H. SYMES.

AUTOMATIC TELEPHONE SYSTEM.

APPLICATION FILED NOV. 9, 1916.

1,353,673.

Patented Sept. 21, 1920.

2 SHEETS—SHEET 1.

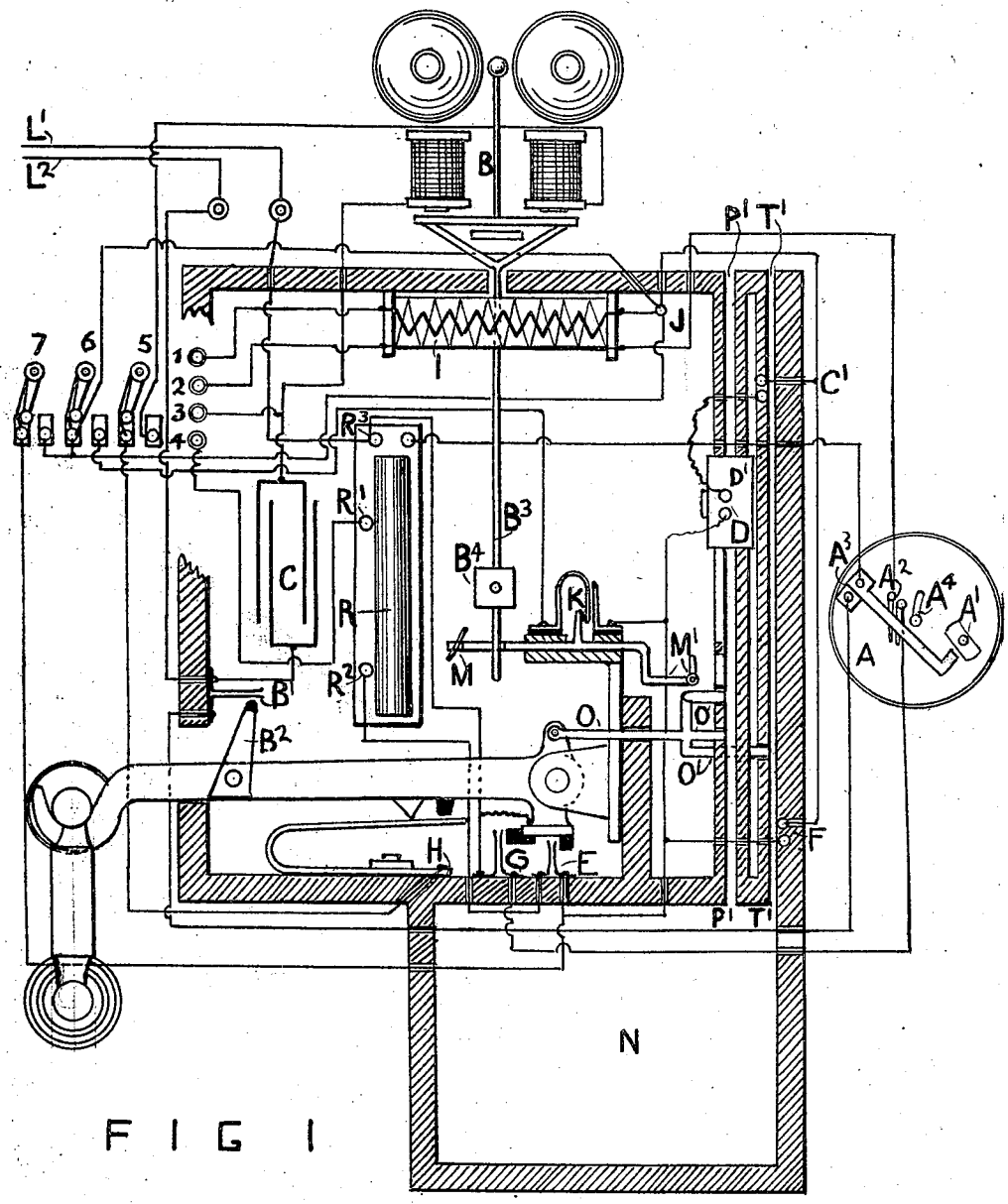


FIG 1

Witnesses

W. E. McDade.

C. L. Kesler

Inventor

Henry Symes

by James L. Norris,

Attorney

H. SYMES.

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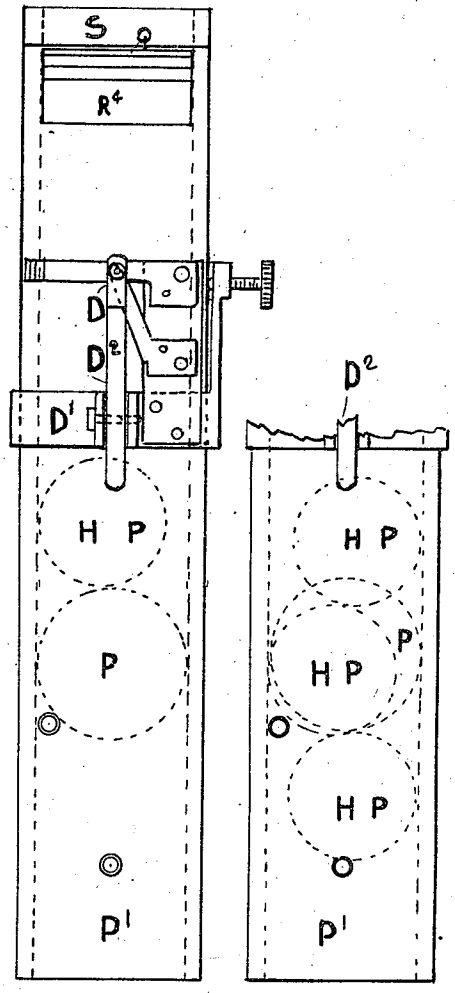


FIG 2

FIG 3

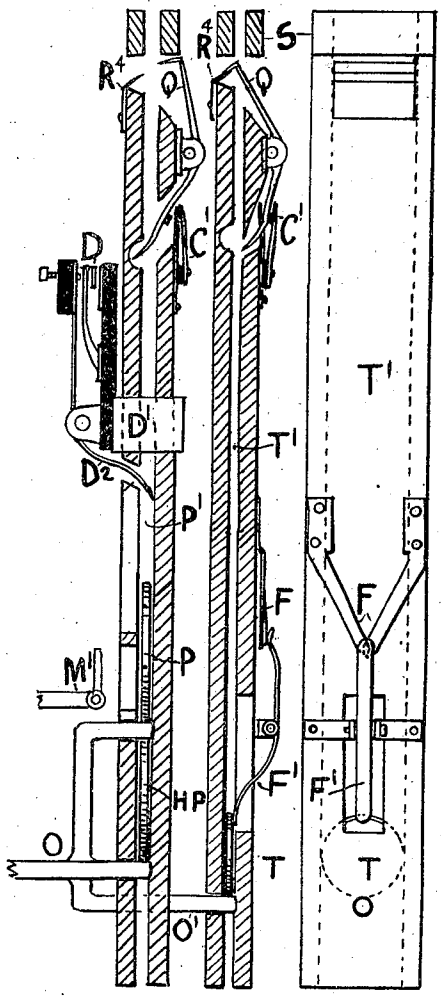


FIG 4

FIG 5

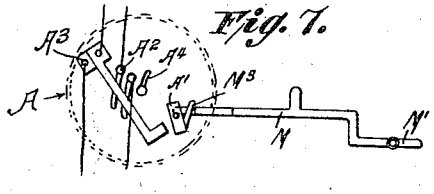


Fig. 7.

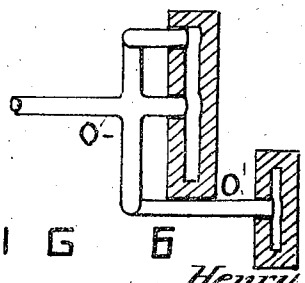


FIG 6

Witnesses:
M. E. McArdle.
C. B. Kesler

Inventor
Henry Symes
by Louis L. Morris
Attorneys

UNITED STATES PATENT OFFICE.

HENRY SYMES, OF DUNEDIN, NEW ZEALAND.

AUTOMATIC TELEPHONE SYSTEM.

1,353,673. Specification of Letters Patent. Patented Sept. 21, 1920.

Application filed November 9, 1916. Serial No. 130,423.

To all whom it may concern:

Be it known that I, HENRY SYMES, a subject of His Majesty the King of Great Britain, residing at 91ª Princes street, in the city of Dunedin, in the British Dominion of New Zealand, have invented certain new and useful Improvements in Automatic Telephone Systems, and do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to set forth a telephone that can either be used as a subscriber's instrument, or be instantly changed to be worked by coins in slots, for both sending or receiving messages, either for street boxes, or for household use, and one that could be used, either by the sender paying, free to the receiver, or by both sender and receiver paying, not necessarily the same amount, for instance a penny or more might be charged for sending and say a half-penny for receiving. The instrument can also be instantly adjusted to work say with mixed pence and half-pence as convenient to the sender, up to two pence half-penny and with pence to three pence, while if the sender were short of these, a silver three penny piece would work the instrument, no matter at what price the instrument was set to be worked at.

As mentioned, pence and half pence may be interchangeably used in most cases, if put in as directed, but if tampering is tried say either by a string or hair being attached to the coin, or by a strip of metal forced in, the machine will refuse to work and the coin cannot be let down sufficiently to work the instrument.

All these alterations or adjustments of the instrument can be instantly effected by merely altering a switch or sliding an adjustable part up or down as needed. Thus for instance, more might be charged after certain hours, if desired and vice versa. Most parts are those of the usual microtelephone with the addition of certain units to be herein described.

Alterations can also be instantly effected to combat adverse weather or long distance conditions.

Coins of any nation can be worked with as needed.

All needed would be, perhaps to alter the width of slots for this purpose.

Referring to the accompanying drawing:—

Figure 1 is a diagram of the complete wiring of the telephone substation, the microtelephone is, a well-known form being shown applied to the hook lever. Fig. 2 is the elevation of the slotted coin chute adapted for pence and half pence with the device for protection from fraud, called the "protector" also the part that is slid up or down for the requisite charges, it being there shown set for a penny halfpenny. Fig. 3 shows a detail of a part of the slotted coin chute arranged to have three half pennies operate therein, but that a half penny followed by a penny would not, but a fine of another coin would act. Fig. 4 is a longitudinal section of Figs. 3 and 5 with coins shown in position in the slots. Fig. 5 is the elevation of the small slot for a three penny piece. Fig. 6 is a plan of both slots these details being to a larger scale than Fig. 1. Fig. 7 is a diagrammatic view showing the parts of the automatic caller and a portion of a contact making and breaking rod operative thereby. A is the usual automatic caller with cover removed preferably placed in the door of the instrument and so arranged that cam A^1 that breaks and makes contacts A^3 when calling, also forces out the hinged end M^1 of rod M, if same were turned down straight and in the slot P^1, by pressing sloping plate M^3 at end of rod M, which makes or breaks contact K as indicated. A^4 is the usual arm which is now used to break the secondary line while calling and remake same when call is finished. B is the bell set and B^1 a contact in the bell circuit. B^2 is an insulated contact maker attached to hook-lever. B^3 is an extended arm vibrating when the bell rings, aided by weight B^4 for forcing rod M into slot P^1. This is only used when payment is made by the called subscriber as for free receiving the arm M^1 is bent up as shown.

C is the condenser connected up to the bell set as shown and also to the contact B^1, or, is included in the bell circuit for well known reasons. C^1 is a contact which is common to both protectors and worked by a loop in the circuit so that either protector if tampered with would cause a break of the circuit. In Fig. 4 the protector is shown in normal position in the larger slot with contact C^1 closed and in the smaller slot with the end Q passing like a blade of scissors

over the fixed part R^4 which it could not do if anything were attached to a coin and even if the tail were forced out, C^1 would be broken as shown, the primary circuit being cut.

F is a contact closed when a three penny piece is placed in its slot, by its pressing out the tail of F^1. In the larger slot the sliding device D^1 is so placed that the tail D^2 touches the top edge of the last coin when more than one are used, see Figs. 2 and 3 so a smaller one would slip past and another be needed, to close the circuit. It will thus be seen that the small silver coin acts as a "master" and works the instrument no matter how set for copper coins.

I is the usual induction coil, J a distributing terminal. K is a contact closed by the action of the bell. L^1 L^2 are the usual line wires. N is any coin receiving box placed where desired. O is a forked rod worked by the hook-lever forcing the three fork prongs into the slots when the telephone is off the hook as see Fig. 4. The upper prong enters at the side of the larger slot so that a half penny can pass, but a penny cannot, another enters centrally below and prong O^1 enters the smaller slot centrally as shown all working both in or out together, so the hanging up of the telephone allows any coins to drop into box N.

P indicates a penny, HP a half penny, T a three penny piece, P^1 the copper coin's slot, T^1 the silver coin's slot, S the top of the telephone box.

The slot P^1 can instantly be altered for the instrument to be worked by (1) a half penny, (2) either a penny or two half pence, (3) either a penny and a half penny or three half pence as shown, (4) either two pence, or one penny and two half pence, or four half pence, (5) two pence and a half penny or a penny and three half pence, (6) three pennies, (no half pence in this case.) (7) as mentioned a three penny bit would do in all these cases, say as an emergency coin.

To use, the telephone is taken off its hook and the automatic call is made, the answering voice can now be heard if the call were effective but the caller must drop the required coin in the slot before he can be heard as that closes the primary current.

The circuit through the switches 5, 6, and 7 are shown broken; to make either, the switch is moved to its corresponding block or contact.

The circuits are as follows:—

For an ordinary automatic telephone, the circuit will be from L^2 to B^1, B^1 to the calling contacts A^3 then to rheostat R^3, and to line.

The primary circuit will be from R^1 to jack 4 then out at 1 to primary coil I through J to C^1, from C^1 to D, then to E and to R^2.

When three pence are inserted in the slot, the circuit will be from C^1 to F, F to E, then to R^2, the receiver circuit being from B^1 to G then to jack 3 and out at 2 to secondary coil I, then to A^2, on to G and to R^3.

The bell circuit will be from B^1 to C then through B to reversed switch 5, then to H and consequently G to R^3.

When receiving free messages the circuit will be from J to reversed switch 6 then to K, on to E and to R^2.

The circuit of the automatic telephone will be from 6 to reversed switch 7 from 7 to E, and to R^2, switch 6 remaining as shown.

The rheostat, in series with the main line, consists of sufficient suitable double silk covered platinoid wire, preferably No. 36, to give the desired resistance; it is wound on a suitable reel, with or without a soft iron core. The desired voltage may then be drawn off the said coil for energizing the microphone and primary coil, by soldering branch wires on the points of the coil, found, either by calculation or a volt-meter, and the branch line or lines may then be led to a switch, which may be so moved as to obtain any desired voltage, or a fixed voltage may be used without the switch. When the instrument is set as a coin telephone and a caller desires connection with someone outside the automatic circuit, he removes the receiver from its hook and makes the usual long distance call. He then replaces the receiver and waits till the bell rings which, by the action of B^3, closes the primary circuit at K, allowing free communication with the exchange. He then removes the receiver and dials the number the exchange gives, which disconnects the primary circuit by cam A^1, forcing back rod M by acting on plate M^3. He can now hear the answering voice of the subscriber wanted, if successful, but must put in the prescribed coin or coins in the usual manner in order to be heard.

The fraud protecting device consists of an arm Q bent and pivoted near its center, the top sharp edge of which works like a scissor blade with a relatively operating sharp edge R^4. Normally, the lower tail of O closes the slot as shown, but a passing coin causes the scissor blades, which are the whole length of the slot, to close. This would either cut a fine wire or thread, or, if not, would break the circuit at C^1 and so render the instrument useless. This action is clearly shown, the blades being open in slot P^1 and closed in slot T^1, the contacts C^1 being respectively shown closed and broken, the width of the blades being shown in Fig. 5 and also in Fig. 2. The blades R^4 are fixtures.

It will be seen that when any coin falls to the prong stops O or O^1, as the case may be, the small slot T^1 is shown with a fixed closing device f^1 whereby the circuit is closed by the coin, and, in the larger slot P^1 the

analogous device is movable, this latter is so that it can instantly be altered to suit the size and number of the coins that are required to actuate the machine, the contact being placed as near the upper edge of the coin that comes or comes in last as needed, so that a smaller one would fail to make the required contact. This is plainly shown by the parts D^2 in Figs. 2 and 3.

In this invention, any suitable materials or sizes may be adopted.

What is claimed is:

A telephone system of the class specified comprising the usual line and line connections, transmitter, receiver, hook arm, contact and an automatic caller, of a coin slot apparatus connected in circuit with the system and consisting of a plurality of elements having slots therein of different dimensions to receive coins of different thicknesses, a forked rod connected to and operated by the hook lever when the latter is released, the forks of the rod transversely entering the slots of the elements, a slidable rod operative by the automatic caller to make and break the circuit through the said contact and a slide having projecting means extending into the wider slot of the slotted element, the slide contact and the contacts of the elements exposed to the slots in the latter all being electrically connected with the circuits of the system for completing the circuits by the insertion of coins in the slots whereby a sender's or receiver's instrument may be converted from the usual automatic exchange operating instrument into coin-in-slot telephone instruments under operation of the person calling and person called.

In testimony whereof, I have hereunto set my hand in presence of the subscribing witnesses.

HENRY SYMES.

Witnesses:

HINTON MACAULAY DAVEY,

J. T. WALTER.