(No Model.) 2 Sheets—Sheet 1.

H. C. ROOT.

AUTOMATIC TOLL BOX FOR TELEPHONE PAY STATIONS.

No. 525,623. Patented Sept. 4, 1894.

FIG. 1.

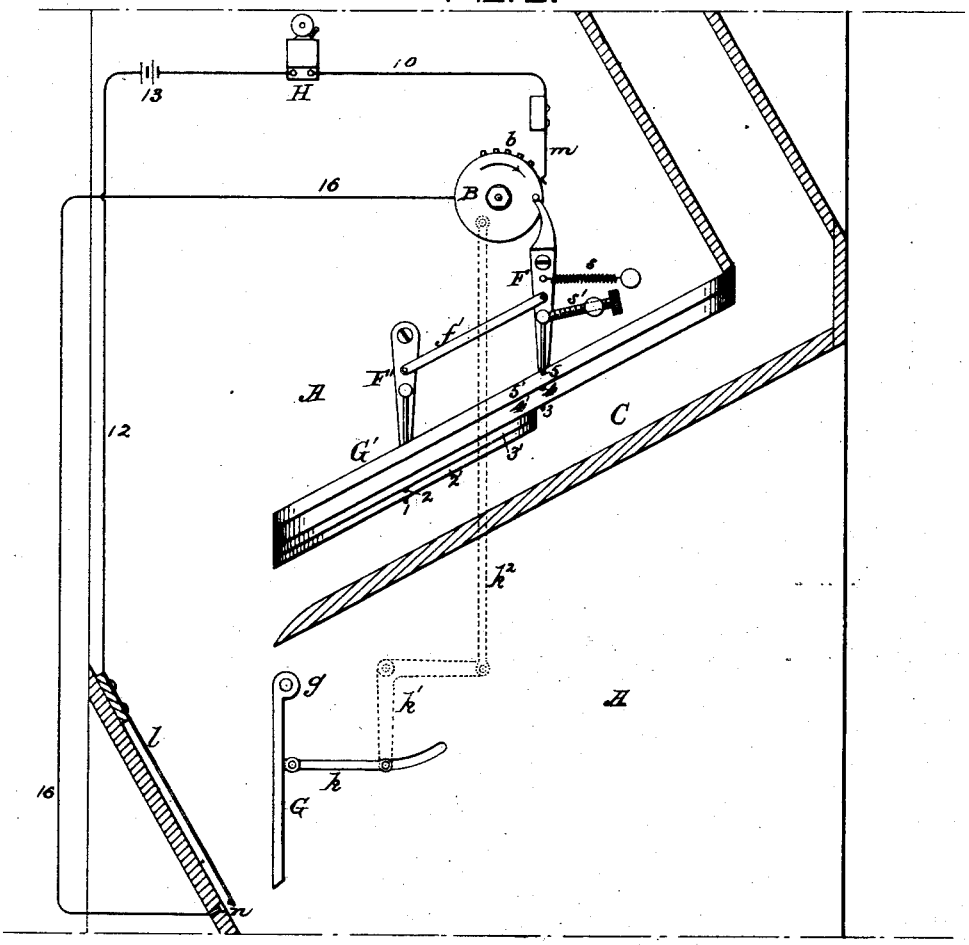


FIG. 5.

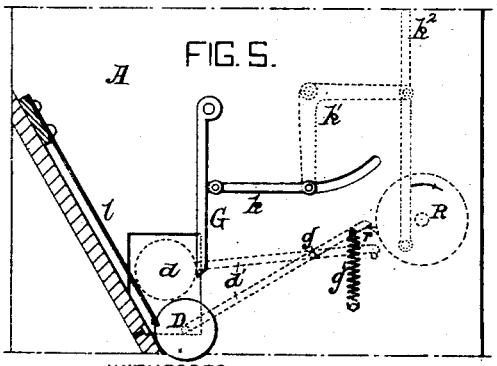
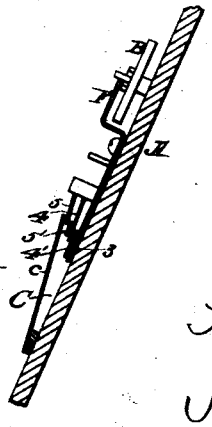


FIG. 4.



WITNESSES:

George Bannigan

Edith J. Griswold

INVENTOR

Howard C Root

BY

Howson and Howson

his ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

H. C. ROOT.

AUTOMATIC TOLL BOX FOR TELEPHONE PAY STATIONS.

No. 525,623. Patented Sept. 4, 1894.

FIG. 2.

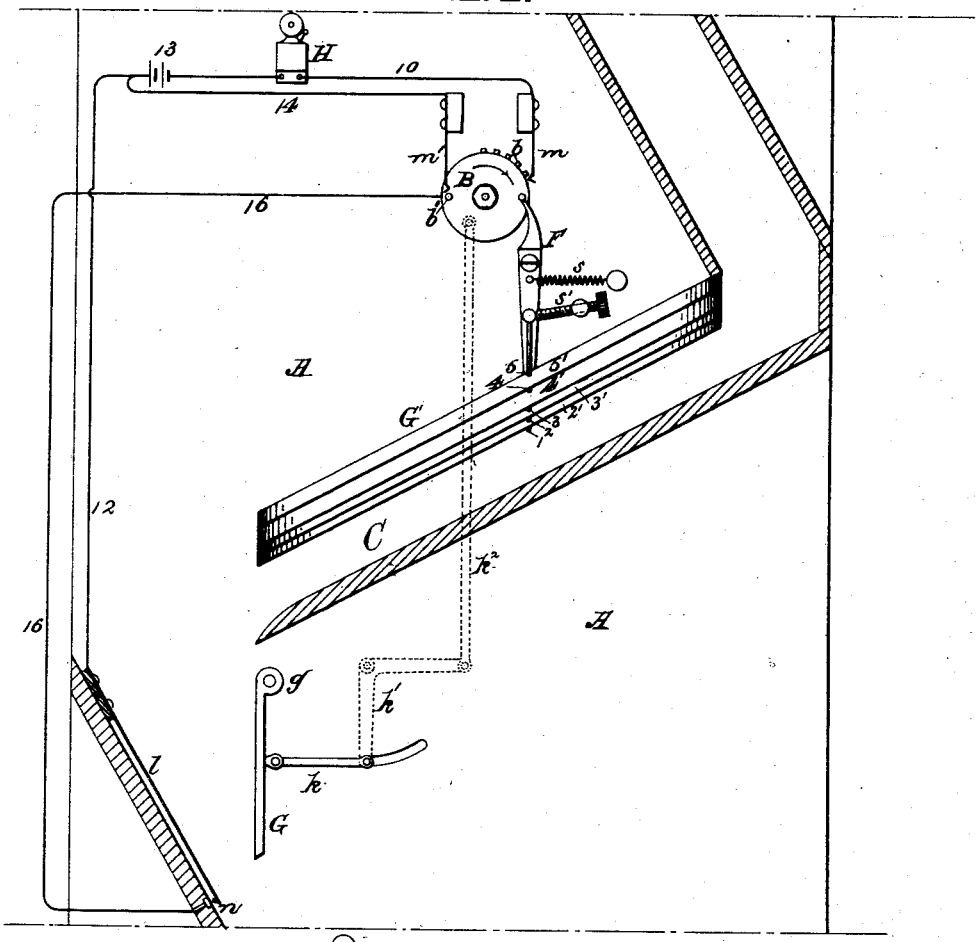
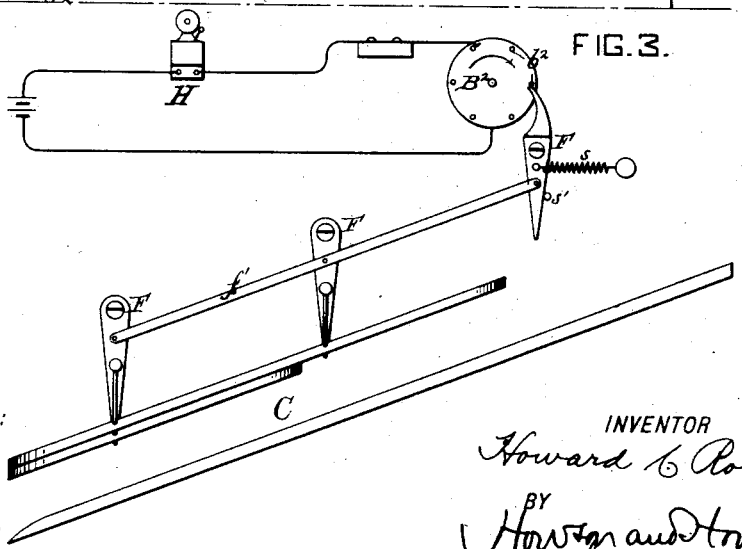


FIG. 3.



WITNESSES:
George Baumann
Edith J. Griswold

INVENTOR
Howard C. Root
BY
Howson and Howson
his ATTORNEYS.

UNITED STATES PATENT OFFICE.

HOWARD C. ROOT, OF BROOKLYN, NEW YORK.

AUTOMATIC TOLL-BOX FOR TELEPHONE PAY-STATIONS.

SPECIFICATION forming part of Letters Patent No. 525,623, dated September 4, 1894.

Application filed March 22, 1894. Serial No. 504,682. (No model.)

To all whom it may concern:

Be it known that I, HOWARD C. ROOT, a citizen of the United States, and a resident of Brooklyn, Kings county, New York, have invented Improvements in Automatic Toll-Boxes for Telephone Pay-Stations, of which the following is a specification.

My invention consists of certain improvements in the construction of automatic toll boxes for telephone pay stations, more particularly those embodying the invention for which I have obtained Letters Patent of the United States No. 440,118, dated November 4, 1890, the object of my present invention being to simplify and make more economical as well as improve in other respects the apparatus of my said patent.

In the accompanying drawings, Figure 1 is a diagrammatic view illustrating one construction, for carrying into effect my present invention. Fig. 2 is a similar view of a modification. Fig. 3 is a view of another modification. Fig. 4 is an illustration of a part of the device shown in Fig. 2; and Fig. 5 is a view of a trapping device which may be employed to drop out coins which it is not desired to use.

In the construction of the toll box illustrated in my aforesaid patent, a number of signaling movements are employed, depending upon the number of different characters of toll coins or tokens to be used for giving different signals, and each such signal-producing movement had its separate circuit making or breaking means. In order to simplify and lessen the cost and size of the box of such a construction and to diminish its liability to get out of order, I combine with the chute a single signal-producing movement which will automatically, by the passing of different sizes of coins through the chute, give different signals, dependent upon the size of the toll coin. In this specification I use the term "coin" in a general sense to embrace any suitable disk-like token of value such as might be used for toll in this class of instruments.

In the drawings I have illustrated as the preferred signal-producing movement, one in which a circuit making and breaking device, somewhat similar to those used in district messenger boxes, is employed, and in the present instance, I have illustrated it as normally on the open circuit and producing the signal by the closing of the circuit or circuits, but it will be understood that I do not wish to limit myself to the use of such a circuit making or breaking device.

In the construction shown in Fig. 1, C is the inclined chute or run-way, upon which the coins are to be dropped, and over which they pass in a somewhat inclined position, as by properly inclining the back-board A upon which the chute is mounted, as will be readily understood by reference to Fig. 4, and to my former patent. The chute is as usual provided with a front guard *c* to prevent the coins from falling off.

As set forth in my said patent, I provide contact fingers at different heights from the bottom of the chute, to be struck by the different sizes of coins, but in this case the several contact fingers are combined in one movement.

In the construction shown in Fig. 1, there are two of these pivoted finger levers F connected together by a link *f'*, so that they operate as one device, while in the construction shown in Fig. 2, there is but a single lever F. In each case, as many points or fingers are provided on the lever or levers as there are different tolls to be used in the apparatus.

With the several contact fingers I combine guards G' which are arranged over the different contact fingers at different heights from the bottom of the inclined chute, so that the larger coins will run over these guards and be thereby prevented from coming into contact with the fingers intended to be struck by the smaller coins.

In the drawings I have shown five fingers 1, 2, 3, 4, 5, and four guards bearing such relation to the bottom of the chute as that the longest finger is adapted to be struck by a ten-cent piece, the next finger No. 2 is adapted to be struck by a five-cent piece, the upper edge of which will run on the guard 2'. The twenty-five cent piece will strike the third finger, 3, the upper edge of the coin running upon the guard 3'; the fifty-cent piece will run on the guard 4' and strike the finger 4, while the dollar will run on the guard 5' and strike the finger 5. In the construction shown in Fig. 1, the first lever F, carries

the fingers 3, 4 and 5, while the second lever F′ carries the fingers 1 and 2, but the two levers being linked together act as one. In Fig. 2, all the fingers are shown as upon one lever.

A suitable spring *s* normally keeps this finger F in the position illustrated in the drawings with a projection thereon against the adjustable back stop *s′*, and its upper end in contact with a stop upon, and normally restraining, a break wheel B from turning in the direction of the arrow. This break wheel has a series of contacts adapted to close a signaling circuit, for the purpose of transmitting signals to the operator at the exchange, such signals differing with the different sizes of coins introduced into the box. The signal may be transmitted to the operator at the exchange in any of the well-known ways as by making and breaking the line circuit, as described in my aforesaid patent, or by having an audible signal at the pay station to make sounds which may be transmitted to the exchange, like the talking, through a telephonic instrument.

In the drawings I have, for simplicity, indicated an audible signal H which may be considered as located at the telephone pay station, this audible signal being shown as in the form of an electro-magnetic call-bell connected up through a conductor 10, with the contact *m* and through a conductor 12 with a spring contact *l* at the bottom of the chute. Adjacent to this spring contact *l* is a back stop *n* connected through a conductor 16 with the break-wheel B. A suitable battery or other generator is connected up in the circuit 12 as at 13. At the bottom of the chute and opposite this contact *l* is a gate G which may be pivoted at *g* and is connected by suitable mechanical means with the break-wheel B, so that the gate will be moved back or opened as the break-wheel B revolves, when first released from the lever F. In the drawings I have illustrated the gate as connected to the break-wheel through the medium of a link *k*, bell-crank lever *k′* and link k^2.

In the construction illustrated in Fig. 1, the gate is adapted to have its lower end at such a distance from the contact *l* when the gate is in its closed position, as shown in the figure, that the smallest sized coin intended to be used to give a signal will be unable to pass until the gate has been opened to some extent. On the other hand a complete revolution of the break-wheel will open the gate to a sufficient extent to allow the largest sized coin to be used to pass beyond the gate into the coin receptacle at the bottom of the toll box.

When a suitable coin is dropped into the chute it first strikes one of the levers F and so releases the break-wheel B, which begins then to turn in the direction of the arrow, the coin passes on down through the chute and falls between the gate G and the yielding contact *l* pressing the latter into electrical contact with the back stop *n*. By this time the first of the projections on the break-wheel B will have come in contact with the finger *m* and the signaling circuit will now be closed momentarily to transmit the signal to the exchange. The revolution of the break-wheel tends to open the gate G and if the coin which has been introduced is of the smallest size, the gate G will have been sufficiently opened to allow the coin to pass before the second projecting finger on the break-wheel comes into contact with the finger *m*. As the dropping through of the coin into the receptacle below frees the spring contact *l*, opening the signaling circuit at that point, the continued revolution of the break-wheel B will not produce any further signals and the break-wheel will come to a stop, after it has completed a revolution, with the parts again in the positions shown in the drawings. If the next to the smallest coin has been introduced, as for instance, a nickel, it will be held by the gate G a sufficient length of time to allow of the circuit being closed twice by the break-wheel B before it drops through into the receptacle; so the twenty-five cent piece will be held by the gate until the circuit has been closed three times; the fifty cent piece will be held while the circuit is closed four times, and the dollar while the circuit is closed five times. It will be understood that while I have referred to these five various sizes and values of coins, for the purpose of explanation, my invention is applicable for use with a greater or less number of coins and of other values, as will be readily understood.

Instead of waiting until the toll coin gets down to the gate to make a signal, I may construct the apparatus, so that a signal will be given as soon as a coin trips the lever F (F′). Thus in Fig. 2, I have shown as combined with a construction similar to that already described, an additional circuit-closing device consisting of a spring finger *m′* with which engages a contact *b′* immediately after the break-wheel begins to revolve. This contact *m′* is connected up through a conductor 14 with the conductor 12 connected to the battery 13, and audible signal H; the break-wheel is electrically connected through a conductor 16 with the back stop *n*. The first of the projections *b* on the break-wheel B is so arranged in reference to the contact *m* that the circuit will be closed at that point at the same moment that the finger *b′* comes into contact with the spring finger *m′* immediately on the beginning of the movement of the break-wheel, so that the circuit is then momentarily closed through the break-wheel, finger *m′*, conductor 14, battery, audible signal and conductor 10 and contact *m*. With this arrangement the gate G will be normally at such a distance from the contact *l* as to allow of the smallest toll coin passing directly through into the receptacle below, the one signal given as described being an indication

that the smallest toll coin has been put in. Each larger toll coin will similarly give a first signal as already described, and then the circuit will be again closed, while the coin is being held by the gate G, the number of times the circuit is closed being dependent as already described on the size of the coin. In connection with these devices suitable drop-out slots or traps may be used to separate out and prevent signals being given by coins which are not intended to be used as toll.

The first guard 2′ will be so arranged that the one-cent piece will ride over it without striking the finger 2. When that coin reaches the space between the gate G and contact *l* there will be sufficient space there for it to drop through into the receptacle below without giving any signal. The ten-cent piece will also drop through but it will already have given its signal by tripping the lever F.

To get rid of a larger objectionable coin, as a two-cent piece for instance, I use a trap which is combined with any suitable means whereby proper toll coins will automatically close the trap on their way down to it, while coins not intended for tolls will not close it. For this purpose I prefer to connect the trap with the signal-producing movement, so that the latter controls the trap. In Fig. 5 I have shown such a device. Near the point where the coins usually lodge between the gate G and the contact *l* is a trap or drop-out slot *d* in the back-board. In connection with this is a shutter or guard D, carried by a suitable lever *d′* pivoted to the back of the back-board at *g*. A spring *g′* tends to elevate the shutter D to the position indicated by dotted lines to close or guard the trap *d* but a finger *r* on a rotary arm or wheel R, to be operated by and rotate with the break wheel B by any suitable means, keeps the shutter D in the position shown by full lines in Fig. 5, with the slot *d* open or unguarded when the break wheel B is in its normal position of rest, as shown in Figs. 1 and 2. When, however, a proper toll coin is put in and striking a finger F, releases the break wheel B, the wheel or arm R moves also, in the direction of the arrow and releases the lever *d′*, and the shutter D, under the influence of the spring *g′*, will move up to close or guard the slot *d* and prevent the coin from dropping out. Coins which are put in and do not release the break wheel B, will find the slot *d* unguarded and will drop through out of the way, and so avoid possibility of the giving of improper signals by toll-coins subsequently introduced.

In the modification shown in Fig. 3, I have shown another construction whereby my invention may be carried into effect. In this also I use a break-wheel B^2 normally on open circuit but adapted to close the signaling circuit one or more times according to the size of the coin passing through the chute. In this case I use spaced finger levers F over the chute C and at different heights from the bottom of the chute, and these several finger levers are connected with each other by a suitable connecting rod or link or links *f′*, so that they will all operate together as one self-contained movement. For the sake of simplicity three only of these spaced levers are shown in the drawings. The first of these levers normally engages with one of the several stop pins b^2 on the break-wheel B^2 and prevents the latter from rotating until one of the levers is struck by a coin, then the break-wheel will be rotated by the usual spring power in the direction of the arrow until the next stop pin b^2 comes into contact with the upper end of the first finger F.

In the construction illustrated, the smallest coin used will strike only the last of the levers and close the circuit once to give a signal, the next size larger coin will strike the second and third fingers in succession and give two signals, while a still larger coin striking all three of the fingers F will give three signals. In this construction, as in those previously described, a single signal-producing movement is used operating through but one circuit making and breaking device for all the different sizes of coins which automatically gives the different signals for different sizes of coins passing down or through the same chute.

I claim as my invention—

1. The herein described automatic toll box for telephone pay stations, consisting of a chute for the passage of different sizes of coins, provided with a single signal-producing mechanism automatically operated by the weight or impetus of the coins through contact with a single controlling device to give different signals by the passage of different sized coins through one and the same chute, substantially as described.

2. The herein described automatic toll box having a chute for the passage of different sized coins and provided with a signal-producing mechanism having a single circuit making and breaking device and a single means automatically operated by the weight or impetus of the coins, to produce a different number of breaks by different sizes of coins.

3. An automatic toll box having a chute for the passage of different sizes of coins, a break-wheel, contact fingers for the coins controlling said break-wheel, a gate in the path-way of the coin to be opened by the movement of the break-wheel and a contact in the signaling circuit held closed by the coin while detained by the said gate, substantially as set forth.

4. A coin-controlled box having a chute for the passage of different sizes of toll coins, with a coin trap or drop-out, and means controlled by each of the several different toll coins for closing the trap.

5. An automatic toll box having a chute for the passage of the coins, a signal-producing movement controlled by the coins, and a coin trap controlled by the signal-producing move-

ment, whereby improper coins failing to operate the signal will be dropped out, substantially as described.

6. An automatic toll box having a chute for the passage of the coins, a signal-producing movement controlled by the coins, a gate in the path-way of the coins to be gradually opened by the signal-producing movement and a contact in the signaling circuit closed by the coin so long as it is detained by the said gate, substantially as set forth.

7. An automatic toll box having a chute for the passage of the coins, a signal-producing movement controlled by the coins, a gate in the path-way of the coins to be opened by the signal-producing movement, a contact in the signaling circuit closed by the coins while detained by the gate, and a coin trap also controlled by the said signal-producing movement, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD C. ROOT.

Witnesses:
EDITH J. GRISWOLD,
HUBERT HOWSON.