Nov. 3, 1925. 1,560,226

S. FISHER

AUTOMATIC RESPONDING AND RECORDING DEVICE FOR TELEPHONES

Filed Sept. 1, 1921 3 Sheets-Sheet 1

Fig. 1.

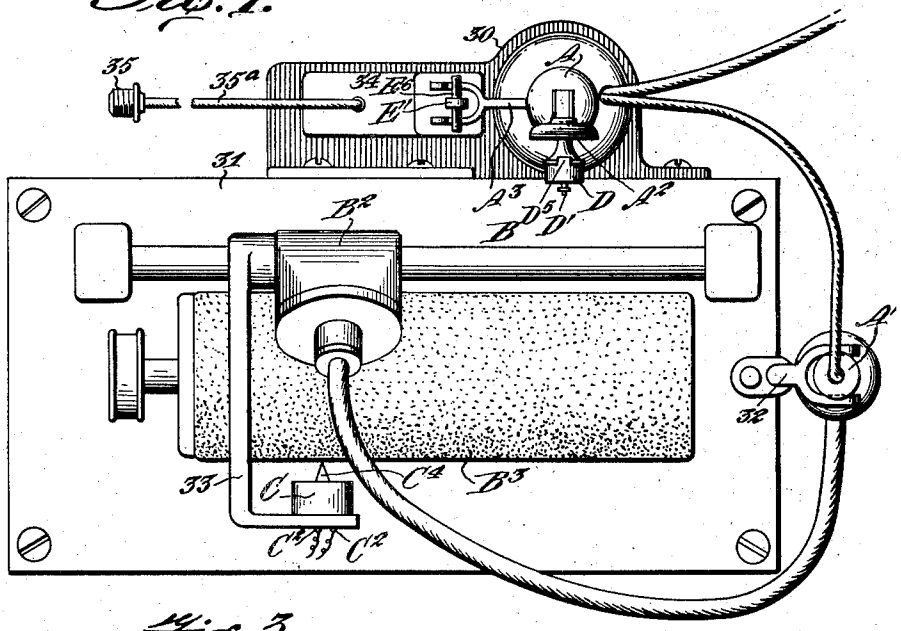


Fig. 3.

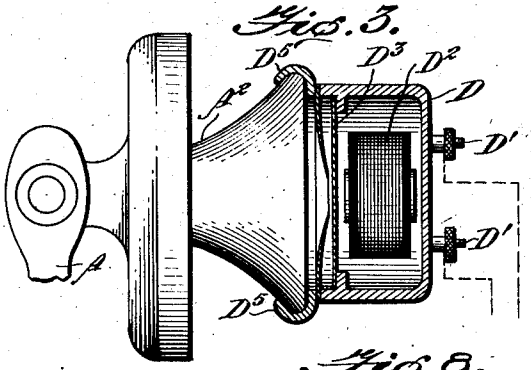


Fig. 4.

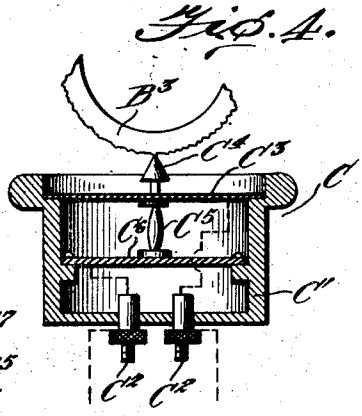


Fig. 8.

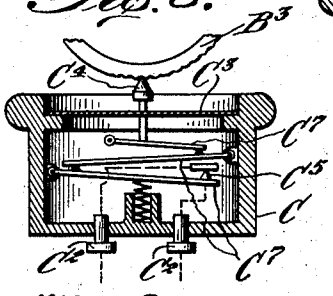
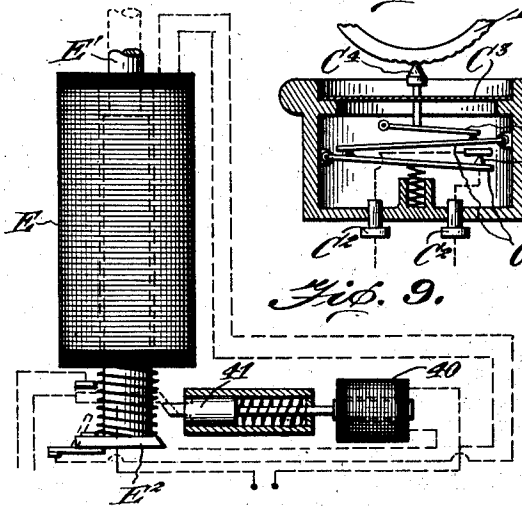


Fig. 9.



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Nov. 3, 1925. 1,560,226

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AUTOMATIC RESPONDING AND RECORDING DEVICE FOR TELEPHONES

Filed Sept. 1, 1921 3 Sheets-Sheet 2

Fig. 5.

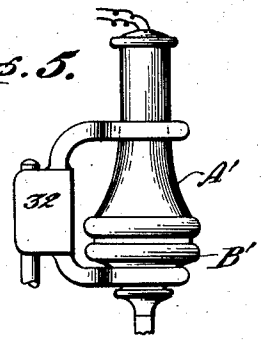
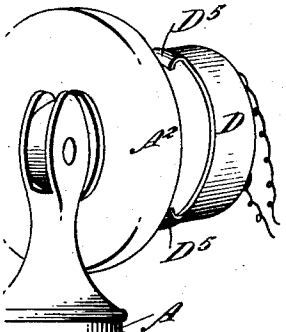


Fig. 2.



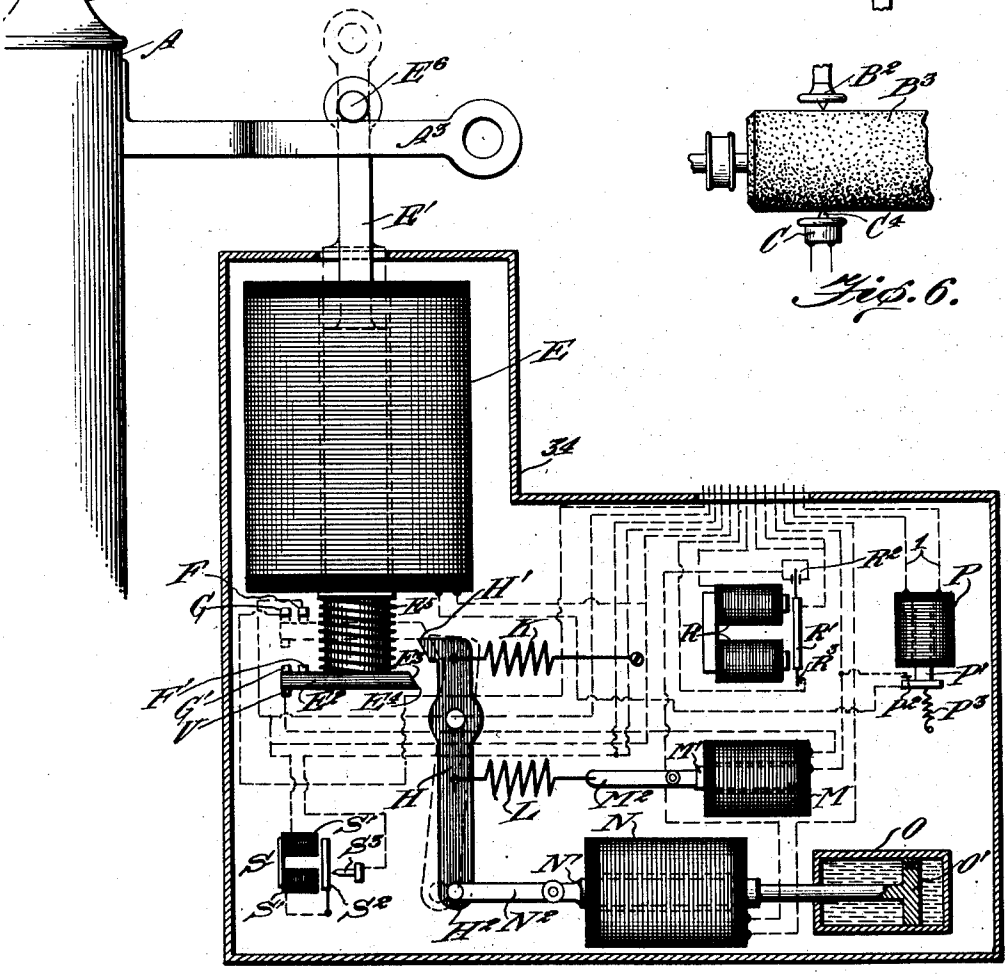


Fig. 6.

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Nov. 3, 1925. 1,560,226

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AUTOMATIC RESPONDING AND RECORDING DEVICE FOR TELEPHONES

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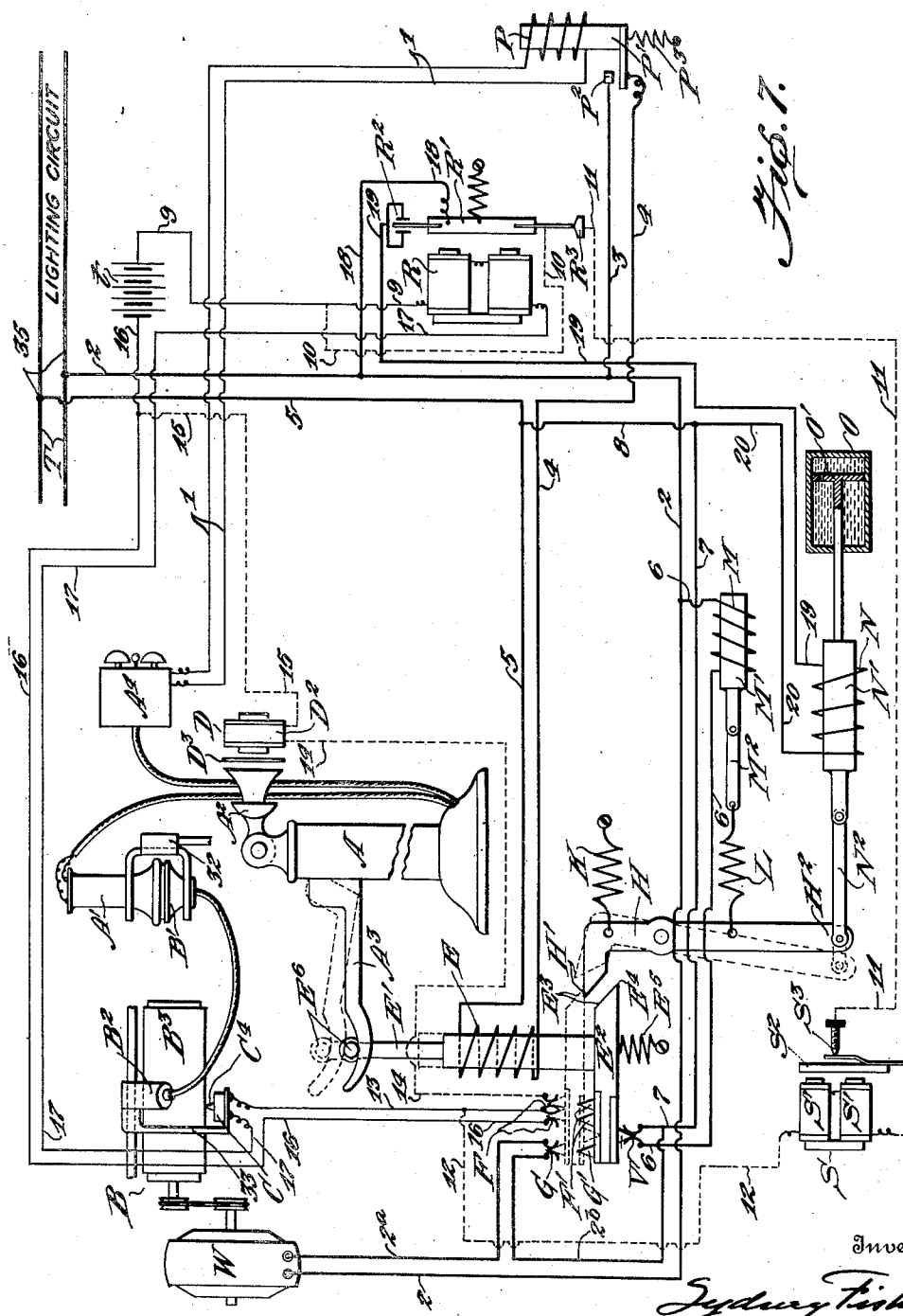

Fig. 1.

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Patented Nov. 3, 1925. 1,560,226

UNITED STATES PATENT OFFICE.

SYDNEY FISHER, OF WESTPORT, CONNECTICUT.

AUTOMATIC RESPONDING AND RECORDING DEVICE FOR TELEPHONES.

Application filed September 1, 1921. Serial No. 497,587.

To all whom it may concern:

Be it known that I, SYDNEY FISHER, a citizen of the United States, residing at Westport, in the county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Automatic Responding and Recording Devices for Telephones, of which the following is a specification.

My invention is an improved automatic device for use with telephones and phonographic recording instruments of standard type to notify the calling party of the absence of the party called and to receive and record the message which the calling party may dictate.

One object of the invention is to provide a device of the class specified which is adapted for use particularly as an attachment to the telephone instrument, being operated independently of the telephone circuit and capable of being entirely disconnected from the telephone and the recording instrument to allow the use of either in the customary way.

Another object of the invention is to provide a device which when connected to the telephone will be automatically set in operation by an incoming call to signal to the calling party that the party called is absent, while indicating that the apparatus is connected to receive and record a message.

Another object of the invention is to adapt the device to remain in active connection with the telephone for a predetermined period previous to or during interruptions in the dictation, and to remind the party calling that the connection will be broken unless dictation is commenced or resumed as the case may be.

Another object of the invention is to adapt the device to be automatically reset to first position after having received and recorded a message, or after a predetermined period of waiting for the dictation of the message, whereby it is left ready for the next call.

Further objects of the invention are set forth in the following specification which describes a preferred embodiment of the apparatus as illustrated in the accompanying drawings. In the drawings:

Fig. 1 is a general plan view of my improved device, showing the dictaphone with which it cooperates and illustrating the method of connecting the apparatus with the telephone instrument;

Fig. 2, a longitudinal view taken in a vertical plane through the main housing of the apparatus and illustrating the mechanical connection between its electrical-control devices and the telephone instrument;

Fig. 3, an enlarged sectional view of the absent-signalling device or buzzer, showing the manner in which the same is attached to the telephone transmitter;

Fig. 4, an enlarged sectional view showing the variable-contact device employed in connection with the dictaphone stylus to operate the absent-signalling device;

Fig. 5, a detail view of the means for holding the telephone receiver in communication with the dictaphone transmitter or mouthpiece;

Fig. 6, a detail view showing the variable-contact device and dictaphone reproducer in contact with the record;

Fig. 7, a more or less diagrammatic view of the complete apparatus shown in connection with the telephone instrument and the dictaphone, and illustrating the various electrical circuits for controlling the operation of the device;

Fig. 8, a detail view similar to Fig. 4 illustrating a modified form of the variable-contact device;

Fig. 9, a detail view showing a modified form of the detent-means for the solenoid which operates the receiver-hook of the telephone; and

Referring first to Fig. 1 of the drawings, A designates a telephone instrument of usual type which, for cooperation with my improved apparatus, is placed upon a bracket or shelf 30 secured to the stand or table 31 of any approved form of phonographic recording instrument which, for convenience of description, will hereinafter be referred to as a dictaphone B. The stand 31 is also provided with a bracket 32 adapted to support the telephone receiver A′ to connect the latter with the mouthpiece B′ of the dictaphone B, see also Fig. 5. Attached to the recorder B^2 of the dictaphone B, and movable therewith longitudinally of the record cylinder B^3, is an arm 33 shown in Fig. 1. The arm 33 extends transversely of the record cylinder B^3 and carries at its outer end a variable-contact device C constructed in the manner and for the purpose as later explained.

Mounted on the shelf or bracket 30 which supports the telephone instrument A is a

housing 34 enclosing the main operating elements of my improved device which are provided with the necessary electrical connections extending to the variable-contact device C and to a signalling-device or buzzer D adapted to be attached to the telephone transmitter A^2. A screw-plug 35 at the end of a cable 35^a serves as a means for establishing electrical connection with any convenient lighting-socket to supply current for operating the complete apparatus.

Referring now to Fig. 2, the operating elements of the device enclosed within the housing 34 comprise a main solenoid E having a vertically slidable core E'. The core E' carries a cross-head E^2 at its lower end provided with contact points F', G' and V at one side and formed on its opposite side with an inclined cam-face E^3 terminating in a point E^4, the purpose of which is later explained. Surrounding the core E' between its cross-head E^2 and the bottom of the solenoid E is a spring E^5 which serves to normally maintain the core in its lowermost position. At the upper end of the core E' is a cross-arm E^6 adapted to be hooked across the receiver-hook A^3 of the telephone instrument A to hold the hook in its normal or depressed position when the receiver A' is removed therefrom.

Adjacent the lower end of the solenoid E is pivotally mounted a detent-lever H which is formed at its upper end with detention-point H' adapted to coact with the inclined cam-face E^3 and point E^4 of the cross-head E^2 carried by the core E'. Connected to the detent-lever H above and below its pivot point, respectively, are springs K and L, the spring K at its upper end being anchored at any convenient point on the housing 34. The spring L below the pivot of the lever H is connected by a link M^2 to the sliding core M' of a solenoid M, the purpose of which is to increase or decrease the tension of the spring in the manner and for the purpose as later explained. The extreme lower end H^2 of the detent-lever H is connected by a link N^2 to the sliding core N' of a solenoid N, said core N' being connected at its opposite end with the piston O' of a dashpot O which acts as a damping-device to control the period of activity of the complete apparatus in the manner as later explained.

Within the casing 34 is a polarized relay R comprising suitable magnet-coils provided with a vibrating armature R' adapted to close certain circuits having contacts at R^2 and R^3, the purpose of which is later set forth. The polarized relay R is energized by current from a primary battery *t* of any suitable type shown diagrammatically in Fig. 7 of the drawings. A small solenoid P located within the casing 34 is adapted to be energized by the ringing of the telephone call-bell A^4, see Fig. 7, and is designed to control the circuit of the main solenoid E through the medium of a switch contact P^2 which is normally held open by the tension of a spring P^3 acting upon the sliding solenoid core P'. Within the casing 34 is an interrupter S comprising magnet-coils S', a vibrating armature S^2, and a contact S^3 connected in circuit as later described.

Fig. 3 illustrates the absent-signalling device consisting of a buzzer D comprising a casing provided with binding posts D' and having mounted therein a magnet-coil D^2 adapted to vibrate a resilient disk or diaphragm D^3. The buzzer D is provided with clamps D^5 by which it may be attached to the telephone transmitter A^2 when the complete apparatus is to be connected therewith.

The variable-contact device C as illustrated in Fig. 4 consists of a casing C' provided with binding-posts C^2 and having mounted therein a diaphragm C^3 carrying a sensitive needle-point or stylus C^4 adapted to travel over the face of the record-cylinder B^3. Projecting from the inner face of said diaphragm C^3 is a spindle-like contact-member C^5 adapted to make variable contact at its lower end with a carbon disk C^6. One of the binding-posts C^2 is connected to the diaphragm C^3 and the other to the carbon disk C^6 so that current passing therebetween will be of varying intensity due to the variable movement communicated to the contact-member C^5 by the record cylinder B^3 through the medium of the sensitive contact-point C^4 and the diaphragm C^3.

An alternative form of this device is shown in Fig. 8 in which a compound system of levers C^7 is substituted for the construction just described. The purpose of the levers C^7 is to amplify the movement of the contact-point C^5 to increase the degree of variation in intensity of the current.

Fig. 9 illustrates an alternative detent-means for retaining the core E' of the main solenoid E in its raised position. In this modified form of device a small solenoid 40 and a slidable spring detent-latch 41 are substituted for the pivoted detent-lever H. This form of control is intended for use in systems employing a central switchboard and is designed so that upon completion of an incoming message the operator may energize the small solenoid 40 by ringing the call with which it is in shunt circuit, whereupon the latch 41 will be retracted and the core E' allowed to take up its normal position.

The operation of my improved apparatus is accomplished by means of a system of electrical circuits comprising four maior circuits whose energizing current is ordinarily drawn from any convenient lighting system; and three minor circuits, two of which are energized by the primary battery *t* and one by means of a shunt from the telephone call-

bell circuit. These several circuits are shown graphically in Fig. 7 and are arranged as next described. Connected in shunt with the call-bell A^4 is a minor controlling-circuit comprising wires 1 leading to and from the solenoid P. The major controlling-circuit for initiating and maintaining the operation of the complete apparatus is illustrated by heavier lines in Fig. 7 and comprises the following conductors. As before stated, the operating current is taken from the lighting circuit, indicated at T in Fig. 7, by plugging in at 35, whence a wire 2 in the plug-cord or cable leads directly to the electric motor W of the dictaphone B. Leading from the motor W is another branch 2^a of this circuit which is connected to the contact G operated from the main solenoid E. A third wire 2^b in this circuit leads from the contact G to contact V. Connected with the major circuit conductor 2 of the plug-cord is a branch 3 leading to the contact P^2 operated from the solenoid P which is controlled through the call-bell shunt circuit 1. From the opposite side of the contact P^2 this branch circuit extends through a wire 4 to the main solenoid E, and thence through a wire 5 back to the main line T at the plug 35. Cut into the major circuit wire 2 is a branch 6 leading through the detent-control solenoid M and connected to the contact V. From the opposite side of the contact V this circuit is extended through wires 7 and 8 to the return wire 5 from the solenoid E, and thence back to the plug 35.

The minor circuit from the primary battery *t* is illustrated by lighter lines in Fig. 7 and comprises on one side a wire 9 leading to the relay R. From the opposite pole of the battery *t* a wire 16 leads to contact F operated from solenoid E, and this circuit is continued through wire 13 to the variable-contact device C and thence through wire 17 back to the relay R. From the battery circuit line 9 a wire 10, represented by dotted lines, leads to the armature side of contact-point R^3 and from the opposite side of the contact a wire 11 leads to the contact S^3 of the interrupter S. This circuit is continued through wire 12 leading from the coils S′ of the interrupter to the wire 13 which connects the variable-contact device C with contact-point F.

The absent-signalling device or buzzer D is connected in circuit with the primary battery *t* through a branch 15 leading from wire 16, and a wire 14 leading to contact F.

The circuit for the damping-device or dashpot solenoid N comprises a branch 18 leading out from the major operating-circuit wire 2 to the armature R′ of the relay R, a wire 19 leading from the contact-point R^2 to the solenoid N, and a return wire 20 connecting through wire 8 to return wire 5.

Having now set forth the structure and arrangement of the complete apparatus in detail its method of functioning will next be explained.

Referring to Figs. 1, 2 and 7, the apparatus is connected to the telephone and prepared for automatic operation in the manner as follows: The telephone instrument A is first set upon the shelf or bracket 30 and its receiver A′ removed and placed in the holder 32. As the receiver A′ is removed from its hook A^3 the latter is locked in its normal or depressed position by placing the cross-bar E^6 on the solenoid core E′ across its top. The buzzer D is next clamped on over the mouthpiece of the transmitter A^2 and the attaching plug 35 screwed into any convenient socket in the lighting circuit. The device is set in operation by the ringing of the call-bell A^4, coincident with which current impulses will flow along the shunt circuit 1 leading to the solenoid P to energize the latter to draw in its core P′. This action operates the switch contacts P^2 to close the normally-open major circuit extending through wires 2, 3, 4 and 5 to the solenoid E. The main solenoid E is thus energized with current from the lighting or line circuit T flowing along the wires 2, 3 and 4 to the solenoid E, and along the wire 5 back to the line T. As the solenoid E becomes energized it draws its core E′ upwardly into the position shown by dotted lines in Figs. 2 and 7, breaking contact at V and making contact at F and G in the manner and for the purpose as later explained.

The upward movement of the core E′ of the solenoid E allows the receiver-hook A^3 of the telephone instrument A to assume its raised position, as shown by the dotted lines in Fig. 7, where it must be retained as long as it is desired to hold the telephone in readiness to receive the incoming message. It is to be observed that the contact P^2 remains closed only as long as the call-bell A^4 continues to ring, since it is only for such a period of time that the shunt circuit 1 is alive and the solenoid P energized. When the call-bell A^4 ceases to ring the solenoid P is deenergized and the contact P^2 will be opened by the action of the spring P^3 on the core P′. This action opens the circuit leading to the solenoid E so that the latter becomes deenergized and releases the core E′. Under tension of the spring E^5 the core E′ would normally return to its original or dropped position and lower the receiver-hook A^3 to break the connections and prematurely close the telephone against the expected message. To support the core E′ in its raised position, however, and prevent this premature dropping of the receiver-hook A^3 the pivoted detent-lever H is provided, the detention-point H′ of which is normally held in the path of the cross-head E^2 at the

lower end of the core. In order to permit the cross-head E^2 to pass by the detention-point H′ of the lever H without rocking the latter on its pivot any known means such as a spring-latch may be employed therewith. Through the engagement of the detention-point H′ with the under edge E^4 of the cross-head E^2 the core E′ is supported with the receiver-hook A^3 in raised position to hold the telephone in a receptive condition. It is now necessary that the person calling be notified that the person called is absent. This is accomplished by means of the buzzer D suspended over the telephone transmitter A^2, the buzzer being actuated by current from the primary battery *t* flowing along primary circuit wires 9 and 10 to contact-point R^3, thence along wire 11 and through the interrupter S. From the interrupter S the current flows through wires 12 and 13 to the two-point contact F which, at this period of operation, is closed by contact-point F′ of the cross-head E^2 carried by the core E′, as shown in dotted lines in Fig. 7. From this point the primary current travels along the wire 14, represented by dotted lines in Fig. 7, to the buzzer D, and thence by way of wires 15 and 16 to the opposite pole of primary battery *t*.

It will be apparent that the interrupter S is now energized and the resulting vibrations of its armature S^2 are transmitted to the buzzer D and will there set up a corresponding vibration of the armature disk D^3, see Fig. 3, the sound of which will be caught up by the telephone transmitter A^2 and relayed to the receiver held by the person calling. In this manner notification is given of the absence of the party called and of the proper connection of the message-recording device in accordance with the prearranged understanding. In order to have a message properly recorded the party calling must now begin dictation within a predetermined period of time which, for convenience of this explanation, will be called a "five minute period." Failure to dictate within this prescribed limit of time will result in disconnection of the telephone through the dropping of the receiver-hook A^3, which action is brought about by subsequent release of the detent-lever H as next explained. The movements of the detent-lever H are controlled by the springs K and L and the solenoid N, the core N′ of which is pivotally connected to the lower end H^2 of the lever. During normal or inactive periods the different units of the device remain in position as shown by full lines in the diagram, Fig. 7. Throughout these inactive periods the solenoid M is continuously energized by reason of its circuit being closed at contact-point V and the consequent flow of current from the line T along the wire 2 through the coil, then along the wire 6 to the contact-point V, and thence back to line T by way of wires 7, 8 and 5. While thus energized the solenoid M exerts a pull on the spring L tending to balance the tension exerted by the spring K whereby the detent-lever H is held in the position shown by full lines in the drawings to adapt it to latch the crosshead E^2 of the core E′ of the solenoid E as the latter moves to raised position. When, however, the core E′ moves upwardly the contact V is immediately broken and the solenoid M is therefore de-energized, whereupon the tension of the spring L is released and the spring K tends to pull the lever H into the off position so that the core E′ would normally be allowed to drop under the tension of its spring E^5. The pulling action of the spring K and consequent movement of the lever H, however, is retarded by the functioning of the dashpot O which, through the connection of its piston O′ with the lower end H^2 of the lever H, permits only a slow movement thereof. The period of this retardation is determined by previous adjustment of the dashpot O to properly time its action to the requirements of any particular individual service. Assuming that the dashpot is adjusted for a five minute period, it is apparent that at the expiration of this time the spring K will have overcome its opposition to permit it to pull the lever H into the off position, whereupon the core E′ will drop and the receiver-hook A^3 be lowered to open the telephone circuit. The method of operation of the means for preventing the above described action during dictation of the message will next be explained.

Assuming that dictation of the message to be recorded is begun within the prescribed five minute period, then the retention of the detent-lever H in position to support the core E′ of the solenoid E is accomplished through a combination of units whose relative action is as follows: The receiver A′ of the telephone and the mouthpiece B′ of the dictaphone being secured together, as illustrated in Figs. 5 and 7, it is apparent that the wave impulses of the incoming message will be carried directly to the recorder B^2 of the dictaphone B. The operating motor W of the dictaphone, having had its circuit closed at the contact-point G upon the upward movement of the core E′ of the solenoid E, is now actuated by current from the line T flowing along the wire 2 to the motor, thence along the wire 2^a to the contact-point G, whence it follows the wire 2^b to the wire 7, along said wire 7 to wire 8, and from wire 8 to and along wire 5 back to the line T. In this manner the motor W is connected for operation to start the dictaphone B and as the record B^3 rotates and the recorder B^2 travels thereover impressions are traced in a spiral path corresponding in depth to the

intensity of the wave impulses delivered through the telephone-receiver A'. The impressions thus produced upon the record B^3 serve to actuate the sensitive operating-point C^4 of what is herein termed the variable-contact device C. This variable-contact device is of the construction shown in Fig. 4, and previously described, and comprises the sensitive contact point C^4 carried by the diaphragm C^3 and adapted to follow the path of the recorder B^2 upon the record B^3 to be actuated by the impressions produced thereon. Upon its under face the diaphragm C^3 carries the spindle-contact member C^5 which, at its lower end, makes a loose or imperfect contact with the carbon disk C^6.

From the foregoing description it will be seen that the wave impulses of the message being dictated act through the medium of the impressions produced upon the record B^3 to control the degree of pressure exerted by contact member C^5 upon the carbon disk C^6. The diaphragm C^3 and carbon disk C^6 are connected in series in the minor circuit extending from the primary battery *t* through wire 9 to polarized relay R, from relay R through wire 17 to variable-contact device C, thence through wire 13 to contact F which, when closed, completes the circuit back to the battery through wire 16. It will therefore be apparent that the intensity and duration of current throughout this circuit is determined by the character of the contact set up in the variable-contact device C through the medium of the impressions on the record B^3.

As long as contact F remains closed the current from primary battery *t* which energizes the polarized relay R is controlled and varied by the incoming message which, through the medium of the variable-contact device C and the impressions being produced on record B^3, rapidly varies the resistance of the circuit so that the current going through the coils of the polarized relay R is at times uniform and at other times varied in its intensity. During periods of interruption in the dictation of the message being recorded there are no impressions produced upon the record B^3 due to the cessation of the wave impulses which actuate the recorder B^2. It will therefore be seen that at this point in the spiral path being traced upon the record B^3 a smooth space will be encountered by the sensitive point or tractor C^4 of the variable-contact device C. This results in a steady contact between the spindle C^5 and carbon disk C^6, causing a uniform flow of current through the polarized relay R and the consequent inaction of its armature R' which, during this period, remains in the neutral position shown in Fig. 7 with the contact R^3 closed. As long as the armature R' remains in this position with the contact R^3 closed the buzzer D is in operation, due to the closing of its circuit represented by dotted lines in Fig. 7. It is during these periods of inaction of the armature R' that the spring K tends to slowly draw the detent-lever H into its off position, thus tending to release the core E' of solenoid E, which is equivalent to hanging up the receiver. Should the inactive period of the armature R' exceed the time period for which the dashpot O is adjusted then the spring K would succeed in completing the action just described. When, however, the dictation of the message is resumed within the prescribed period then the path of the recorder B^2 on the record B^3 again becomes irregular, the contact at the device C correspondingly varied, and the current passing through the relay R of fluctuating intensity. Vibration of the armature R' is now set up causing a break at the contact R^3 and thus stopping the buzzer D and effecting an intermittent contact at R^2. This intermittent contact at R^2 permits a flow of current from the line T along wires 2 and 18 to the armature R', through contact R^2, and along the wire 19 to the solenoid N, whence it returns to the line T by way of the wires 20, 8 and 5. The solenoid N is now energized and through the connections of its core N' with the detent-lever H tends to hold said lever in position to support the core E' of solenoid E and maintain the entire apparatus in proper adjustment to receive and record the message.

From the foregoing description it will be seen that I provide a device to automatically operate a telephone instrument in conjunction with any suitable phonographic recording instrument to automatically record messages transmitted over the telephone. Furthermore, said device is designed so as not to impair the utility of either the telephone instrument or the recording instrument for operation as individual units. The apparatus is set in operation by the ringing of the telephone call-bell to signal the party calling that the party called is absent and is thereafter controlled automatically to be retained in receptive condition to receive and record any message that may be dictated through the telephone. If for any reason the message being recorded is interrupted for a period of time greater than that provided for in the adjustment of the device then the operating-mechanism will automatically reset itself, making it necessary to ring the telephone call-bell a second time before the message can be continued. Otherwise the device is reset to place the telephone in normal condition awaiting any other call which may come over the line.

It is noted that while the telephone instrument herein shown and described is of standard type, my improved apparatus may be

employed with equal effect on other types of telephones; and likewise it is to be understood that the term dictaphone as used in the specification and claims is to be construed broadly covering any suitable phonographic recording instrument.

It is also to be understood that while I have herein shown and described a preferred embodiment of my improved apparatus I do not limit myself solely to this form and construction of the invention. Various modifications may be made in the structure and arrangement of the elements of the device without departing from the spirit or scope of the invention; therefore, without limiting myself in this respect, I claim:

1. An apparatus for attachment to a telephone instrument comprising a dictaphone, means for connecting the dictaphone to adapt the latter to record messages dictated over the telephone, means operated from the call-signal of the telephone to render the dictaphone operative, absent-signalling means operated from said call-signal to notify the calling party that the party called is absent, positively-acting electro-mechanical means for continuing the operation of the dictaphone during dictation and for a predetermined waiting-period previous to and during interruptions in the dictation, and means for causing automatic operation of the absent-signaling means during the waiting-periods to signal the calling party that the apparatus is connected and awaiting the dictation of the message.

2. In a device of the type specified, the combination with a telephone and a dictaphone, of means for connecting the dictaphone to adapt it to record messages dictated over the telephone, means operated from the telephone signalling-circuit to render the dictaphone operative, positively-acting electro-mechanical means to continue the operation of the dictaphone during dictation and for a predetermined waiting-period previous to and during pauses in the dictation, and means for signalling back to the calling party during the periods when no dictation is being received.

3. In a device of the type specified, the combination with a telephone and a dictaphone, of means to connect the dictaphone to adapt it to record messages dictated over the telephone, means operated from a call on the telephone to close the line circuit, means to start the operation of the dictaphone, means controlled by the record being made for continuing the operation of the dictaphone during dictation, and means for effecting a predetermined waiting-period in the operation thereof previous to and during pauses in the dictation.

4. In a device of the type specified, the combination with a telephone and a dictaphone, of means to connect the dictaphone to adapt it to record messages dictated over the telephone, means operated from a call on the telephone to close the line-circuit, means to start the operation of the dictaphone, means operated from the record being made for continuing the operation of the dictaphone during dictation, means for effecting a predetermined waiting-period during the operation of the dictaphone previous to and during pauses in the dictation, and means for opening the telephone line-circuit and stopping the dictaphone at the termination of the waiting-period.

5. In a device of the type specified, the combination with a telephone and a motor-driven dictaphone, of means for connecting the dictaphone to record messages dictated over the telephone, a source of current outside the telephone circuit for operating the dictaphone, a circuit including said source of current and the dictaphone-motor, means operated from the signalling-circuit of the telephone to close the motor-circuit, means operating concurrently therewith to close the telephone line-circuit, means controlled by the record being made for maintaining said last-named circuits closed during continuous dictation over the telephone, and means for delaying the opening of said circuits a predetermined waiting-period previous to and during pauses in the dictation.

6. In a device of the type specified, the combination with a telephone and a motor-driven dictaphone, of a normally open circuit for connecting the dictaphone-motor with a source of current outside of the telephone circuit, means operated from the telephone signalling-circuit to close the motor-circuit, means controlled by the record being made for maintaining said motor-circuit closed during continuous dictation of the message, and means for effecting a predetermined waiting-period previous to and during pauses in the dictation.

7. In a device of the type specified, the combination with a telephone and a motor-driven dictaphone, of a normally open circuit for connecting the dictaphone-motor with a source of current outside of the telephone circuit, means operated from the telephone signalling-circuit to close the motor-circuit, and positively-acting mechanical detent-means for maintaining said motor-circuit closed during dictation and for a predetermined waiting-period previous to and during pauses in the dictation.

8. In a device of the type specified, the combination with a telephone and a motor-driven dictaphone, of a normally open circuit for connecting the dictaphone-motor with a source of current outside of the telephone circuit, means operated from the telephone signalling-circuit to close the motor-circuit, positively-acting mechanical detent-

means for maintaining the motor-circuit closed, means to release the detent-means when no dictation is received over the telephone or when dictation ceases, and a damping-device for delaying release of the detent-means for a predetermined waiting-period.

9. In a device of the type specified, the combination with a telephone and a dictaphone, of means operated from the call-signal of the telephone to start the operation of the dictaphone, positively-acting mechanical detent-means for maintaining the dictaphone operative, means to release the detent-means when no dictation is received or when dictation ceases, and means for delaying the release of the detent-means for a predetermined waiting-period previous to and during pauses in the dictation.

10. In a device of the type specified, the combination with a telephone and a dictaphone, of means for connecting the dictaphone to record messages dictated over the telephone, means controlled from the telephone signal-circuit to start the operation of the dictaphone, means controlled by the action of the stylus in recording the message to maintain the dictaphone operative, and automatically-operated means for maintaining the dictaphone operative for a predetermined waiting-period previous to and during pauses in the dictation.

11. In a device of the type specified, the combination with a telephone and a dictaphone, of means for connecting the dictaphone to record messages dictated over the telephone, means controlled from the telephone signal-circuit to start the operation of the dictaphone, positively-acting mechanical detent-means for maintaining the operation of the dictaphone, means for releasing the detent-means, and means energized from the impressions of the message on the record to prevent the operation of the detent-releasing means.

12. In a device of the type specified, the combination with a telephone and a dictaphone, of means for connecting the dictaphone to record messages dictated over the telephone, means operated from the call-signal of the telephone to start the operation of the dictaphone, means for maintaining said dictaphone operative during a predetermined waiting-period previous to and during pauses in the dictation, stopping-means for arresting the operation of the dictaphone at the end of the waiting-period, and means controlled by the impressions of the message being recorded to prevent the action of the stopping-means.

13. In a device of the type specified, the combination with a telephone and a dictaphone, of means for connecting the dictaphone to record messages dictated over the telephone, means operated from the call-signal of the telephone to start the operation of the dictaphone, a contact-device for following the impressions of the message traced upon the record, and means controlled from said contact-device to stop the dictaphone after a predetermined period of waiting when no impressions are being traced on the record.

14. In a device of the type specified, the combination with a telephone, of means for recording a message transmitted over the telephone, a reproducing mechanism cooperating therewith, means for automatically starting the operation of the recording-means, means operated directly from the reproducing mechanism of the recording means to continue the operation of the recording-means while the message is being received, and means for arresting the operation of the recording-means after a predetermined waiting-period during which no message is received.

15. In a device of the type specified, the combination with a telephone, of a dictaphone adapted to record messages received over the telephone, means operated from the call-signal of the telephone to start the operation of the dictaphone, means operated directly from the record being made to continue the operation of the dictaphone, and auxiliary means acting automatically to arrest the operation of the dictaphone after a predetermined waiting-period during which no reproduction is being made.

16. In a device of the type specified, the combination with a telephone, of a dictaphone adapted to record messages received over the telephone, means operated from the call-signal of the telephone to start the operation of the dictaphone, means for signalling the calling party that the dictaphone is operative, means operated directly from the record being made to continue the operation of the dictaphone, and automatically-operated means for arresting the operation of the dictaphone after a predetermined waiting-period during which no message is received or upon cessation of the recording of the message.

17. In an apparatus for attachment to telephones, the combination with a dictaphone having a reproducer cooperating therewith, of means for connecting the dictaphone to record messages transmitted over the telephone, means operated from the telephone call-signal to start the operation of the dictaphone, means operated directly from the reproducer for continuing the operation of the dictaphone while the message is being received, and means for arresting the operation of the dictaphone after a predetermined waiting-period during which no message is being transmitted or after the cessation of the transmission of the message.

18. In an apparatus for attachment to

telephones, the combination with a dictaphone having a reproducer cooperating therewith, of means for connecting the dictaphone to record messages transmitted over the telephone, means operated from the telephone call-signal to start the operation of the dictaphone, means for signalling to the calling party that the dictaphone is connected for operation, means operated directly from the reproducer for continuing the operation of the dictaphone while the message is being received, and means for arresting the operation of the dictaphone after a predetermined waiting-period during which no message is being transmitted or after the cessation of the transmission of the message.

19. In an apparatus for use with telephones, the combination with a dictaphone having a reproducer cooperating therewith, of means for connecting the dictaphone to record messages transmitted over the telephone, means operated from the telephone call-signal to start the operation of the dictaphone, a waiting-signal for notifying the calling party that the dictaphone is connected, means operated from the reproducer for continuing the operation of the dictaphone while the message is being received, means for operating the waiting-signal during periods when no message is being received, and means for discontinuing the operation of the apparatus after a predetermined waiting-period during which no message is received or after the completion of the message.

20. In an apparatus for direct attachment to telephone instruments, the combination with a dictaphone, of means for connecting the telephone receiver with the recorder of the dictaphone, means for normally holding the receiver-hook depressed when the receiver is removed therefrom, means operated from the call-signal of the telephone to cause the receiver-hook to rise to close the telephone line-circuit, and means for starting the operation of the dictaphone.

21. In an apparatus for use with telephones, the combination with a motor-driven dictaphone, of a normally open circuit including the dictaphone-motor and a source of current, means for connecting the dictaphone to record messages transmitted over the telephone, electro-mechanical means operated from the signalling-circuit of the telephone to close the line-circuit and the motor-circuit, positively-acting mechanical detent-means for maintaining said circuits closed, means operated automatically from the dictaphone to release the detent-means, and means for delaying the release of the detent-means for a predetermined waiting-period.

22. In an apparatus for use with telephones, the combination with a dictaphone, of electro-magnetic means for starting the operation of the dictaphone, positively-acting mechanical detent-means for holding said starting-means operative, electro-magnetic means for effecting the release of the detent-means, and a damping-device for retarding the action of said last-named means.

In testimony whereof I affix my signature.

SYDNEY FISHER.