

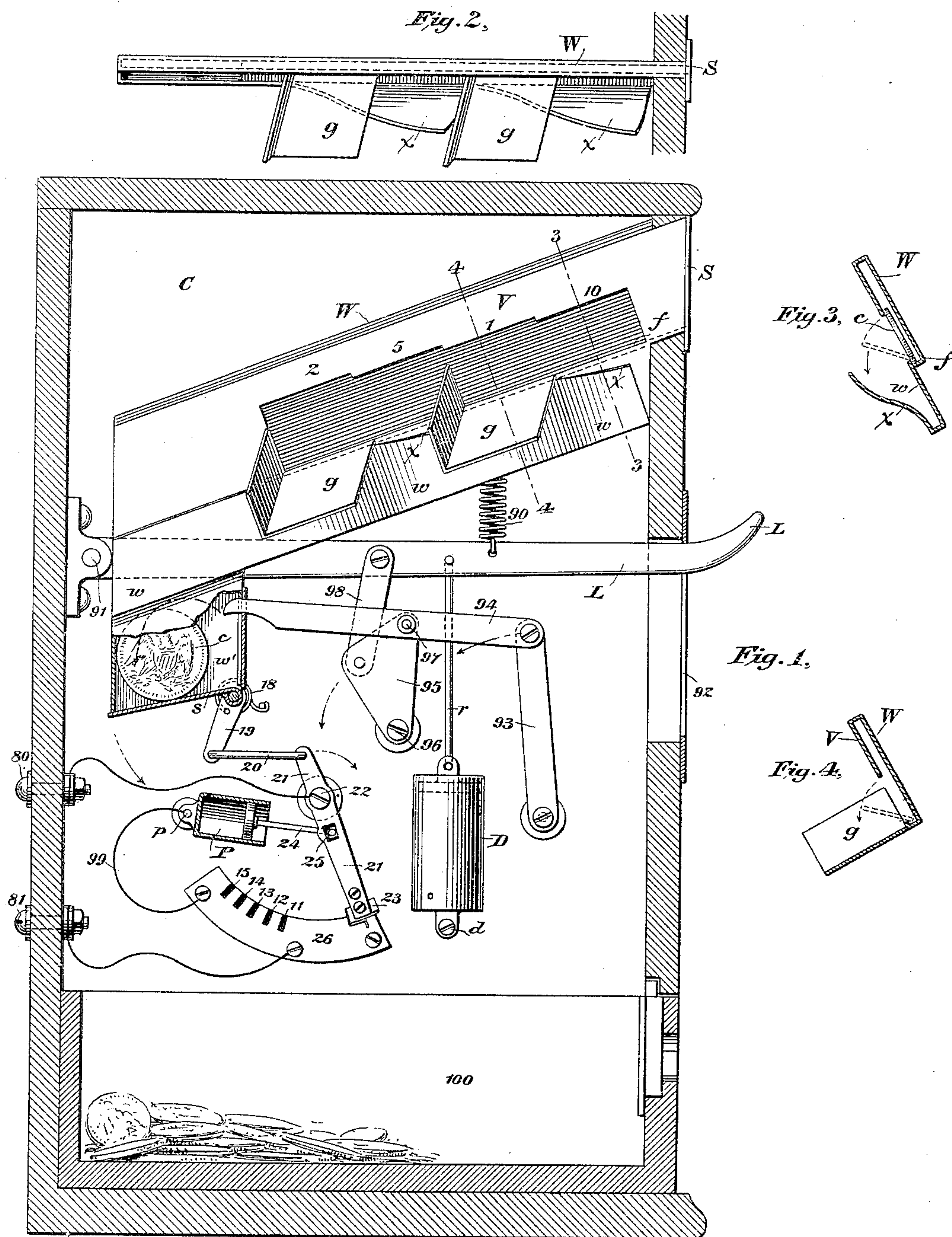
(No Model.)

2 Sheets—Sheet 1.

J. W. VAUGHN.
TELEPHONE TOLL STATION.

No. 442,342.

Patented Dec. 9, 1890.



Witnesses
Geo. W. Dreck.
C. E. Ashley

Inventor
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By his Attorney J. P. Mansie

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Fig. 5.

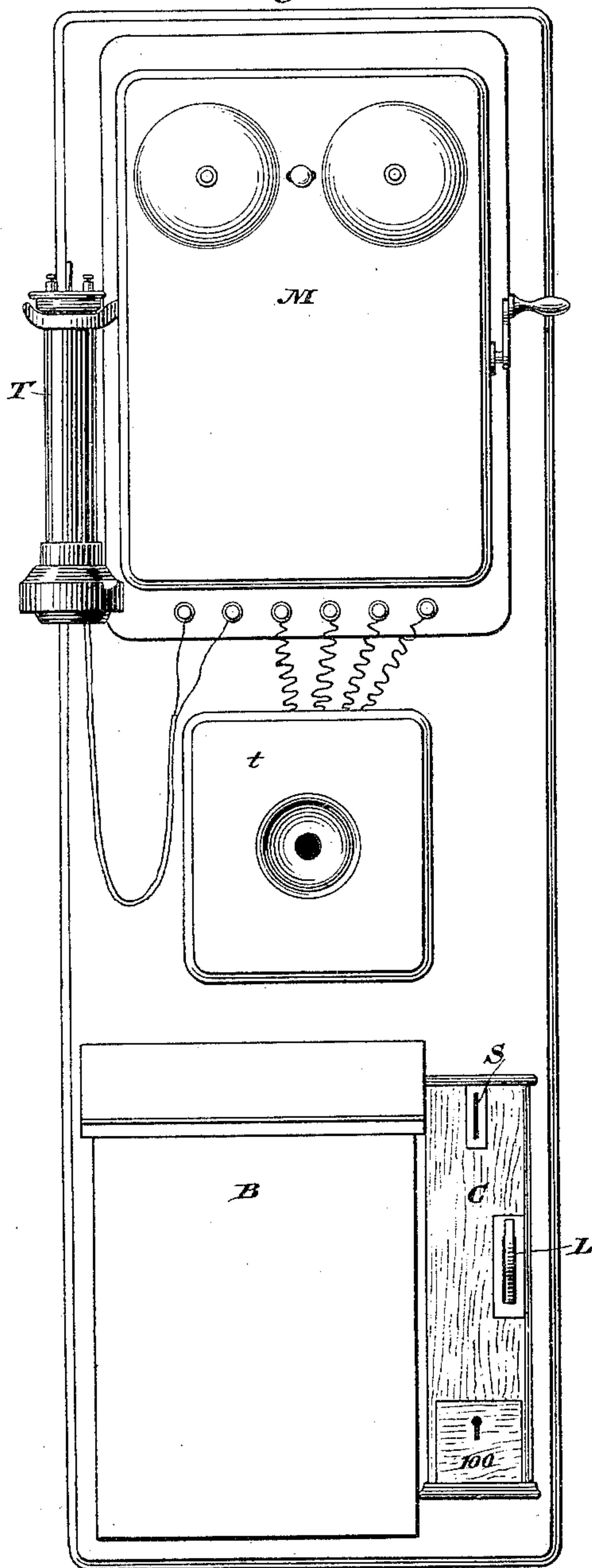
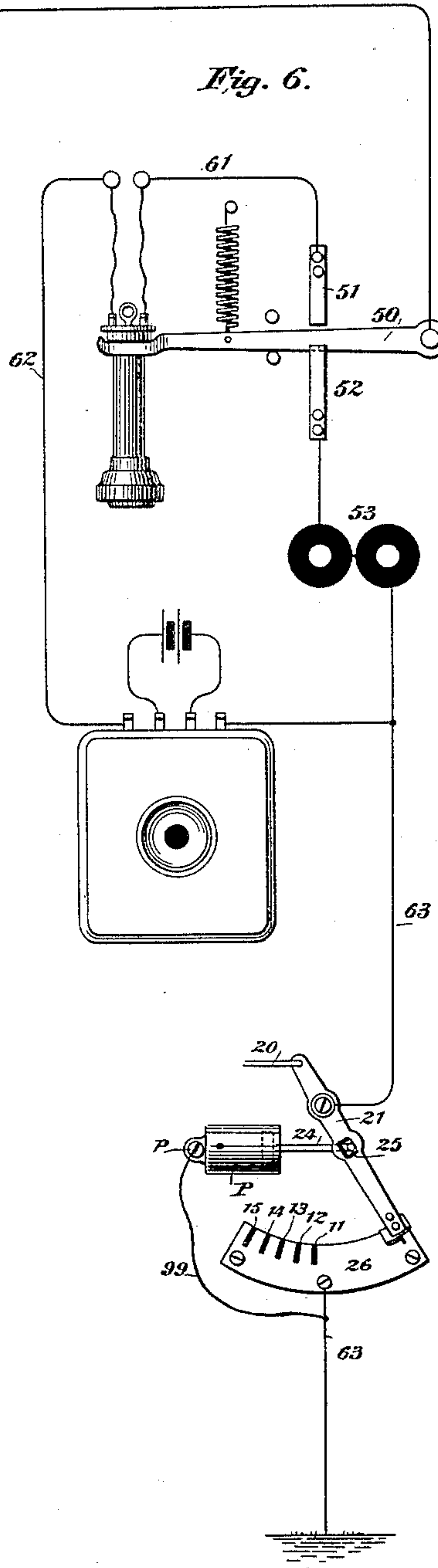
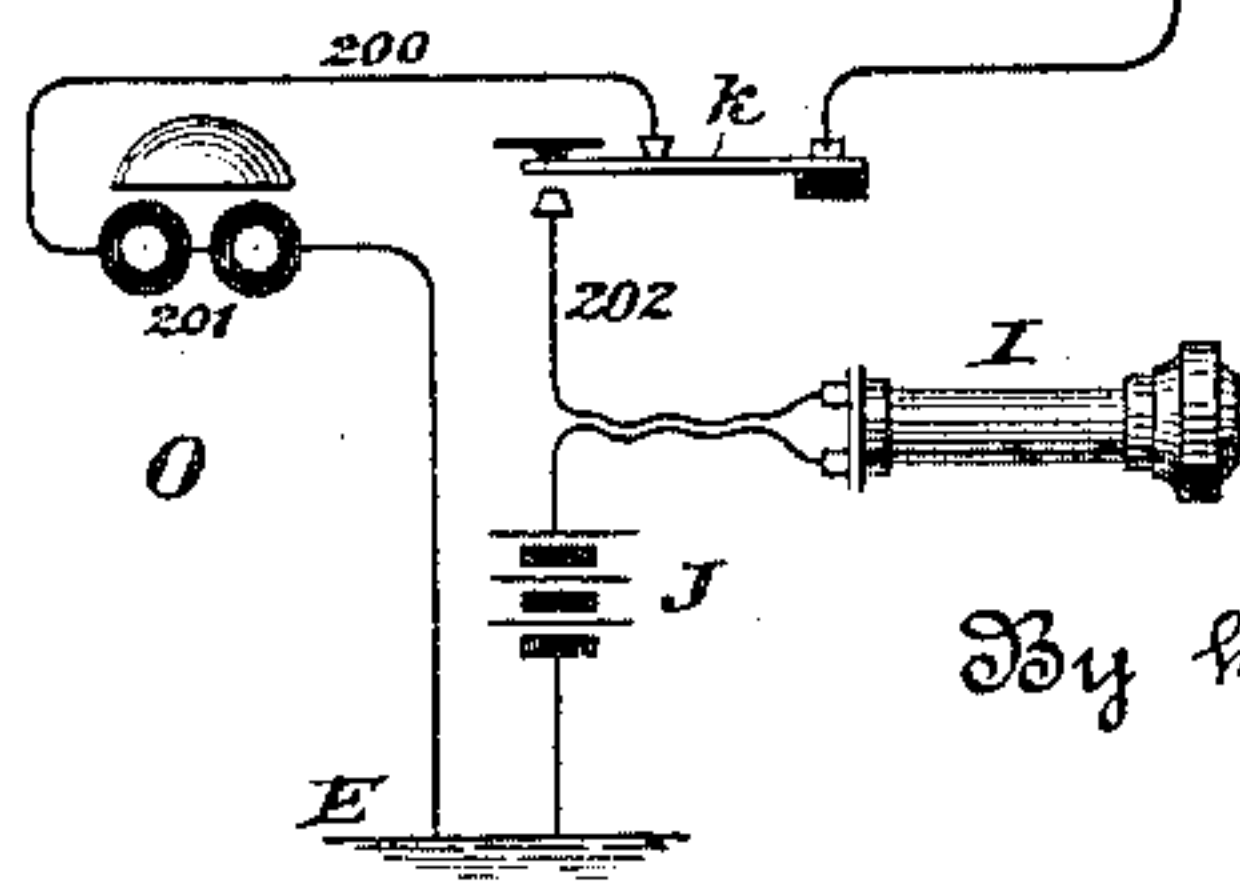


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TELEPHONE TOLL-STATION.

SPECIFICATION forming part of Letters Patent No. 442,342, dated December 9, 1890.

Application filed April 24, 1890. Serial No. 349,233. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. VAUGHN, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Telephone Toll-Stations, of which the following is a specification.

My invention is an improvement in telephone toll-stations, and embraces the combination of a telephone-set with an apparatus for automatically indicating to the central-station operator the fact of the deposit and the denomination of a coin placed in the slot by the party desiring telephonic communication in pursuance of directions received from the central-station operator or otherwise. In the use of this apparatus the party desiring to communicate telephonically calls the central station in the usual manner and inquires for the desired correspondent and the cost of such communication. Upon being informed by the central station that the correspondent is accessible and the price a coin of the proper denomination is placed in the slot of the apparatus provided for the purpose. As a result a signal of a predetermined character, dependent upon the size or denomination of the coin introduced, is automatically transmitted as by a number of successive makes and breaks or other variations of current upon the line, the number and arrangement, or both, differing for each of the various sizes of coins to be introduced, each coin having its characteristic signal, which may be made manifest to the central-station operator in the telephone or in any suitable manner.

My improved coin-receiving and signaling apparatus consists of a coin way, passage, or opening adapted for the reception of coins, a movable stop in the path of the coins—that is, a stop normally obstructing the passage and movable or adjustable to open the passage more or less in accordance with the variations in the size of the coins. A circuit-changer—such as a make-and-break transmitter—is located in an electric circuit in operative relation with said movable stop, so that the extent of movement of said stop and the number of successive variations in said

circuit bear a predetermined relation to each other, and thus indicate the size or denomination of coin introduced. Thus if it be determined to receive for toll the current issue of United States coins having the denomination of five, ten, twenty-five, fifty, and one hundred cents, and if it be arranged that a predetermined signal be automatically sent by each coin, respectively, which signal is made to depend upon the diameter of the coin in any case, as is done in my apparatus, then we must provide means for avoiding the use of the one and two cent coins for signaling purposes, because they are of intermediate diameter; and my invention embodies an improved device for accomplishing this result which can best be explained by reference to the drawings.

My invention also embodies certain other features of improvement which will be described by reference to the drawings.

The accompanying drawings illustrate my invention.

Figure 1 is a plan view of the coin receiving and signaling apparatus. Fig. 2 is a detail top plan view of the device for selecting the signaling-coins from the others. Figs. 3 and 4 are detail cross-section views of the same. Fig. 5 is a view of my apparatus combined in operative relation with a telephone-set, and Fig. 6 shows the preferred arrangement of circuits and coin-signaling apparatus.

The apparatus comprises three mechanical devices: The coinway for selecting signaling-coins from non-signaling coins, the lever arrangement for forcing the coin forward in its passage, and the electrical signaling apparatus.

Referring to Figs. 1 to 4, at the top of Fig. 1 there is shown the coinway. S is a slot of sufficient size to take any coin. W and w are coinways tilted at an angle, as shown in Fig. 3, so that a coin c, Fig. 3, will rest upon its rim upon the floor f and also upon one side in contact with the front wall V of the coinway W. This front wall V of coinway W has a series of successive openings, each succeeding opening being a little greater than the one immediately preceding it. The smallest opening 10 in V is slightly wider than the

diameter of a ten-cent piece, so that when a coin of that diameter is introduced at S it will ride along, resting upon the floor *f* and side wall V until it reaches the opening 10, when it will drop through into the coinway *w*, located below and parallel with coinway W. Coinway *w* communicates with the signaling apparatus, and its wall is curved outward, as shown at *x*, Fig. 3, just below the ten-cent opening, so that when a ten-cent piece falls through it will strike the curved surface *x* and right itself in position to travel along the coinway *w* upon its edge and side, as before. A one-cent piece is slightly greater in diameter than a ten-cent piece, and when introduced at S rides along upon its edge and side until it arrives at the opening 1 in the wall V, where it falls sidewise upon the shed or guard *g* and is conducted directly to the money-drawer 100, located in the bottom of the case, thus avoiding any passage in or through the coinway *w*. Its use as a signaling-coin is thus avoided. The five-cent piece is next in size and passes along the passage W until it arrives at the point marked 5, when it falls into the coinway *w* after striking the curved surface *x*, just as was the case with the ten-cent piece. The two-cent piece is obliged to pass along W to the point 2, where it falls upon shed or guard *g* and thence to the drawer 100. Its use for signaling is thus prevented. The twenty-five, fifty, and one hundred cent pieces ride along W upon floor *f*, resting against wall V, and at the extreme end of W fall into the extension *w'* and rest upon the movable stop *s* until sufficient force is applied by means of lever L to force open this door or stop *s* and operate the signaling device. This force is applied through a compound lever arranged as follows: L is a hand-lever pivoted to the case at 91, its free end projecting through the case and moving up and down through the opening 92. Said lever is held in a raised position by the spring 90, and its movement is graduated and controlled by the air-valve or dash-pot D, pivoted at *d*, having a plunger connected with L by the rod *r*. The stop 93 is pivoted to the case at one end, and to the lever 94 at its other end. The piece 95 is pivoted at 96 to the case and at 97 to the lever 94. The piece 98 forms a connection between the piece 95 and the lever L, to both of which it is pivoted. When L is depressed, the free end of lever 94 enters the coinway-extension *w'*, and moving in a curved line, as shown, strikes the coin resting in position, as shown, and forces the door or stop *s* aside to an extent equal to the diameter of the coin in any given case. The movable stop *s* in the coinway is pivoted at 18 and held normally closed in the position shown by a spiral spring. Fixed to the same pivot is a lever 19. The circuit changer or transmitter consists of a metal plate 26, containing a series of regularly-arranged insulating-sections 11 to 15, five in number, and an arm 21 pivoted at 22. Upon the end of arm 21 is a

spring-contact 23. The opposite or short end of arm 21 is connected by the piece 20 to the lever 19.

The signaling-circuit is connected to post or terminal 80, circuit then passing to arm 21 at point 22 through arm 21 and contact-spring 23 to metal plate 26 to post or terminal 81. This circuit is a normally-closed circuit; but if the end 23 of arm 21 be moved over the plate 26 until it rides upon the contacts 11 to 15 said circuit will be successively broken as many times as there are insulating-points passed over. This is exactly what occurs when the door or movable stop *s* is deflected by the passage of a coin, and the extent of movement of the stop *s* limits or controls the number of break-points that the arm 21 passes over, and consequently the signal transmitted is dependent upon the diameter of the coin passing the stops. It is to be noticed that when the arm 21 sweeps across the break-points it reverses its direction of movement under the control of the spring on pivot 18, and the signal or the number of breaks would be repeated if some suitable means were not devised to prevent it. For the purpose of preventing this duplication of the signal I form a cut-out or shunt-circuit around the break-points when the arm is moving in one direction, preferably its first movement.

P is an air-valve, constructed like a dash-pot, to regulate and control the speed of movement of the arm 21. It is pivoted at *p* and connected with the arm 21 by a metal rod 24. There is a hole or opening in the arm 21 into which a hook on the end of rod 24 takes. One side of this opening is covered with an insulating-bushing 25. The opposite side is uncovered, so as to form good electrical contact with the rod 24. The pot P is electrically connected with the plate 26 by a wire 99. Circuit normally passes via 80, 22, 21, 23, 26 to 81. When the spring 23 on arm 21 is moving toward the dash-pot P the rod 24 is in contact with the metallic side of the slot in the arm 21, and a short circuit is formed via 21, 24, *p*, P, and 26, and no break can occur at points 11 to 15; but upon the return movement of arm 21 the rod 24 is pulled by the arm 21 and the hook on 24 rests on the insulating-bushing 25, so that the short circuit is broken at 25, and the breaks made by the points 11 to 15, or any of them, occur in the signaling-circuit and are rendered evident in the telephone at the central station.

Referring to Figs. 5 and 6, M is the usual arrangement of magneto-bell and gravity-arm. T is the receiving-telephone, *t* the transmitter, B the local-battery box, and C the toll signaling apparatus. The telephone-circuit enters the sub-station and passes to the gravity-arm 50, thence to contact 52, through the bell, and to ground-wire 63, in which is located the toll signaling apparatus heretofore described. When the telephone T is taken from the arm 50, circuit passes via 50, 51, 61, T, 62 to ground-wire 63, so that whether the telephone is on or off the hook

of arm 50 the signal will be evident at the sub-station. At the central station O there is a key *k*, a branch circuit 200, containing an annunciator 201, and a branch circuit 202, containing an electrical generator J, both branches being connected to earth E.

The operation is as follows: The person desiring to communicate calls the central station by operating the magneto M in the usual and well-known manner, stating the correspondent desired. The central-station operator, if the said correspondent is available, notifies the calling station of the fact and the price or cost of the service. The charges we assume are limited to five, ten, twenty-five, fifty, or one hundred cents. Let us assume that in this case it is ten cents. The central station having notified the calling party depresses the key *k*, connecting generator J to line through an indicating-instrument I, which may be a hand-telephone. The circuit is normally closed. The party calling now drops a ten-cent piece into the slot S. This passes to the opening 10 in the coinway W, drops through to the coinway *w*, and so on to the receptacle *w'*, resting like *c* upon the door or stop *s*. The lever L is now depressed and the coin forces the stop *s* aside to an extent equal to the diameter of the coin and drops into the coin-box 100. The stop *s* has now moved the arm 21 and its opening 23 to a position of contact between the insulated sections or points 11 and 12. The circuit has not been broken, however, as there exists a short circuit through the rod 24 and connection 99, as already described. On the return movement arm 21, operated by spiral spring on 18, regulated by the air-valve P, moves slowly and regularly, pulling against the hook of rod 24, which rests against the insulating-bushing 25, thus breaking the short circuit and allowing the break caused by the passage of arm 21 over the insulating-point 11 to be heard in the indicating-instrument I at the central station O. Upon being satisfied of the deposit of the coin the central-station operator makes the desired connection. The same series of steps are incident to the use of either of the other coins. The five-cent piece opens the door or stop *s* farther than the ten-cent piece, and the spring 23 advances to a point on plate 26 between insulating-points 12 and 13. Upon its return movement it sounds a compound signal, consisting of two successive breaks. The twenty-five-cent piece in the same way produces three breaks, the fifty-cent piece four, and the dollar five. If a one or two cent piece be placed in slot S, it is caused to pass out of the opening 1 or 2, as the case may be, and conducted to the receptacle 100 at the bottom without producing any signal. It will thus be seen that each signaling-coin produces a

predetermined or characteristic signal for the information of the central-station operator. 65

What I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for indicating the deposit and denomination of coins or tokens of various sizes, the combination of an electrical circuit, a circuit-changing device located in said circuit, consisting of a series of break-points arranged in the arc of a circle, a contact-point moving over the face of said break-points in contact therewith, a coin way, passage, or opening adapted for the reception of said coins, and a movable stop in the path of said coin mechanically connected with the movable part of said circuit-changer, substantially as described. 70 75 80

2. In an apparatus for indicating the size or denomination of coins or tokens of various sizes, the combination of an electrical circuit, a multiple circuit-breaker consisting of a series of break-points and a complementary contact-point located in said circuit, and a coin way, passage, or opening having a movable stop mechanically connected with a movable part of said circuit-breaker, substantially as described. 85 90

3. In a telephone pay-station, the combination of a telephone at one station, an indicating-instrument at a second station, an electrical circuit connecting them, and an apparatus for receiving coins or tokens and for indicating the denomination thereof, said apparatus consisting of a multiple signal-transmitter composed of a fixed part and a movable part, a coin way, passage, or opening, a movable stop located therein, and a mechanical connection between said stop and the movable part of the transmitter, substantially as described. 95 100

4. The combination of two coin ways or passages, one or more traps or openings in the walls of one coinway communicating with the other coinway, and one or more traps or openings in said coinway provided with guards to prevent the passage of coins from one coinway to the other, substantially as described. 105 110

5. The combination of a coin way or passage, a movable stop located at the terminal thereof, upon which a coin may rest, a multiple signal-transmitter composed of a fixed part and a movable part, a mechanical connection between the movable stop and the movable part of the transmitter, and a lever for deflecting the movable stop to admit of the passage of the coin, substantially as described. 115 120

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