

(No Model.)

2 Sheets—Sheet 1.

C. STEVER.

TIME INDICATOR ATTACHMENT FOR TELEPHONES.

No. 512,454.

Patented Jan. 9, 1894.

Fig. 1.

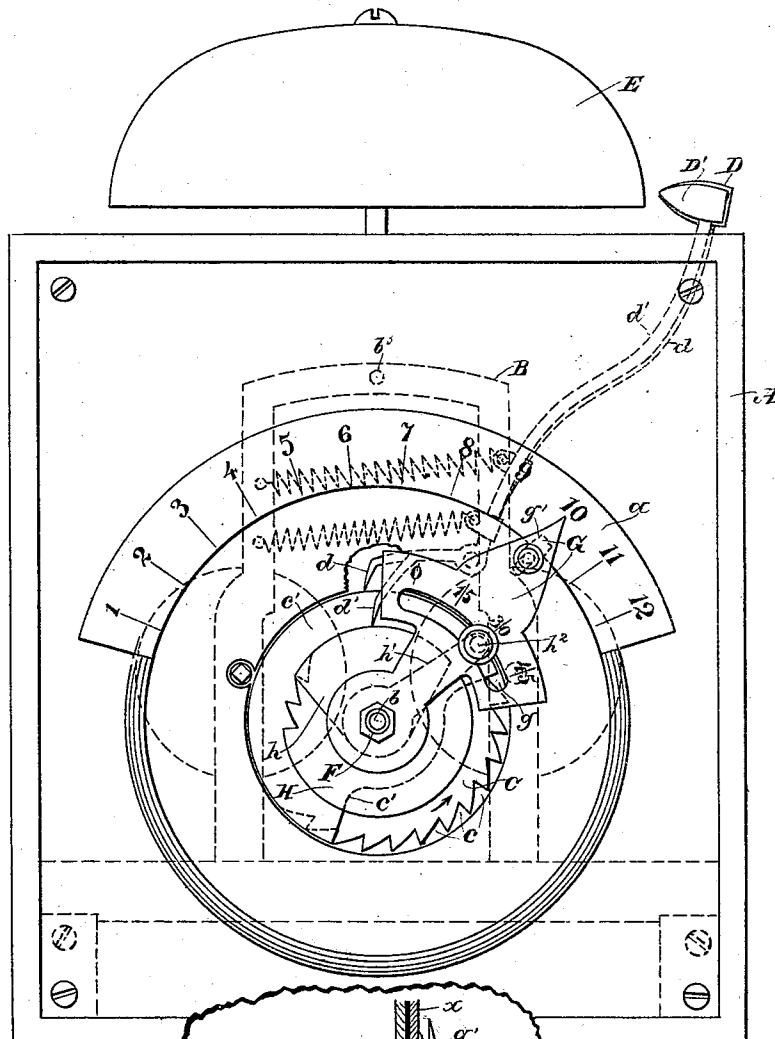
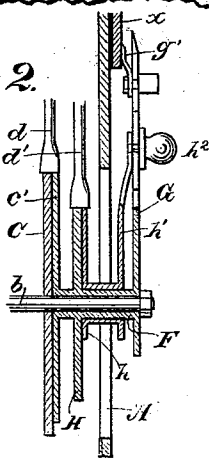


Fig. 2.



Witnesses:
 St. Louis
 J. F. Aschbeck

Inventor
Charles Stever
By Dewey & Co. atty.

UNITED STATES PATENT OFFICE.

CHARLES STEVER, OF SAN JOSÉ, CALIFORNIA.

TIME-INDICATOR ATTACHMENT FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 512,454, dated January 9, 1894.

Application filed March 24, 1893. Serial No. 467,470. (No model.)

To all whom it may concern:

Be it known that I, CHARLES STEVER, a citizen of the United States, residing at San José, Santa Clara county, State of California, have
5 invented an Improvement in Time-Indicator Attachments for Telephones; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of indicating devices for use in offices, for the purpose of informing callers as to the time of absence and return of the occupant.

My invention consists essentially in an indicator, electrically connected with a telephone, and provided with means, set in operation by the connection of two telephones, whereby a response is returned over the telephone wire, giving the necessary information.

It also consists in the novel details of arrangement, construction, combination and connection of the time indicator, hereinafter fully described, and specifically claimed.

The object of my invention is to provide for an automatic response over the telephone wire during the absence of the occupant of the office.

Upon leaving the office, the indicator is set for the time of return of the subscriber, and remains normally inactive; but when the telephone to which the indicator is attached is switched in at the central office, and the subscriber at the distant office calls as usual, this sets in operation the indicator which thereupon makes a response, conformable to the time for which it is set, said response being in the nature of sounds, which are audible through the telephone. By this means the person calling another up, through the telephone, will be immediately informed of the absence of the person called, and of the time of his return, so that he will know when to call him up again.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a front view of my indicator. Fig. 2 is a vertical section through the hour wheel and quarter wheel, showing their controlling segmental disks, and the impingement of the hammer shanks thereon. Fig. 3 is a rear elevation of the interior mechanism of the indicator. Fig. 4 is a diagram of the several circuits.

A is a box or case having mounted within it a frame B, of a suitable movement or power mechanism, which in this case is shown as
55 consisting of a clock-work mechanism, unnecessary to describe in detail. Upon the driving shaft or arbor *b* of this movement is mounted rigidly a wheel C having in one portion of its periphery twelve notches *c*. Upon
60 the periphery of this wheel rests the inner end of the spring-controlled shank or stem *d* of the hammer D which is adapted to strike the gong E, on top of the box or case. Frictionally fitted upon the outer end of the shaft
65 or arbor *b* is a hub or sleeve F, which carries upon its inner end a segmental plate *c'* which lies directly against the face of the wheel C with its edge extending outwardly to the edge of said wheel, whereby the inner end of the
70 hammer shank *d* rests upon it, as well as upon the wheel.

When the wheel C and the segmental plate *c'* rotate together, the end of the hammer shank *d* is held up by the peripheries of the two,
75 and the hammer is thereby held away from the gong; but when the notched portion of the wheel C comes under the hammer shank, said shank will rise and fall in said notches, thereby effecting successive strokes upon the gong.
80 Now, by turning the hub or sleeve F, independently of the arbor on which it is frictionally mounted, the segmental plate *c'* may be made to expose a greater or less number of the notches of the wheel C, and thereby provide for any required number of strokes on the gong. For example, if it be desired to strike but one stroke, the segmental plate *c'* is so turned that its periphery will lie along-
85 side of and overlap all the notches of the wheel C, with the exception of one, and the hammer shank is thereby permitted to drop into but one notch, as it will then be carried and held up by the full round portion of the segmental plate. Likewise if six strokes are
90 desired, the segmental plate *c'* is turned to expose six of the notches of the wheel C, whereby the hammer stem will drop successively into the six exposed notches; and if it be desired to make twelve strokes all the notches
95 are exposed. The wheel C may, therefore, be properly called the hour wheel, as it provides for twelve strokes on the gong.

To set the segmental plate *c'*, there is on

the outer end of the hub or sleeve F, a pointer G, which plays over a face-plate *a* of the box or case A, upon which said plate are the characters or figures denoting the twelve hours. Therefore, by turning this pointer to, say, the hour 1, the segmental plate *c'* will be turned to expose but one notch of the hour wheel C, and, by turning it to 6, it will expose six notches and when turned to 12, twelve notches will be exposed. Now, in order to indicate the quarters of the hour, there is fast upon the hub or sleeve F, a wheel H, which may be termed a quarter wheel, and which is provided with three notches.

Pivotally mounted upon the sleeve or hub F, is a segmental plate *h*, which is adapted to be turned to expose one or more of the notches of the quarter wheel H or to cover them all, and said segmental plate, being operated by means of a lever arm *h'* having a finger button *h²* which plays in a slot *g* in pointer G, said slot having the markings, as shown, designating the positions of the quarters. Now, by turning this lever arm, to proper position upon the pointer G, the segmental plate *h* is turned to expose one or more of the notches of the quarter wheel H, or to cover them all, and it may then be set by tightening up the finger button which is preferably in the form of a set screw, which tightening also has the effect of holding the segmental plate *c'* firmly against hour wheel C thereby preventing accidental displacement when set.

It is to be observed that the quarter wheel H is so located with relation to the segmental plate *c'* that the effect of its notches in causing the quarter alarm, as will be presently explained, shall always take place after the strokes from the hour wheel. An intermission is thereby provided between the strokes of the hour, and those of the quarter, and this intermission is a constant one, no matter how many strokes of the hour there may be, by reason of the fact that the quarter wheel is mounted with fixed relation to the segmental wheel *c'* which controls the notches of the hour wheel (both being upon sleeve F) and will, therefore, be always in a fixed relation to the exposing edge of said segmental wheel, and be removed the same distance from the last operative or exposed notch of the hour wheel. Upon the peripheries of the quarter wheel and its controlling segmental plate rests the inner end of the spring controlled shank or stem *d'* of the hammer D' adapted also to strike the gong E. It will be well at this point to describe the operation of these devices.

Suppose the pointer G to be set to the hour 10 on the face-plate *a*, and that the finger-button *h²* be set to the second quarter on the pointer G. In these movements the segmental plate *c'* has been turned around to expose ten of the notches of the hour wheel C, and the segmental plate *h* has been turned to expose two notches of the quarter wheel H, and as before stated the notches of the quarter

wheel are at the same distance from the exposing edge of the segmental wheel *c'* whereby their effect will take place only upon the stated intermission after the strokes of the hour hammer. Now, upon turning the shaft or arbor *b* all these parts begin their rotation. The stem *d* successively drops into the ten notches of the hour wheel C, and there are ten successive blows of the hammer D on the gong. After this the hammer shank *d'* successively drops into the two exposed notches of the quarter wheel H, and there are two successive blows of the hammer D' on the gong, whereby there is indicated the hour 10.30. Now, to render this indicator automatically operative in connection with the telephone, there are the following constructions:—The clock movement contains an escapement wheel *b'* with which normally engages a pawl *b²*, which is carried on a shaft *b³*, adapted to be rocked by the spring controlled armature *i* of an electro magnet I. Now when this magnet is electrically energized, it will draw its armature *i* over, and will thereby release the pawl *b²* from the escapement wheel of the movement, and the latter will thereupon begin to rotate its arbor *b*. In order to hold the pawl out of engagement with the escapement wheel, during a complete rotation of the arbor, the lower end of the armature *i* normally rests in a notch *j* of a cam disk J on arbor *b*, and when the armature is attracted, its lower end moves out of the notch, and the full edge of the cam disk then bearing upon it, holds the armature over and keeps the pawl out until the notch *j* coming around, allows the armature to drop back, and the pawl to return to its engagement, and thus hold the movement.

The means for throwing the magnet I into and out of electrical connection are as follows: K is a second electro magnet. Its armature *k* has a hook *k'* at its lower end, with which engages a drop lever L. Under this drop lever is a contact spring M, under which is a second contact spring M', the two springs being normally out of contact, and both mounted upon an insulating bracket or stand-ard *m*. By the fall of the drop lever L the contact between the two springs is effected. Upon the shaft or arbor *b* is a cam *b⁴* which lies directly under the drop lever L. Now, when the magnet K is energized, its armature *k* being attracted, releases its hook *k'* from the drop lever L which, descending, forces the spring M into contact with spring M', and these springs being in a circuit, as will presently be described, to the magnet I, said magnet is energized and the movement starts, as heretofore described. Immediately upon the starting of the movement, the cam *b⁴* raises the drop lever L into engagement again with armature *k*, which has been at once released from the influence of its magnet, as will be described.

Within the back of the case A is a spring N and another N', the ends of the two over-

lapping, and being normally in contact. O and O' are two springs similarly arranged to the springs N and N'. Upon shaft or arbor b are two cams n and o similarly arranged, the former being adapted to act upon the overlapping ends of springs N and N', to force them into temporary contact, and the latter acting similarly upon the ends of springs O and O'.

P is a spring contact, which lies above and normally out of contact with three independent springs Q. The end of spring P is engaged by a notch r in a cam disk R on the shaft or arbor b, whereby it is held up out of contact with the three springs Q; but as the cam disk rotates with the arbor, it presses and holds said spring P down into contact with the three springs Q, during the complete rotation of the arbor b.

The pointer G is adapted, when set, to be in electrical contact with the face plate a, or of some portion thereof. The face plate may be made of some insulating or non-conducting material, and the portion where the figures or characters are, may be a metallic arc, or any suitable arrangement may be made to bring the pointer into a circuit, whereby when set for the time, the machine may be ready for operation, as hereinafter described; and when the pointer is thrown down away from the figures, the machine will be inoperative, as during the time the subscriber is in his office. I have here shown a small contact brush g' on the back of the pointer G which comes in contact with the conducting portion of the face plate, when the pointer is set for action.

In the back of the case A are the several binding posts. Two of these, S, are the line posts, two, lettered T, are battery posts, three, lettered U are transmitter posts, and one, V, is the yoke post. The several circuits are as follows: The circuit s leads from one of the line posts S, to spring N, thence through spring N' to magnet K, to some portion of the clock movement frame B, to pointer G, to face plate a, thence to spring O', spring O and to other line post S. Circuit t leads from one of the battery posts T to magnet I, to spring M', spring M and back to the other battery post T. Circuits u and v lead from transmitter posts U to the springs Q, to spring P and back to yoke post V.

The case A, with its contained parts, is adapted to be located in suitable proximity to a telephone, and to receive therefrom the proper electrical connections, that is to say, the line posts S are to be connected with the line wires of the telephone, the battery posts T are to be connected with the battery in the bottom of the telephone, and the transmitter and yoke post are to be connected with the transmitter and yoke connections of the telephone. The arrangement of the connections, it is not necessary herein to show, as these may be varied to suit circumstances, the object being to operate the indicator electrically from the use of the telephone and to place it in

such proximity thereto that its gong can be heard through the receiver of the telephone calling the indicator into action.

The complete operation of the indicator is as follows:—A subscriber, upon leaving his office, and expecting to return at half past ten, will set the pointer G to the figure 10 upon the face plate, and will set the button h² to the second quarter upon the pointer G. The pointer G is now in electrical contact with the face plate a, and the circuit from the line posts S is complete, because in the normal position the cams n and o on shaft or arbor b press and hold the springs N N' and O O' together. Now, upon the call bell being rung indicating a connection between telephones, and the person calling having put his receiver to his ear, he will receive the desired information, as follows: The connection of the two telephones will send a current through the line posts S, which will energize the magnet K, and the armature k being attracted, will release the drop lever L. This lever will throw the springs M and M' in contact, and this will complete the circuit through magnet I. The armature i of this magnet being attracted will release the pawl b² from the escapement wheel b', and thereupon the movement will start, and the shaft or arbor b will commence its rotation. Several actions now take place immediately, all due to the rotation of arbor b. The cam disk J removes its notch j from the lower extremity of armature i, and the full portion of said disk bearing upon said extremity, holds the armature in position to hold the pawl b² out of engagement with the escapement wheel, during a complete rotation of the arbor b. The cam b⁴ at once raises the drop lever L to position again to be re-engaged by the hook end of armature k, which said armature has been freed from its magnet, by the immediate breaking of the circuit through it, occasioned by the removal of the points of cams n and o from the overlapping ends of springs N N', and O O', and thus the line circuit is instantly broken at both ends. The cam disk R removes its notch r from the end of spring P, which it was holding up, and the full portion of the cam bearing down upon said spring, holds it in contact, during a complete rotation, with the three transmitter springs Q. By this last named contact, the transmitter and yoke circuit of the telephone is closed and the two telephones are properly connected and remain so during a full revolution of arbor b. The movement continuing, then causes the notched hour wheel to operate the hammer D, to deliver ten blows successively upon the gong, and the quarter wheel to cause hammer D' to deliver two blows, after a stated intermission, as I have described in the beginning of this specification. These sounds are heard through the connected telephones, and thus the proper information is imparted, as to the time of return of the subscriber. Now, a complete revolution having been made, the parts return to the first position

ready to repeat the information, if called upon again. When the owner returns, he turns the pointer G down out of electrical connection with the face plate and thus cuts the

entire attachment out.

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

1. A time indicator attachment for telephones, consisting of a movement or power device, mechanism operated electrically from the telephone connections for arresting and releasing said movement or power device, means operated in the movement of the power device for establishing telephonic connection, and mechanism operated by the movement or power device for producing a sound at one station and transmitting it through the telephone to a distant station, substantially as herein described.

2. A time indicator attachment for telephones, consisting of a movement or power device, a transmitter and yoke mechanism, operated electrically from the telephone connections for arresting and releasing said movement or power device, means, operated in the movement of the power device, for electrically connecting the transmitter and yoke of the telephone, and mechanism operated by the movement or power device for producing a sound at one station and transmitting it through the telephone to a distant station, substantially as herein described.

3. A time indicator attachment for telephones, consisting of a movement or power device, mechanism operated in its movement for producing various sounds conformable to the time set, said sounds being transmitted through the telephone to a distant telephone station, means for stopping and releasing said movement, means electrically operated from the telephone connections, to actuate the stopping and releasing mechanism, and means operated by the movement for electrically connecting the telephone transmitter and yoke, substantially as herein described.

4. In a time indicator attachment for telephones, the combination of a movement having means for producing a sound, means for stopping and releasing said movement, an electro magnet having an armature, controlling said stopping and releasing means, a normally open electric circuit from the telephone battery through said magnet, a second electro magnet with armature, and means operated by said armature for closing the circuit of the first magnet, an electric circuit from the telephone line including said second magnet, and means operated by the movement for electrically connecting the telephone transmitter and yoke, substantially as herein described.

5. In a time indicator attachment for telephones, the combination of a movement having means for producing a sound, means for stopping and releasing said movement, an electro magnet having an armature controlling said stopping and releasing means, an

electric circuit from the telephone battery through said magnet, normally separated contacts in said circuit, a second electro magnet with armature, a drop lever engaged and tripped by said armature for forcing the contacts of the circuit through the first magnet together, thereby closing said circuit, means operated by the movement for returning said drop lever to its engagement, an electric circuit from the telephone line through said second magnet, and means operated by the movement for electrically connecting the transmitter and yoke of the telephone, substantially as herein described.

6. In a time indicator attachment for telephones, the combination of a movement having means for producing a sound, means for stopping and releasing said movement, an electro magnet having an armature controlling said stopping and releasing means, a normally open electric circuit from the telephone battery through said magnet, a second electro magnet with armature and means operated by said armature for closing the circuit of the first magnet, an electric circuit from the telephone line through said second magnet, means operated by the movement for opening and closing said circuit, and means operated by said movement for electrically connecting the telephone transmitter and yoke, substantially as herein described.

7. In a time indicator attachment for telephones, the combination of a movement having a rotating shaft or arbor, and means for producing a sound, an electro magnet having an armature, connections operated by said armature for stopping and releasing the movement, a cam on the movement arbor for holding the stopping and releasing connections out of engagement during a complete rotation of the arbor, a normally open electric circuit from the telephone battery through said magnet, a second electro magnet with armature and connections for closing the circuit through the first magnet, a cam on the movement arbor for resetting said connections, an electric circuit from the telephone line through the second magnet, a cam on the movement arbor for opening and closing said circuit, electric circuits connecting the telephone transmitter and yoke, and a cam on the movement arbor for opening and closing said circuits, substantially as herein described.

8. In a time indicator attachment for telephones, the combination of a movement having a driven arbor and means for producing a sound, a pointer for setting said means, an electric circuit closed when the pointer is adjusted and opened when the pointer is out of use, and electric connections with the telephone whereby the movement is controlled and the sounds produced are transmitted over the line, substantially as herein described.

9. In a time indicator attachment for telephones, the combination of the movement, having sounding mechanism and the setting

pointer, the face plate over which the pointer plays and with a portion of which it is adapted to make electrical contact when set, and electric connections with the telephone whereby the movement is controlled and the sounds produced are transmitted, substantially as herein described.

10. In a time indicator, the combination of a movement having an arbor, a wheel thereon having notches in its periphery, an independently turnable segment plate in connection with said wheel and adapted to cover or to expose one or more of the notches thereof, and a sounding hammer having a stem or shank resting upon and actuated by said notched wheel, to deliver successive strokes, substantially as described.

11. In a time indicator, the combination of a movement having an arbor, a wheel thereon having notches in its periphery, an independently turnable segment plate in connection with said wheel and adapted to cover or to expose one or more of the notches thereof, a pointer to set said segmental plate and a sounding hammer having a shank resting upon and vibrated by the notched wheel, substantially as herein described.

12. In a time indicator, the combination of a movement having an arbor, a wheel fast thereon having notches in its periphery, a frictional sleeve or hub mounted upon said arbor, and carrying a segmental plate adapted to cover or to expose one or more of the

notches of the wheel, a second wheel carried by said sleeve or hub and having peripheral notches following those of the first wheel, an independently turnable segmental plate adapted to cover and to uncover the notches of the second wheel, and sounding hammers with stems actuated by the notched wheels respectively and consecutively, substantially as herein described.

13. In a time indicator, the combination of a movement having an arbor, a wheel fast thereon having notches in its periphery, a frictional sleeve or hub mounted upon said arbor, and carrying a segmental plate adapted to cover or to expose one or more of the notches of the wheel, a second wheel carried by said sleeve or hub and having peripheral notches following those of the first wheel, an independently turnable segmental plate adapted to cover and to uncover the notches of the second wheel, and sounding hammers with stems actuated by the notched wheels respectively and consecutively, the pointer for setting the first segmental plate and the button and connections playing over the pointer for setting the second segmental plate, substantially as herein described.

In witness whereof I have hereunto set my hand.

CHARLES STEVER.

Witnesses:

A. E. NEWBY,
CHARLES REED.