C. J. GUSTAFSON.

ANSWERING AND RECORDING TELEPHONE.

APPLICATION FILED MAR. 22, 1913.

1,079,760.

Patented Nov. 25, 1913.

3 SHEETS—SHEET 1.

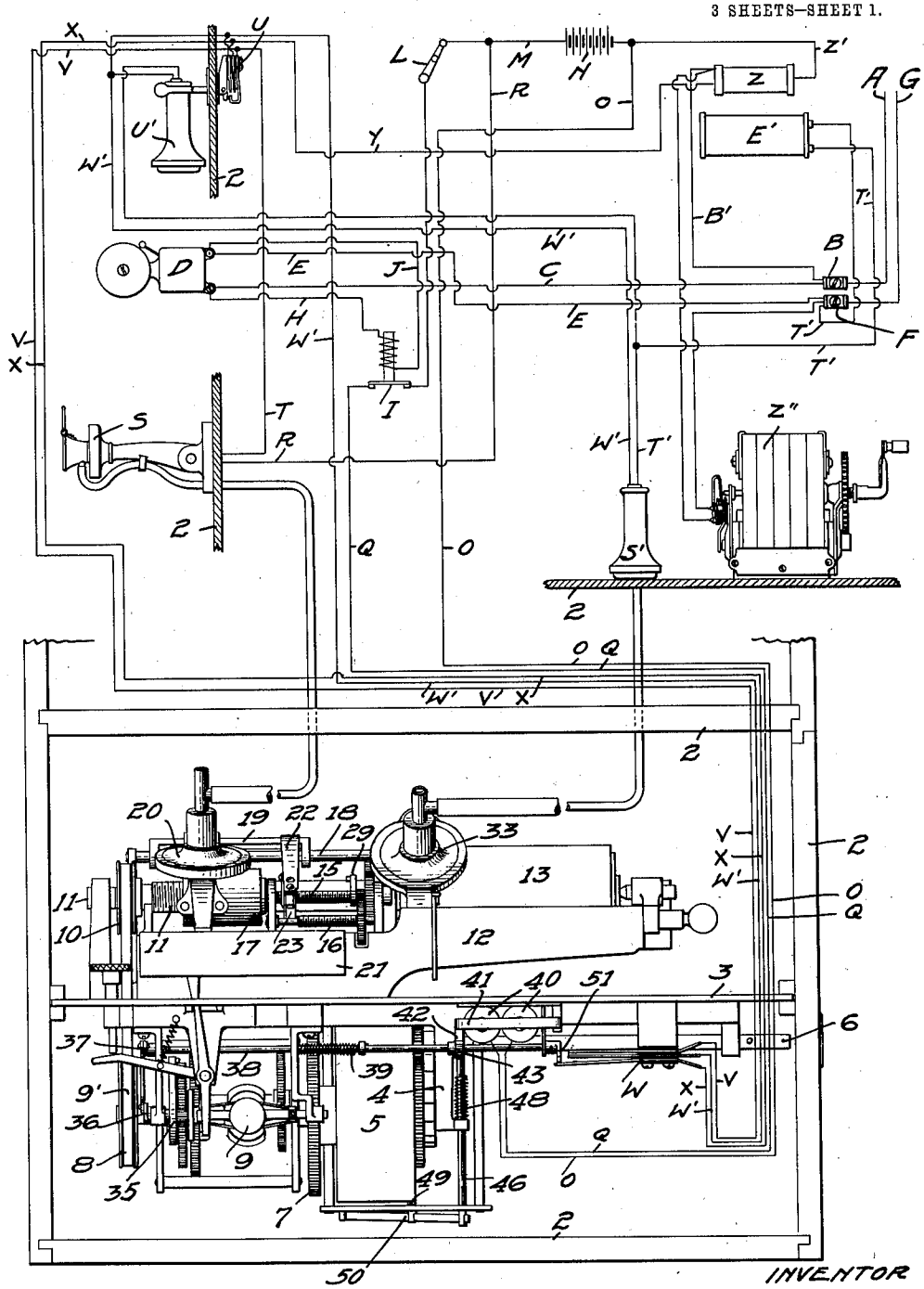


FIG. 1.

WITNESSES

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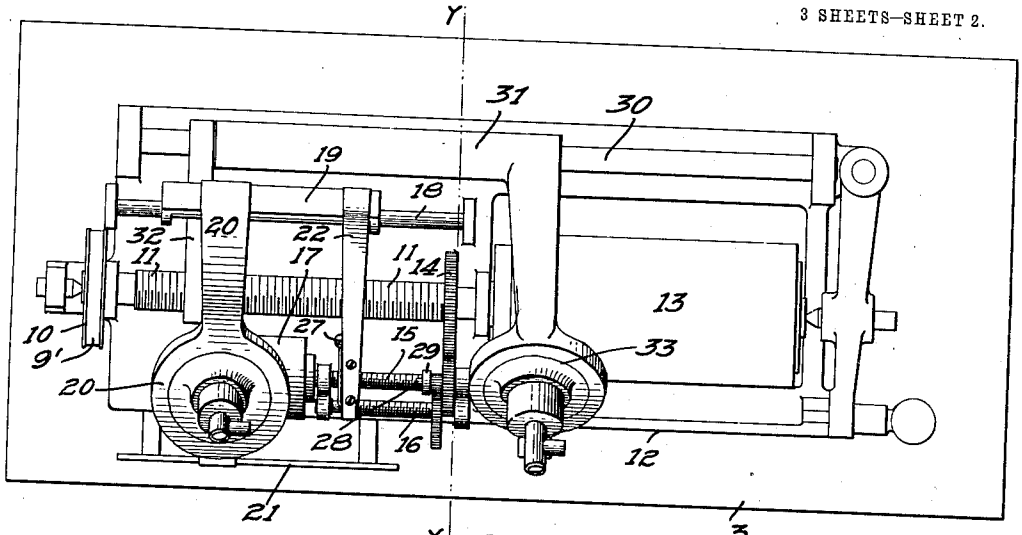


FIG. 2.

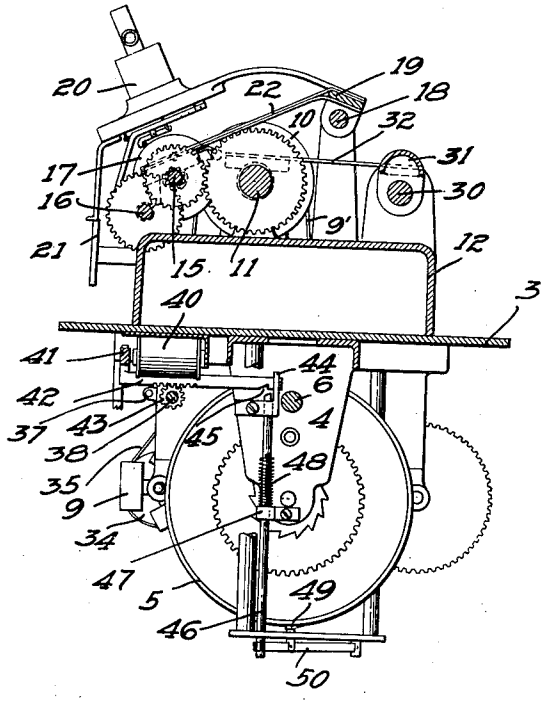


FIG. 3.

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3 SHEETS—SHEET 3.

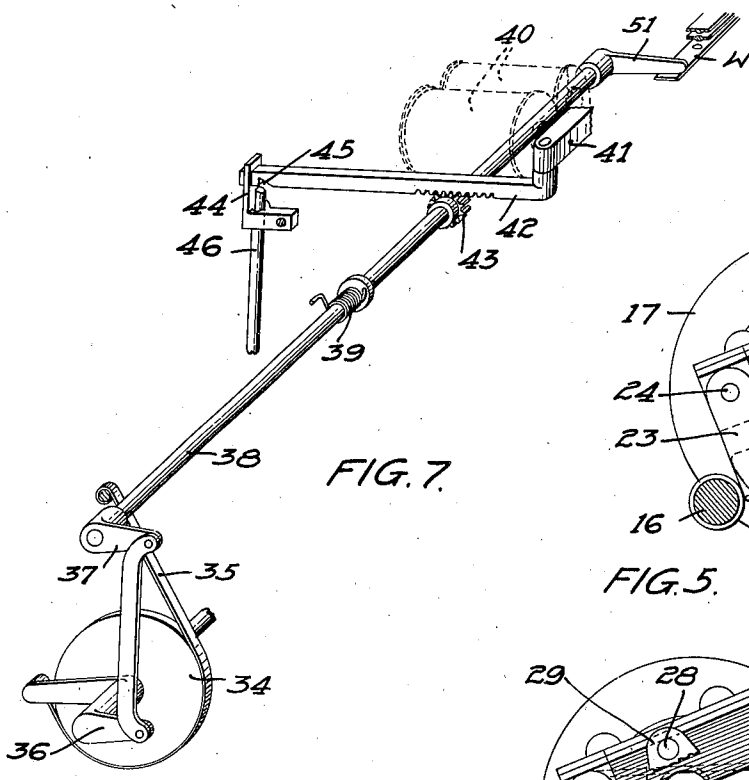


FIG. 7.

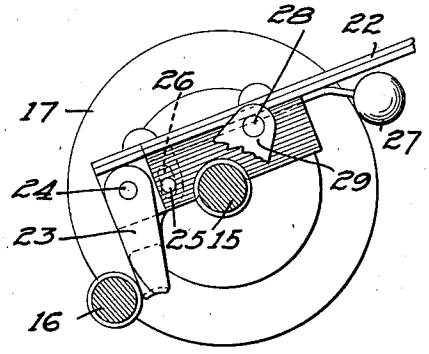


FIG. 5.

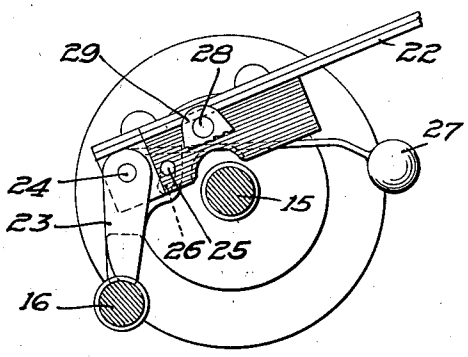


FIG. 6.

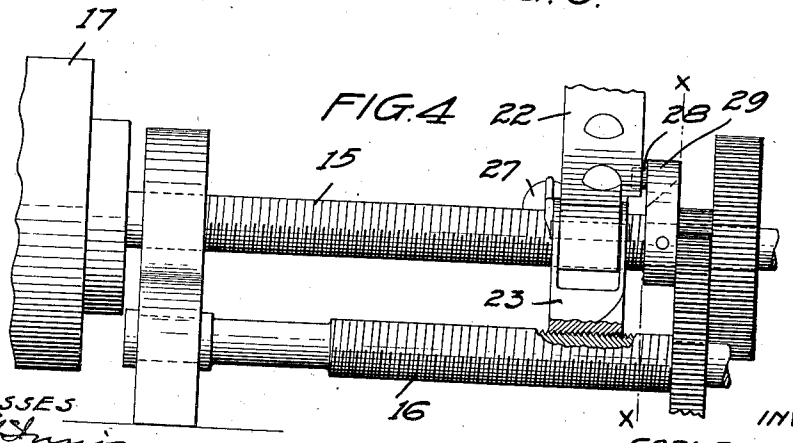


FIG. 4.

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UNITED STATES PATENT OFFICE.

CARL J. GUSTAFSON, OF ABERDEEN, SOUTH DAKOTA.

ANSWERING AND RECORDING TELEPHONE.

1,079,760. Specification of Letters Patent. Patented Nov. 25, 1913.

Application filed March 22, 1913. Serial No. 756,173.

To all whom it may concern:

Be it known that I, CARL J. GUSTAFSON, a citizen of the United States, resident of Aberdeen, Brown county, South Dakota, have invented certain new and useful Improvements in Answering and Recording Telephones, of which the following is a specification.

My invention relates to that class of instruments for use in a residence or office wherein provision is made for repeating a certain predetermined message in answer to a call on the line and also recording any message which the person on the line may choose to dictate.

The object of my invention is to simplify and improve answering and recording telephones of this type and provide a machine which will be positive in its action, will accurately repeat a certain message to the person calling, and record several messages which from time to time may be dictated from the line when the user of the instrument is absent.

Other objects of the invention will appear from the following detailed description.

My invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of the specification, Figure 1 is a diagrammatic view, illustrating the various circuits embodied in my apparatus, Fig. 2 is a plain view of the transmitting and recording devices, Fig. 3 is a transverse sectional view of the same, taken on the line y—y of Fig. 2, Fig. 4 is a front view illustrating the transmitter operating mechanism and the screw for returning the transmitter to its normal position, Fig. 5 is a sectional view on the line x—x of Fig. 4, Fig. 6 is a view similar to Fig. 5, showing the mechanism in operation for returning the transmitter to its normal position, Fig. 7 is a perspective view illustrating the mechanism for releasing the motor to operate the transmitting and recording mechanism.

In the drawing, referring to Fig. 1, 2 represents a suitable casing, in which the apparatus is mounted. This apparatus corresponds substantially to that used in an ordinary phonograph, with various additions and modifications to adapt it for the purposes of my invention. A plate 3 is mounted in this casing and provided with depending brackets 4 supporting a frame 5 wherein the operating spring is arranged. A shaft 6 is geared to this spring and is adapted to receive a winding crank. The shaft of the drum is connected by suitable gearing 7 with a pulley 8 and a governor 9, all substantially as found in an ordinary phonographic machine. The pulley 8 is connected by a driven belt 9′ with a pulley 10 on a screw shaft 11 that is mounted in a frame 12 above the plate 3 and carries at one end a recording cylinder 13 which is adapted to record the message from the person on the line. This shaft 11 is connected through suitable gearing 14 with screw shafts 15 and 16, the frame carrying a recording cylinder 17 bearing the message which it is desired to repeat to the person on the line. A guide rod 18 is mounted on the frame 12 and provided with a carriage 19 adapted to support one end of a transmitter 20, the lower end of which is supported by a guide 21. An arm 22 is mounted on the carriage 19 and adapted to bear on the screw shaft 15 and be fed thereby with the carriage 19 and the transmitter lengthwise of the cylinder 17, the transmitter reproducing the message on the cylinder to the person on the line, as will hereinafter appear.

At the lower end of the arm 22 is a yoke 23 pivoted at 24 on said arm and having a lower end that is adapted to engage the screw 16 which is mounted to revolve in the opposite direction from the screw 15. The yoke 23 has a pin 25 adapted to slide in a slot 26 in the lower portion of the arm and limited in its movement by the length of said slot, and a weight 27 is carried by said yoke and is adapted to swing the yoke into engagement with the threads of the screw 16 when the arm 22 is raised sufficiently to allow the yoke to clear the top of the screw. (See Figs. 5 and 6.) This lifting of the arm is accomplished by means of a pin 28 carried by a bracket 29 at the end of the screw 15, the engagement of the pin with the arm operating to lift the said arm out of engagement with the screw 15 and set the yoke 23 in engagement with the threads of the screw 16 to return the transmitter to its normal position with respect to the cylinder 17. This movement takes place when the message on the cylinder has been transmitted to the person on the line and it is desired to reset the transmitter, ready to repeat the message again when another call comes in. The mes-

sage on this cylinder may be of any suitable nature. Usually it will contain such a statement as, "The person in charge of the office is out. Please give your message and it will receive attention upon his return." The tenor of this message may be varied in many ways to suit the occupation of the person having the machine and the probable nature of the call.

Near the guide rod 18 is a second guide rod 30 having a carriage 31 provided with an arm 32 which engages the threads of the screw 11. A receiver 33 is connected with said carriage and is arranged to move over the cylinder 13 and record the message thereon that comes in over the line. This carriage 31 will be set in motion simultaneously with the carriage 19, and the receiver 33 will be in operation to receive and record the message on the cylinder 13 as soon as the person on the line begins to make a response to the message received from the cylinder 17.

The operation of the motor is controlled by a brake device illustrated in detail in Fig. 7, consisting of a disk 34, a strap 35 connected through a crank device 36 with an arm 37 on a rock shaft 38. A spring 39 is mounted on said rock shaft and normally tends to hold said shaft and the mechanism controlling the strap 35 in their locking position. A pair of electro-magnets 40 is provided near the shaft 38 and an armature 41 is mounted on a rack bar 42 having its teeth in engagement with a pinion 43 on the shaft 38. When the electric circuit is closed through the magnets 40, the armature 41 will be attracted to move the bar 42 lengthwise and rock the shaft 38 a limited distance. The bar 42 has a guide 44 and a notch 45 adapted to receive a rod 46 which is vertically slidable in a guide 47 and is normally held in its raised position by a spring 48. This rod upon entering the notch 45 locks the rack bar 42 temporarily and prevents the release and return of the shaft 38 to its normal position until the mechanism has traveled a predetermined distance. This tripping of the rod 46 I prefer to accomplish by means of a lug 49 mounted on the periphery of the drum 5 in position to engage an arm 50 pivoted at one end and engaging at its other end the lower end of the rod 46. This lug may, of course, be placed in any suitable position on the drum to properly time the operation of the rod 46 and the release of the rock shaft. The recording cylinder is preferably of suitable length to adapt it for recording several messages which may be dictated to the machine in the absence of the operator, the length of each message depending upon the position of the tripping mechanism with respect to the rod 46. Obviously in the construction shown, the longer the travel of the actuating lug 49 before it trips the rod 46, the greater the time of operation of the machine and the length of the message which may be recorded on the recording cylinder. An arm 51 is mounted on the shaft 38 in position to normally engage a switch W which, when the shaft is released, will close an electric circuit, as will hereinafter appear.

The operation of the mechanism heretofore described will be controlled through the energizing of the electro-magnets 40, and I will now describe in detail the various electric circuits which I employ in connection with the apparatus for the automatic sending and receiving of messages.

The bell circuit, or the one that is closed through the use of an instrument on the line, comprises the line wire A to the terminal B, the conductor C to call bell D and conductor E, from call bell back to terminal F and return line-wire G.

The relay circuit includes conductors A and C, conductor H and relay I and conductor J and conductors E and G.

The motor circuit includes relay I to switch L, (which is set to close the circuit when the operator leaves the office and it is desired to have the instrument send and receive a message) from switch L to conductor M through battery N and conductor O to the electro-magnets 40 and return through conductor Q to relay I.

The transmitter circuit primary is through battery N, conductor R to transmitter S and through conductor T to post on switch hook U and conductor V to switch W, through switch W to conductor X to switch hook post U and conductor Y to the primary coil in induction coil Z, and from thence through conductor Z′ to battery N.

The secondary transmitter circuit is through conductor A, terminal B and conductor B′ to the secondary winding of induction coil Z, thence to conductors Y and X, switch W, conductor W′ to receiver S′, and from thence through conductor T′ to condenser E′, terminal F and line conductor G.

The receiver circuit includes line wire A to terminal B and conductor B′, to the secondary winding of induction coil Z and conductor Y, and conductor X to switch W, from thence through conductor W′, receiver S′, and conductor T′ to condenser E′, terminal F and return line wire G. There is also provided in connection with the induction coil Z a generator Z″ of ordinary construction, usually found in connection with circuits of this description and which needs no detailed illustration or description herein, as I make no claim thereto.

In connection with the switch hook U I provide the usual receiver U′ by means of

which the operator can use the instrument as a telephone in the usual way, the apparatus controlled by the switch L being temporarily cut out. At such time the person using the instrument will talk into the transmitter S in the ordinary way, the circuit being closed at the switch hook U upon the removal of the receiver from its supporting hook. If the person having the apparatus in his office or residence wishes to be absent for a time and there is no one to take or give a message to any one calling, he will set the switch L and if a person closes the bell circuit from somewhere on the line the magnets 40 will be energized through the circuits described and the motor released and the transmitter 20 will immediately begin to move over the cylinder 17 and the message thereon will be repeated to the line, such message usually stating that the person called is out and requesting that the person calling give a message which may be repeated when the owner of the instrument returns. This being received by the person on the line, he will give his message, which will be recorded on the cylinder 13 so that when the person called returns he may reproduce this message and understand that such and such a person called him and at the same time obtain a complete reproduction or the substance of the message to be communicated. Sometimes the person calling may communicate his complete message or may simply cause to have recorded on the cylinder 13 the fact that such and such a person called and asking that the owner of the instrument communicate with him upon returning to the office.

The checking of movement of the operating mechanism may be timed or regulated to allow a long message from one person to be recorded, or a series of short messages from different persons calling the office during the absence of the person called.

I claim as my invention:—

1. An answering and recording telephone including a telephone line, mechanism for automatically transmitting speech upon the same, a recording device for registering communications received from the line, a motor for actuating said mechanism and said recording device simultaneously, and mechanism actuated by the movement of the motor for stopping it after a predetermined interval.

2. An answering and recording telephone comprising a telephone line, an answering device for automatically transmitting a communication upon the line, an automatic recording mechanism for registering communications from the line, an operating motor for said answering device and for said recording mechanism, a brake device for said motor, electro-magnets, an armature therefor, and mechanism actuated by the movement of said armature when said magnets are energized for releasing said motor to operate said answering device and said recording mechanism simultaneously.

3. An answering and recording telephone comprising a telephone line, an answering device for automatically transmitting a communication upon the line, an automatic recording mechanism for registering communications from the line, a motor for operating said answering device and said recording mechanism, a brake device for said motor, a rock shaft connected with said brake device and having a pinion thereon, a rack bar engaging said pinion, an armature mounted on said rack bar, electro-magnets having an electric circuit with said line and adapted, when energized, to attract said armature and move said rack bar to rock said shaft and release said motor, means for locking said rack bar in its operating position, and means for releasing said bar to allow it and said rock shaft to return to their normal position at a predetermined point in the movement of said motor.

4. An answering and recording telephone comprising a telephone line, an answering device for automatically transmitting a communication upon the line, an automatic recording mechanism for registering communications from the line, a motor for operating said answering device and said recording mechanism, a brake device for said motor, a rock shaft connected with said brake device, electro-magnets having an electric circuit with said line, an armature for said magnets, means actuated by the movement of said armature to rock said shaft and release said motor brake device, means for temporarily locking said armature and said rock shaft in the position to which they are moved by the energizing of said magnets, and means for releasing said armature and rock shaft to allow them to return to their normal position at a predetermined point in the movement of said motor.

5. An answering and recording telephone including a telephone line, mechanism, including a transmitter and record cylinder for automatically transmitting speech upon said line, a recording device for registering communications received from the line, a motor for actuating said mechanism and said recording device simultaneously, means for moving said transmitter out of engagement with said record cylinder and returning it to its normal position, and mechanism for checking the motor at a predetermined point in its operation.

6. An answering and recording telephone comprising a telephone line, an answering device for automatically transmitting a communication upon the line, an automatic recording mechanism for registering commu-

nications from the line, a motor for operating said answering device and said recording mechanism, a brake device for said motor, a rock shaft connected with said brake device, a switch controlling the line circuit, an arm mounted on said shaft and normally holding said switch in its open position, a call circuit and electro-magnets therefor, an armature, mechanism connected with said armature for operating said shaft to release said brake and close said switch, means for temporarily locking said armature and shaft, and means for releasing them after a predetermined interval.

In witness whereof, I have hereunto set my hand this 11th day of March, 1913.

CARL J. GUSTAFSON.

Witnesses:

Mrs. H. I. KING,

D. M. REHFELD.