs 85 extend from cylinder 68 into the plane of said slots. Between saddle 32 and the cylinder 78 is positioned the spring 86. The effect of this spring is to keep lugs 85 in line with slots 83. Spring 86 rests in a shallow cup 87 which is adapted to slide along the outside of piston 68.

The mechanism is shown in its operative position and in dashed lines in inoperative position. To swing it into operative position and automatically wind it at the same time it is neces-

sary to grasp it so that saddle 84 is depressed against cylinder 68. This brings lugs 85 into slots 84 and upon rotating the combination upward the bars 81 act as eccentric connections and force piston 77 and cylinder 68 apart. When the mechanism is in its operative position, (shown by full lines) and saddle 82 has been released, the spring within the piston tends to draw the piston and cylinder together; since lugs 85 have returned to the path of slots 83 they offer no resistance to the contraction of the mechanism. With continued movement arm 9 will eventually depress switch 11 (not shown). It should be noted that the ball valve in this case seals the cylinder on the exhaust stroke and not on the intake as in the case of Fig. 7.

In Fig. 6 is shown the simplest adaptation of a timing device to the objects I have in view. To the telephone 39, by means of clamp 90, is attached the timing mechanism housing 91. This housing may contain a pneumatic type or clockwork type of timing mechanism. To the piston of the pneumatic type (as indicated in Fig. 6) or to the main gear by means of a rack (as indicated in Fig. 2) is attached the stem 92. Pivoted to the upper end of this stem is the actuating arm 93 which may be rotated into and out of the plane of the hook by means of a thumbscrew 94 integral therewith. To set the timing device operating it is necessary merely to pull upward on stem 92 and then rotate arm 93 into position over telephone hook 95. Displacing the stem 92 upwardly winds the mechanism. The mechanism in unwinding retracts the stem downwardly, eventually to depress the hook 95.

In the remaining figures, 9 to 12 inclusive, illustrate another variation of accomplishing the objects of this invention, and in which the telephone receiver is replaced substantially into its proper place whether it is desired to continue the conversation from another instrument or not. This is in contra-distinction to the devices previously described in which the receiver must not be replaced when the conversation is to be continued from another point.

In Fig. 9, which is the preferred form of its group, 11 is the plunger of the telephone 1 to which the housing 96 of the timing device is attached by means (not visible) similar to clamp 2 previously described. The clockwork means is not shown, but it too is similar to the one shown in Fig. 2 with the clutches and rack omitted. In the figure the cover and the clockwork have been removed so that the pertinent parts may be shown more clearly. 30 is the winding stem to which, as in Fig. 4, cam-disc 47 is fixed and on which disc 50 is rotatably supported. The relative motion of the two discs with respect to each other is again limited by stud 50 protruding from disc 50 into the peripheral notch 52 of disc 47. The handle 97, which normally would be on the outside of the portion of the housing 96 which has been removed, is replaced (in the figure) on stem 30 and illustrates how the mechanism is wound and set.

The follower 98 which rides disc 50 terminates, at its upper end, in the arm 99 which rests on plunger 11. Arm 99 is substantially the same width and length as plunger 11. Follower 98 is slidably supported in the neck 100 of the housing 96. The length of follower 98 is equal to the distance from the periphery of disc 50 to the top of plunger 11 in its upper position. Discs 47 and 50 are supplied with depressions 53' and 53 (similar to those shown in Fig. 4) to receive the

follower 98 and their depth is equal to the maximum displacement of the plunger 11.

When it is in its inoperative position depression 53 lies in the path of follower 98 and the follower together with its arm 99 (being of light material) travel with the plunger. To set the device it is necessary to wind the clockwork by turning handle 97. This, thru the medium of cam depression 53' in disc 47, raises and maintains arm 99 in its uppermost position. The receiver is then placed into position and is supported away from plunger 11 by arm 99. As the timing device unwinds, eventually follower 98 and depression 53 coincide and the follower drops into position and simultaneously brings the weight of the receiver to bear on plunger 11 to switch the telephone back into its ringing or enunciator circuit.

Figs. 10 and 11 are improvements on Fig. 9 in that temporary support for the telephone receiver must be manually set into its operative position. Fig. 11 is a view looking down on Fig. 10. In Fig. 10 the cover has been removed from the timing mechanism housing 101. 97 is the winding arm attached to the main or winding stem 30 of the clockwork which is enclosed in housing 101 behind face 102. Rigidly attached to stem 30 is the striking arm 103 positioned in front of face 102. The housing is attached to the telephone by means of clamp 45. The actuating lever 104 is Z shaped, is pivoted to face 102 at 105 and its end may be caught and held against upward displacement by the hooked pawl 107. The pawl itself is pivoted to face 102 at 108 and from its lower end, from hinge 109, is suspended a continuation thereof in the form of short bar 110. This bar 110 may be displaced counter-clockwise by arm 103 without any effect on pawl 107. But when arm 103 rotates counter-clockwise it trips pawl 107 in striking bar 110. Spring 111 anchored to face 102 at 112 tends to keep the pawl in proximity to end 106.

Spring 113 anchored to the housing 101 tends to pull the actuating arm 104 down against the action of the pawl, and does so when the pawl is tripped. This spring is not essential since the weight of arm 104 plus the weight of the receiver is enough for the purpose.

The upper horizontal arm 114 of actuating arm 104 terminates in tab 115 which extends somewhat beyond the support for the telephone receiver of the telephone (not shown). Directly over the plunger, and for substantially the full length thereof, there extends from arm 114 the wings 116. Slidably positioned in said wings near the ends thereof are buttons 117. These buttons are displaceable vertically a distance at least equal to the displacement of the telephone plunger.

When the device is properly attached to the telephone and arm 114 is held by pawl 107 wings 116 are positioned over the plunger a distance equal to the heads 118 of buttons 117. The buttons therefor are held in position by the wings but are actually supported by the telephone plunger. In this position the receiver of the telephone may be used in the normal way; when it is replaced into its nest on the telephone, its weight is transmitted by the buttons 117 to depress the switch or plunger of the telephone. If the telephone is part of an extension system and it is desired to continue a conversation from another point it is necessary to wind the clockwork of revolving handle 97 clockwise. As the clockwork unwinds arm 103 which eventually trips

pawl 107 and the combined strength of spring 113 and the weight of the receiver will bring arm 114 to bear on the plunger to depress it.

In Fig. 12 is shown an ingenious method of accomplishing my purpose. In this case over diagonally opposite prongs of a desk type of telephone I slip sleeves 119 which may be of rubber or other composition. The sleeves terminate at their upper end in short flat horizontal surfaces 120. Attached by well known means to one of these sleeves is the gear train box 121 from which winding stem 30 protrudes to carry winding arm 97. The arm 97 is long enough to reach beyond the table 120. When it is desired to use the mechanism it must be wound by (in this case) turning the arm 97 clockwise and then placing the receiver diagonally over its normal resting place so that it is supported at each end by tables 120. As the mechanism unwinds arm 97 turns counter-clockwise to strike or jar the receiver from the adjacent table support. The end of the receiver which as struck is displaced and drops to its normal position thereby bringing the other end with it and thus in its normal position the receiver is depressed.

Although I have described the mechanisms as accessories to a telephone it is conceivable that some of them could very easily be incorporated as an integral part of the instrument without any difficulty or great inconvenience. Once the desirability of automatically returning the switch of a telephone to the position closing the enunciator circuit after the lapse of a predetermined interval time is appreciated, it is not beyond the average ability of one skilled in the timing-device art to devise means for accomplishing the purpose. From the foregoing description it will be seen that I have provided simple, inexpensive and efficient means for carrying out the objects of my invention. Furthermore, while I have particularly described the elements best adapted to perform the functions set forth principally in connection with the "French" type of telephone set, it is obvious that they could be made operable, with slight modifications, with any type of telephone instrument, and various changes in form, proportion, and in minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

What I claim is:

1. In combination with a telephone a timing device, lever means actuated by said timing device to depress the switch of the said telephone after the lapse of an interval of time when the telephone receiver is not in its normal resting place, said lever means being adjustable between operative and inoperative position, and means in association with said lever and timing device to wind the latter as the former is adjusted from inoperative position to operative position.

2. In combination with a telephone a timing device, means controlled by said timing device to operate the switch of said telephone when the telephone receiver is not in its normal resting place, and means to wind said timing device; said last mentioned means comprising lever means in the path of the telephone receiver when it is replaced onto the supports provided therefor, the lever means being displaceable by the weight of the telephone receiver, and winding means for the timing device linked to said lever means so that the said device is wound as the said lever means is being displaced.

3. In combination with a telephone a timing

device, means controlled by said timing device to operate the switch of said telephone after the lapse of an interval of time when the telephone receiver is not in its proper resting place, means to support the timing device in association with said telephone, means whereby the telephone switch operating means is pivoted to said support and is adjustable between operative and inoperative position, and means in association with said support and the winding mechanism of the said timing device to wind the latter when the said switch operating means is brought from inoperative position to operative position.

4. In combination with a telephone a timing device, means controlled by said timing device to operate the switch of said telephone when the telephone receiver is not in its normal resting place, means to rotatably support the timing device in association with said telephone, and eccentric means linked to the winding means of the timing device; the said eccentric means serving to wind the timing device by displacing its winding means as the said device is set from inoperative position to operative position.

5. In combination, a telephone, a support for the telephone receiver in proximity to its normal support on said telephone, and automatic means to transfer the weight of said receiver from the first mentioned support to the latter to depress the switch operating means of said telephone; said automatic means comprising lever means actuated by a timing device.

6. In combination a telephone, a displaceable support for the telephone receiver in proximity above its normal support on said telephone, the positions of the two supports being so inter-related that the said receiver when in place is carried by one of them, means for locking the first mentioned support against the displacement by the weight of the said receiver, and means for unlocking said locking means so that the weight of the receiver will fall on its normal support and actuate the switch lever of the telephone.

7. In combination a telephone, means to support the telephone receiver in proximity above its normally inoperative position on the telephone and above the telephone switch lever, and means to relieve said supporting means of the weight of said receiver by causing it to fall substantially into its normally inoperative position; said relieving means comprising a trip actuated by a timing device.

8. In combination a telephone, a displaceable support for the telephone receiver in proximity above its normal support on said telephone, the positions of the two supports being so inter-related that the said receiver when in place is carried by one of them, means for locking the first mentioned support against displacement by the weight of the said receiver, and automatic means for unlocking said locking means.

9. In combination with a telephone means to support the telephone receiver above its normal resting position on said telephone, a timing device, means for rendering said timing device operative, and means set in motion by said timing device to automatically transfer the said telephone receiver, after a lapse of an interval of time, from the first mentioned supporting means to its normal position so that the switch lever of said telephone is displaced.

10. In combination with a telephone, means to support the telephone receiver above its normal resting position on said telephone and in proximity to the telephone switch lever, and auto-

matic means independent of the weight of the telephone receiver to cause the said receiver to fall into the said normal resting position after the lapse of an interval of time.

- 5 11. In combination with a telephone, supporting means for the telephone receiver in proximity above its normal support on said telephone, and means to suddenly transfer the weight of the receiver from the first mentioned supporting means to the said normal support whereupon the weight of the receiver actuates the switch of said telephone.
- 10 12. In combination with a telephone a timing device, means actuated by said timing device to displace the switch of said telephone after the lapse of an interval of time after the telephone receiver is not in its normal resting place, said means being adjustable between operative and inoperative position, and means in association with said first mentioned means and the timing device to wind the latter as said first mentioned means is adjusted from inoperative to operative position.

13. In combination with a telephone, the receiver of which has been removed from its normal resting place, in a telephone system comprising a plurality of telephone instruments on one outside line, a timing device, and means set in motion by said timing device to return said telephone from the talking circuit to the ringing circuit after the lapse of an interval of time, said interval of time being sufficient to permit going to and picking up the receiver of another telephone instrument on the same outside line.

14. In combination with a telephone, the receiver of which has been removed from its normal resting place, in a telephone system comprising a plurality of telephone instruments on one outside line, a timing device, and lever means set in motion by said timing device to depress the plunger of said telephone after the lapse of an interval of time, said interval of time being sufficient to permit going to and picking up the receiver of another telephone instrument on the same outside line.

BERNARD N. GOTTLIEB.