July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

Filed Sept. 21, 1929 6 Sheets-Sheet 1

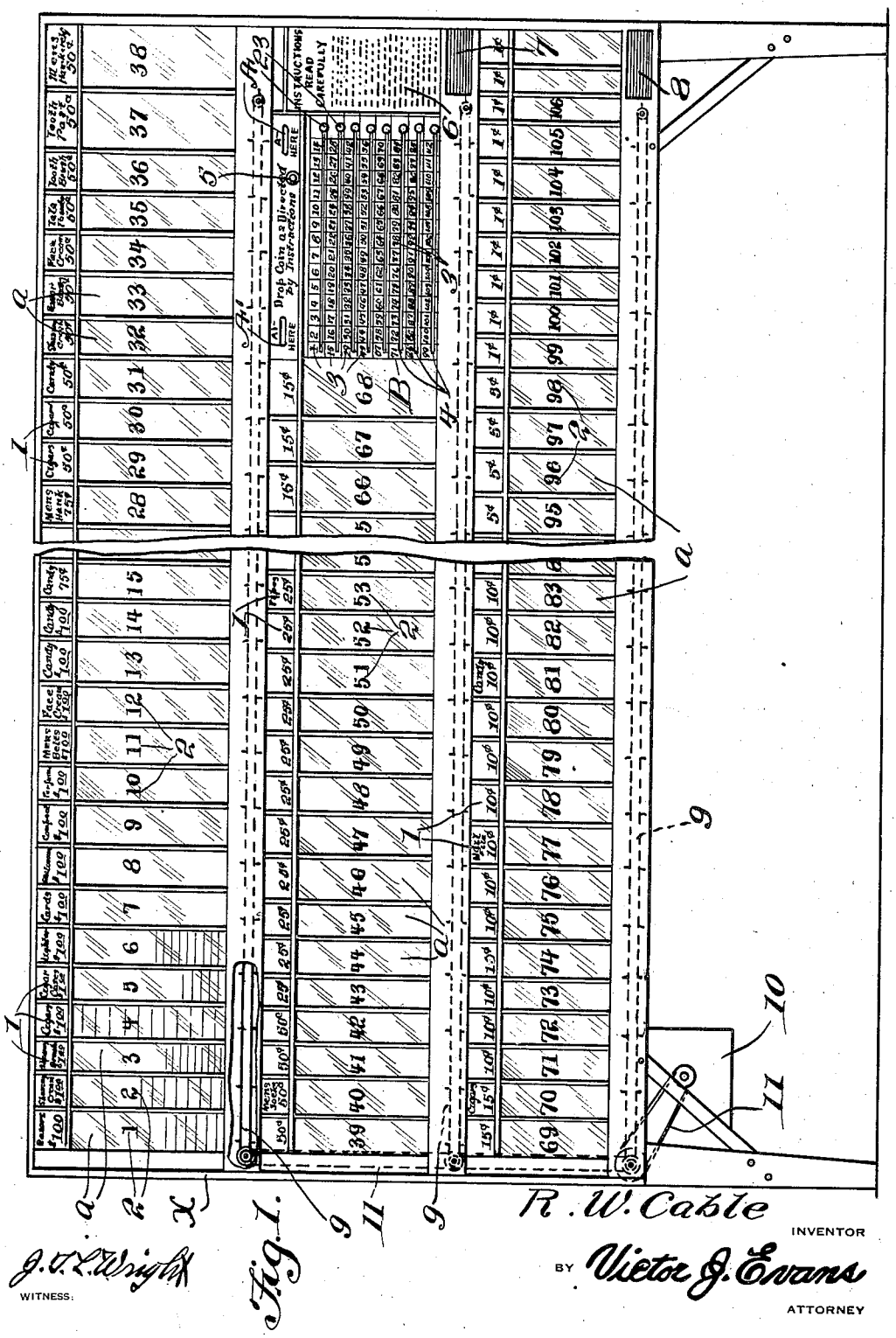


Fig. 1.

R. W. Cable
INVENTOR

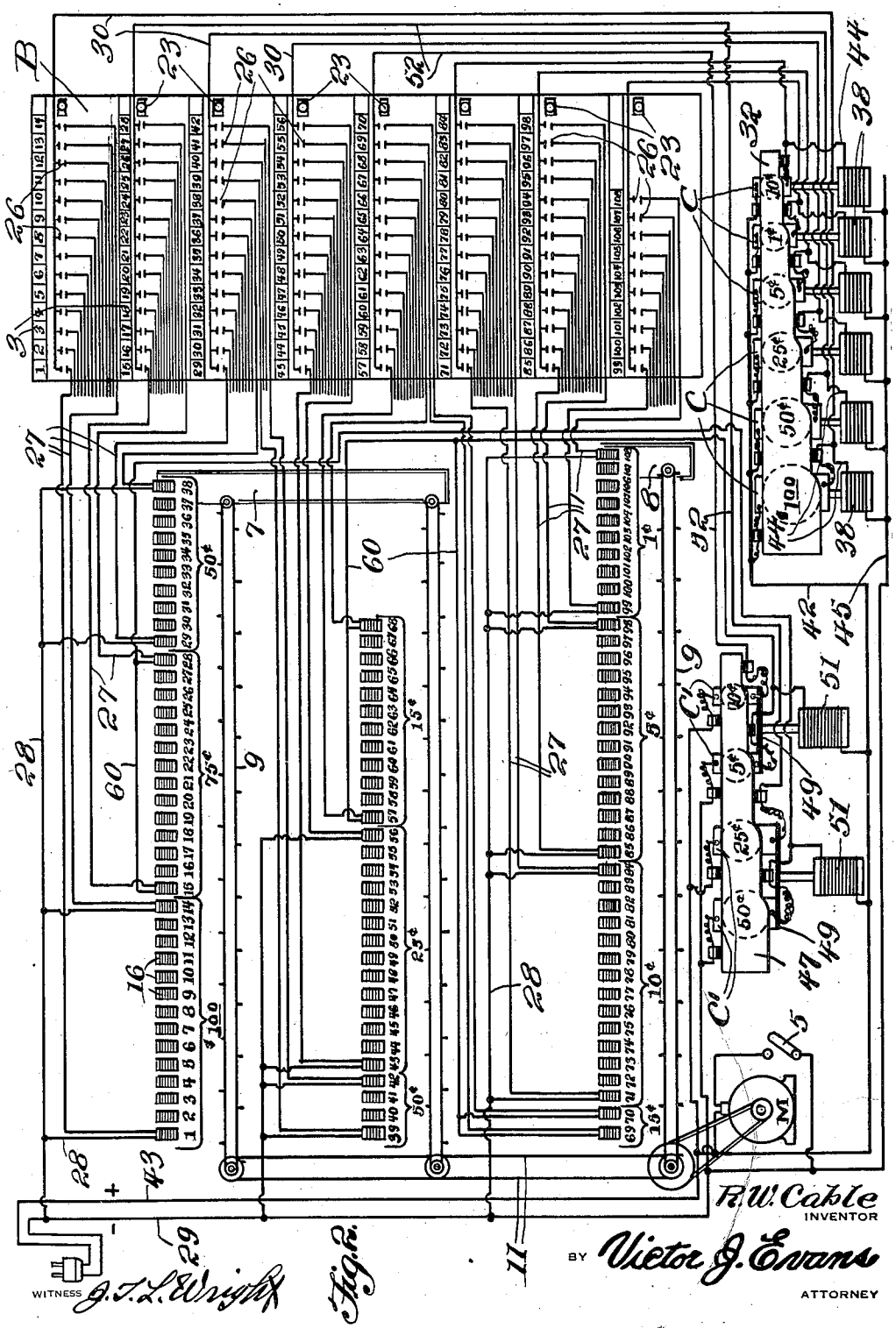
BY Victor J. Evans
ATTORNEY

J. C. L. Wright
WITNESS.

July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

Filed Sept. 21, 1929 6 Sheets-Sheet 2



WITNESS J. T. L. Wright

Fig. 2.

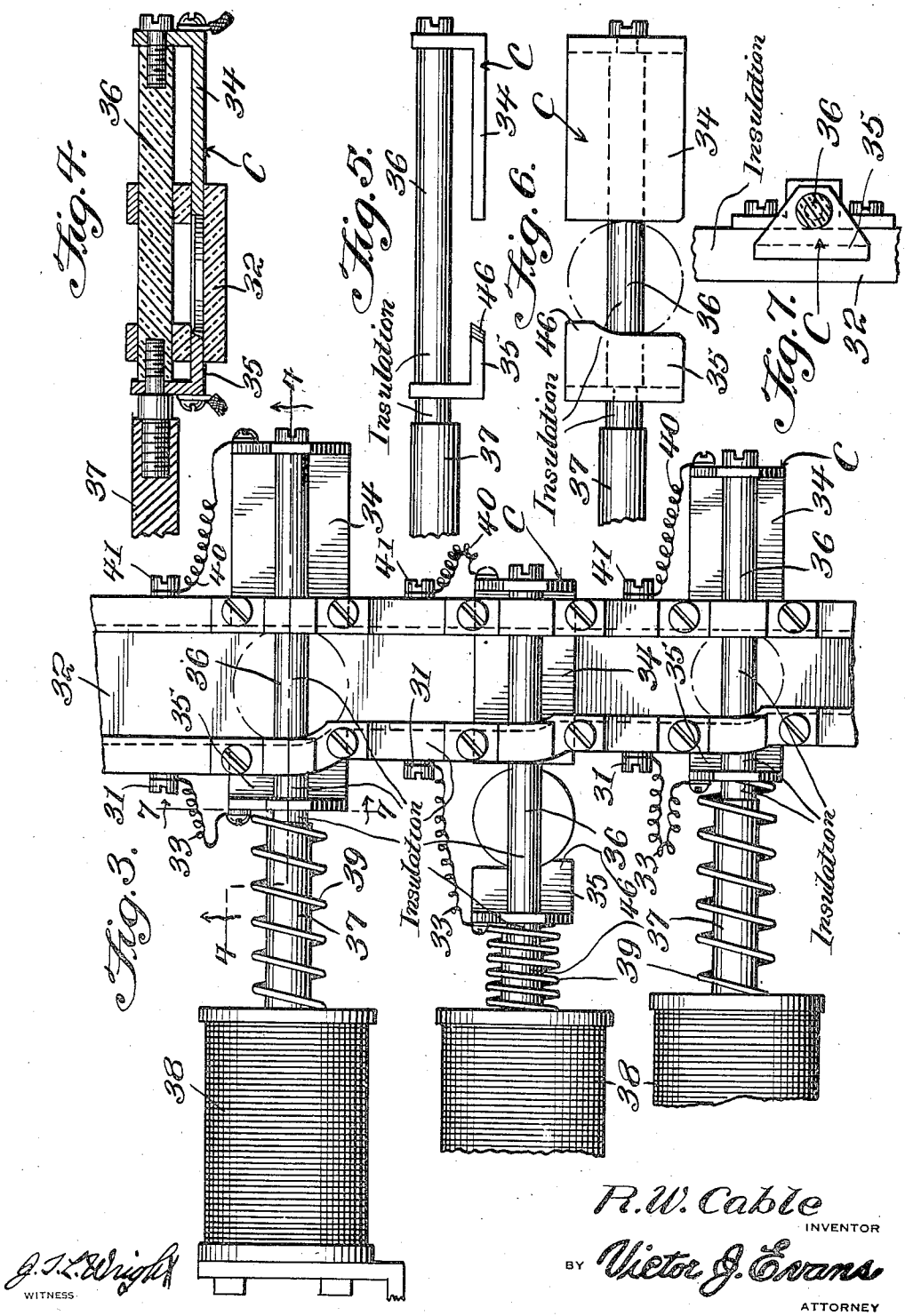
R. W. Cable
INVENTOR

BY Victor J. Evans
ATTORNEY

July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

Filed Sept. 21, 1929 6 Sheets-Sheet 3



R. W. Cable
INVENTOR

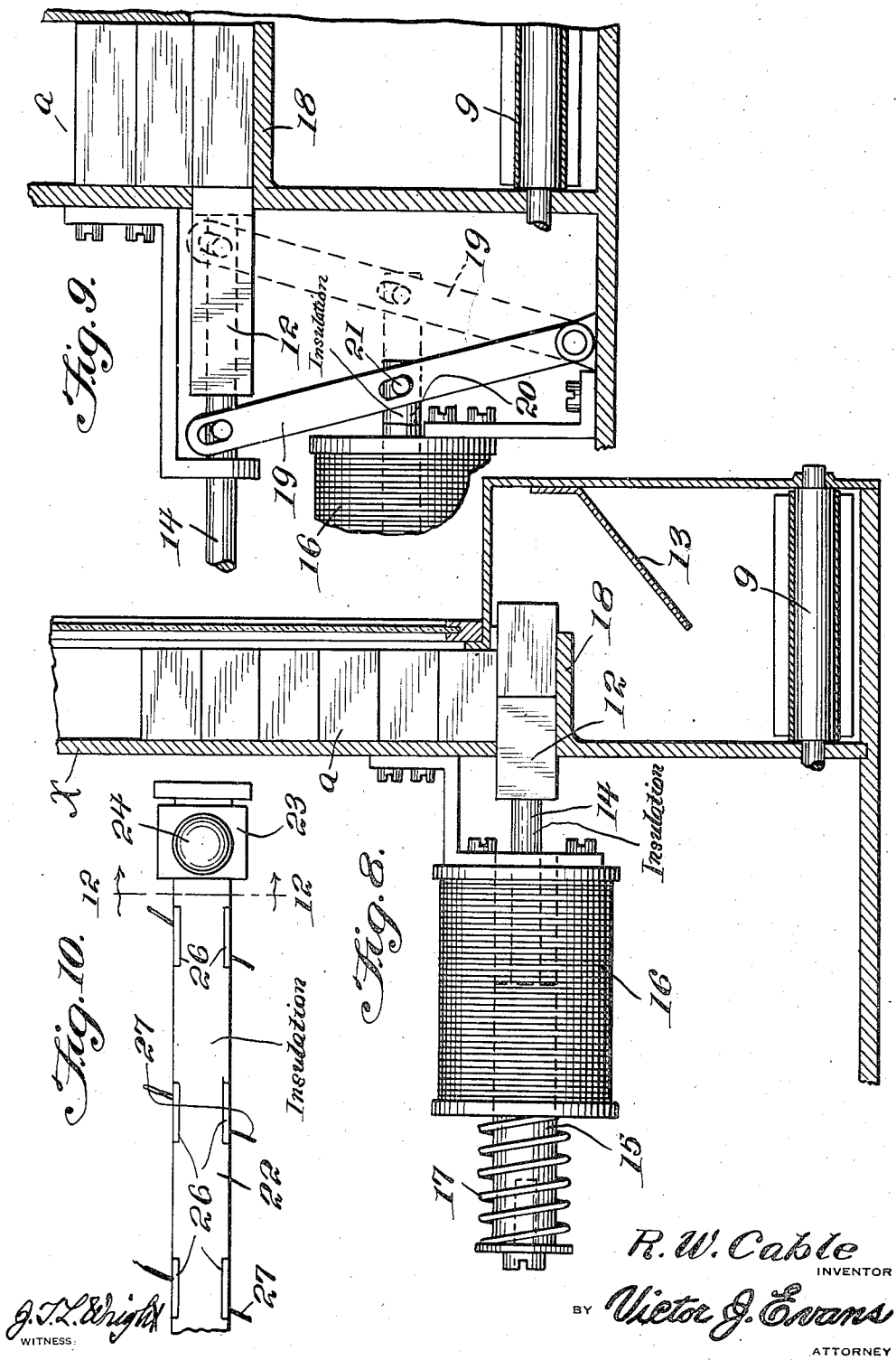
BY Victor J. Evans
ATTORNEY

J. L. Wright
WITNESS

July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

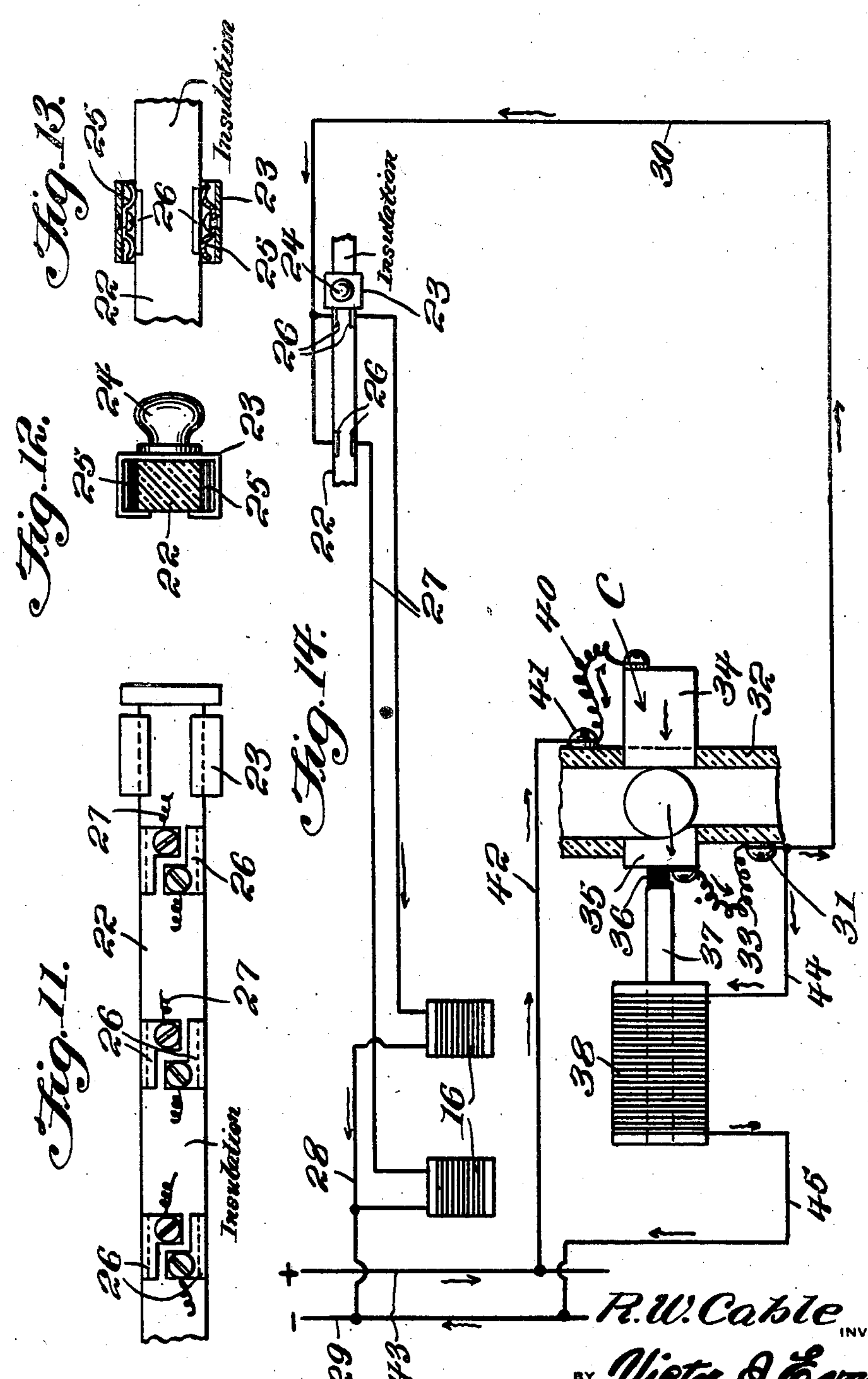
Filed Sept. 21, 1929 6 Sheets-Sheet 4



July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

Filed Sept. 21, 1929 6 Sheets-Sheet 5



R. W. Cable INVENTOR

BY Victor J. Evans ATTORNEY

WITNESS: J. T. L. Wright

July 12, 1932. R. W. CABLE 1,867,496

COIN CONTROLLED VENDING APPARATUS

Filed Sept. 21, 1929 6 Sheets-Sheet 6

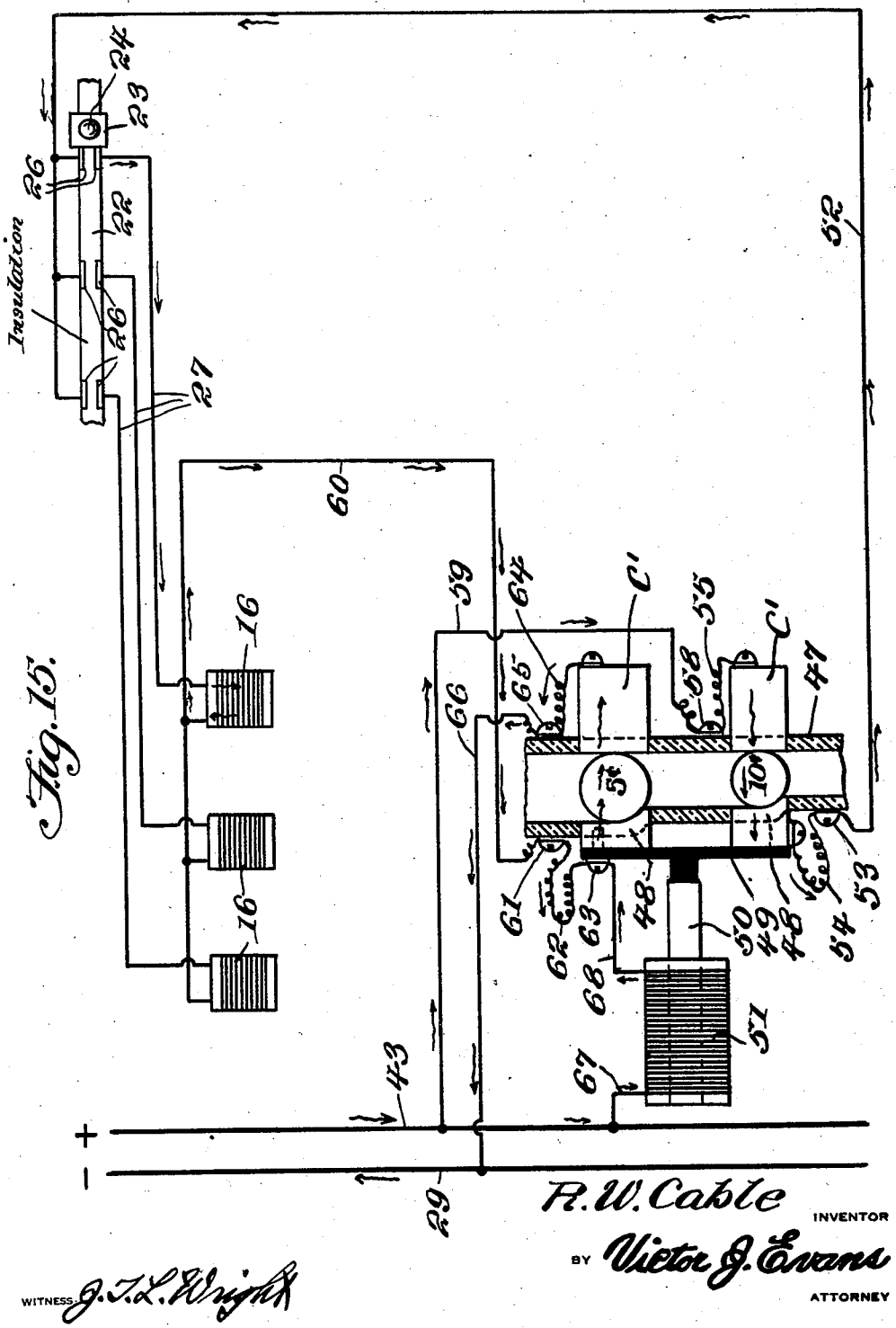


Fig. 15.

R. W. Cable INVENTOR

BY Victor J. Evans ATTORNEY

WITNESS J. L. Wright

Patented July 12, 1932 1,867,496

UNITED STATES PATENT OFFICE

RUPERT WINFRED CABLE, OF GREENSBORO, NORTH CAROLINA

COIN CONTROLLED VENDING APPARATUS

Application filed September 21, 1929. Serial No. 394,199.

This invention relates to an electrically operated, coin controlled apparatus, the general object of the invention being to provide means whereby articles of various kinds and of various prices can be vended from one apparatus, with means whereby one can deposit the coin or coins, operate the switches and receive the articles while standing in front of one part of the apparatus.

Another object of the invention is to provide a pair of coin chutes, one for receiving the coins for controlling the vending of articles, the prices of which are covered by single coins and the other chute receiving the coins for controlling the vending of articles, the prices of which are such that a number of coins must be deposited to cover the price of each article.

A still further object of the invention is to so form each chute that the coins are properly positioned therein according to their sizes so that the coins will close the proper circuits of the vending means, the chute which receives the coins for vending the two coin priced articles having its electric connections so formed that each circuit will not be closed unless two coins of the desired size are placed therein.

A still further object of the invention is to arrange the article receiving compartments in tiers or rows, with a conveyor under each row for conveying the articles dropping from the compartments to the point of discharge, with a single motor for driving the conveyors, the circuit of which is controlled by a switch arranged on the switch board.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an elevation of an apparatus constructed in accordance with this invention.

Figure 2 is a diagrammatic view of the circuits.

Figure 3 is an enlarged fragmentary elevation of the chute for receiving the single coins, this view also showing the ejector means for the coins and portions of the circuits.

Figure 4 is a section on line 4—4 of Figure 3.

Figure 5 is an edge view showing the coin receiving slide and the shaft to which the slide is connected.

Figure 6 is a bottom plan view of Figure 5.

Figure 7 is a section on line 7—7 of Figure 3.

Figure 8 is a sectional view with parts in elevation, showing the ejector means for the articles in one compartment, this view also showing the conveyor.

Figure 9 is a view showing a modification of the ejector means.

Figure 10 is a fragmentary plan view of the contact bar and the sliding switch thereon.

Figure 11 is a bottom plan view of Figure 10.

Figure 12 is a section on line 12—12 of Figure 10.

Figure 13 is a sectional view through the sliding switch, with part of the contact carrying bar in plan.

Figure 14 is an enlarged diagrammatic view showing how a circuit is closed by a single coin.

Figure 15 is a similar view showing how a circuit is closed by a pair of coins.

In these drawings, the letter X indicates a casing or cabinet which contains a plurality of rows or tiers of compartments *a*, each compartment having a glass front so that the

articles therein will be visible, and at the top of each compartment, a card or the like is placed containing the name of the articles in the compartment and the price thereof, as shown at 1 in Figure 1. These compartments are also numbered consecutively, as shown at 2. A switchboard B is placed at any suitable point on the front of the casing and contains rows of numbers 3 which correspond with the numbers of the compartments, a slot 4 being formed in the bore under each row of numbers.

A pair of coin slots A and A' is formed in the top of the board and a switch 5 is also carried by the board. Instructions for operating the apparatus are placed adjacent the board, as shown at 6. Discharge openings 7 and 8 are formed in the front of the casing adjacent the board. An endless conveyor 9 is arranged under each row of compartments and these conveyors are driven from a single motor M placed in a housing 10 through the shafting, sprockets and chains, shown generally at 11. The upper conveyor discharges the articles thereon into a chute which in turn discharges the articles through the opening 7 and the next lower conveyor discharges the articles through said opening 7. The bottom conveyor discharges the articles through the opening 8.

A slide or ejector 12 is located at the lower end of each compartment for ejecting the articles therefrom on to a chute 13 which delivers the articles to the conveyor 9 and this slide or ejector is attached to a shaft 14 which is connected to a core 15 of a solenoid 16. A spring 17 on the core normally holds the parts with the ejector in inoperative position, but when the solenoid is energized, the parts are moved to operative position so that the slide or ejector will move the lowermost article out of the compartment and cause it to drop upon the chute. Then as the ejector is retracted, the next article drops upon the shelf 18 at the bottom of the compartment. Instead of having the shaft or rod 14 connected directly with the core, this shaft can be connected to a lever 19 which is connected with an insulated part 20 attached to the core by a pin and slot connection 21, as shown in Figure 9, so that the ejector will have a greater throw or length of movement than when the ejector is connected directly with the core, as in Figure 8. Of course, in this Figure 8, the ejector is insulated from the core as the shaft 14 is formed in whole or part of non-conducting material.

A plurality of bars 22, formed of non-conducting material, are located in rear of the switchboard, each bar being arranged in rear of a slot 4, and a sliding switch 23 is arranged on each bar, said switch having a knob 24 thereon which extends through the slot and the body of each switch is of substantially channel shape in cross section so as to embrace the bar and said body has arranged therein a pair of spring contact members 25 for engaging the edges of the bar. Each bar carries a plurality of pairs of stationary contacts 26, one contact of each pair having a portion arranged in a recess on one edge of the bar and the other contact having a portion arranged in a recess on the other edge thereof, the contacts of each pair being arranged opposite each other so that the contacts of each pair will be bridged by the body of the switch 23 when said switch has been moved over a pair. These pairs of contacts are arranged opposite the numerals 3 on the switchboard. One contact of each pair is connected by a conductor 27 with a solenoid 16 and each solenoid of those solenoids which are controlled by a single coin is connected by a conductor 28 with the negative wire 29 of a supply circuit. It will, of course, be understood that the contact of the pair which is opposite the numeral 1 on the switchboard will be connected with the solenoid which operates the ejector of the compartment numbered "1" so that when it is desired to secure an article from any desired compartment, it is simply necessary to move the switch 23 by means of its knob 24 to the pair of contacts 26 under the number which corresponds to the number of the compartment from which the article is desired. The second contact of each pair of contacts 26 which are used to control the circuits of the ejector means operated by single coins is connected by a conductor 30 with a terminal 31 on the chute 32 which receives the coins from the slot A and each terminal 31 is connected by a conductor 33 with the section 35 of a coin holder or slide C. The two sections 34 and 35 of this slide are formed of conducting material and are fastened to a rod 36 of non-conducting material which has one end connected with the core 37 of a solenoid 38. A spring 39 on a part of the core tends to hold the slide in a position to receive a coin dropped into the chute. When a coin is in the slide, it will bridge the space between the two sections thereof and thus complete the circuit through a conductor 40, terminal 41 and conductors 42 to the positive line 43 of the supply line. One end of the coil of each of the solenoids 38 of the single coin chute is connected by a conductor 44 with the terminal 31 and the other end of each coil is connected by the conductors 45 with the negative wire 29 so that each magnet 38 will be energized by a coin in the holder thereof, whereby the solenoid will retract the slide or holder and move the coin out of the chute and permit it to drop from between the sections of the holder into a suitable receptacle for receiving the coins. As will be seen, each section 35 is formed with a projection 46, the upper curved part of which is engaged by a coin dropped into the chute so that the coin

is held between the sections by this projection. This construction of the coin holders makes said holders coin selectors, as coins of the denominations for which the holders are designed will be caught and held by the holders, while the smaller coins will pass through the larger holders and be caught and held by the smaller holders which are designed to receive such coins. Each section 35 has the coin engaging edge thereof bevelled as shown in Figures 4 to 6 so that when the section 35 and its companion section 34 are moved outwardly of the coin chute, the coin carried thereby will tilt and fall therefrom.

This chute 32 and the chute 47 for the pairs of coins are of stepped formation, with the larger portions uppermost, with a curved shoulder 48 at the junction of one step with another. Thus the first curved shoulder will act to catch and hold the largest coins that are used in the apparatus, but permitting the smaller coins to pass into the next step, where the next larger coins are caught and held by the next shoulder and so on, so that the shoulders in the chutes will automatically position the coins according to their sizes and in the proper holders C. Of course, the chute 47 is placed to receive the coins dropped into the slot A′ and the holders C′ of this chute are made similar to the holders of the other chute, but these holders C′ are arranged in pairs, each pair being connected to a substantially T-shaped member 49 of non-conducting material, with the stem of the member connected to the core 50 of a solenoid 51. The second contacts of the pairs of contacts 26 which are connected with the ejectors of the compartments containing articles, the cost of which is covered by a number of coins, are each connected by a conductor 52 to a terminal 53 on the chute 47 and each terminal 53 is connected by a conductor 54 to the shouldered section of the lower or smaller coin holder of each pair of holders C′ and the other section of this holder is connected by a conductor 55 with a terminal 58 on the chute which in turn is connected by a conductor 59 with the positive wire 43 of the supply line.

The second terminals of the ejector solenoids 16 for ejecting articles from the compartments containing articles covered by a number of coins are each connected by a conductor 60 with a terminal 61 on the chute 47 and a conductor 62 connects said terminal with a terminal 63 connected with the shouldered section of the upper or larger coin holder of the pair C′ and the other section of this holder is connected by a conductor 64 with the terminal 65 on the chute which in turn is connected by a conductor 66 with the negative wire of the supply line. A conductor 67 connects the supply wire 43 with one terminal of each solenoid 51 and the other terminal is connected by a conductor 68 with the terminal 63.

From the foregoing it will be seen that the articles placed in the compartments are visible through the glass fronts thereof and the names and prices of the articles are arranged above the compartments so that a customer can readily find the articles he desires to purchase as well as the price of such articles. Say for instance, the purchaser wishes an article in compartment No. 1, the cost of which is $1.00. He would first move the switch 23 in the top row of switches to the left, so that said switch would bridge the pair of contacts 26 arranged under the numeral 1, as this switch, of course, controls the circuit of the ejector of the No. 1 compartment. He would then drop a silver dollar into the slot A and this dollar would pass through the chute 32 and engage the first shoulder 48 in the chute. In this position of the coin, it would be bridging the two sections of the first holder 34, so that current would flow from the positive line 43 to the section 34 of the holder, through the coin to the section 35 and then the current would pass over a conductor 30 to the upper contact 26 through the switch 23 to the lower contact 26 and then through the conductor 27 to the solenoid of the ejector of the No. 1 compartment through the conductor 28 to the negative wire of the supply line. Thus the ejector of this first compartment would be operated to eject an article therefrom and the solenoid 38 would be energized to retract the coin holder so that the coin would be moved out of the chute and dropped into the coin receptacle and as soon as the coin leaves the holder, the circuits would be broken and the parts would return to normal position. The customer would then operate the switch 5 to start the motor M so that the upper conveyor, upon which the article had previously been deposited by the ejector, would convey the article to the chute above the opening 7 so that the article would be delivered to the discharge opening 7, where the purchaser could secure the same.

If the customer wanted an article, say from the compartment 15, which costs 75¢, so that two coins must be deposited, he would move the sliding switch to the pair of contacts under the numeral 15 and then deposit a 25¢ coin and then a 50¢ coin into slot A′. The 25¢ coin would pass down the chute until it engaged the second shoulder and the 50¢ coin would pass down the chute until it engaged the first shoulder. Current would then flow from the supply line through conductors 59 and 55 through the sections of the small holder and the 25¢ coin therein, through conductors 54 and 52 to the upper contact 26 of the pair of contacts under the numeral 15, through the switch 23 to the lower contact of said pair, then through conductor 27 to the solenoid 16 of the ejector means of the com-

partment 15, then through conductor 60 to the conductor 62, then through the upper holder of the pair C′ and the coin in the holder, through conductors 64 and 66 to the negative line of the supply. At the same time, current would flow from the supply through conductor 67 to solenoid 51 and through conductor 68 to terminal 63 and through the upper holder of the pair C′ back to the supply line through the conductors 64 and 66. Thus an article in the compartment 15 will be ejected by its ejecting means on to the conveyor and the solenoid 51 will move the pair of coin holders C′ to a position where the two coins will drop from the holders, thus breaking the circuit and permitting the springs to return the parts to normal position. Then the customer would press the switch 5 to operate the motor M so that the conveyor would carry the article to the point of discharge. Thus the invention will vend various kinds of articles and articles of different prices by the proper adjustment of a switch and the insertion of the proper coin or coins in either one of two coin slots and after the article is secured, the apparatus is ready for the next customer without any attention from the first customer. By placing the controls on a switchboard, the operator is not required to change his position from a point in front of the switchboard after he has made his selection of the article or articles desired.

With this invention, an entire store, for instance, can be run by a few attendants, as it will only be necessary for the attendants to see that the compartments are kept full and to make change for the customers.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, combined coin controlled circuit closers and coin selectors for closing the circuits of the article ejector means, electrically operated means for causing the ejection of the coins, conveyor means for conveying the articles ejected from the compartment to a point of delivery to a purchaser, and means for operating the conveyor means.

2. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejecting means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, combined coin controlled circuit closers and coin selectors for closing the circuits of the article ejector means, electrically operated means arranged in the circuit for causing the ejection of the coins, conveyor means for conveying the articles ejected from the compartments to a point of delivery to a purchaser, and means for operating the conveyor means.

3. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, means whereby a coin will close each circuit of some of the article ejector means and means whereby a number of coins will close each circuit of the other article ejector means, said circuit closing means including coin selector means, conveyor means for conveying the articles ejected from the compartments to a point of delivery to a purchaser, and means for operating the conveyor means.

4. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, means whereby a coin will close each circuit of some of the article ejector means, means whereby a number of coins will close each circuit of the other article ejector means, a coin chute for receiving the single coins and a coin chute for receiving a number of coins and coin selector means in the chutes, conveyor means for conveying the articles ejected from the compartments to a point of delivery to the purchaser, and means for operating the conveyor means.

5. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, a pair of coin chutes, a plurality of coin holders associated with each chute, the holders of one chute being arranged in groups, electrically operated means for operating the single holders of one chute, electrically operated means for operating each group of holders of the other chute, the holders of each chute being of gradually decreasing size whereby the upper and large holders will catch large coins dropped into the chute and the smaller coins will pass through the large holders into the smaller ones, the single holders being arranged in the circuits of the ejector means of some of the compart-

ments and each group of holders of the other chute being arranged in a circuit of each of the other ejector means, each holder consisting of two parts which are bridged by a coin whereby the circuit between the two parts is completed by the coin, the electrical means for operating the holders being arranged in the circuits, conveyor means for conveying the articles ejected from the compartments to a point of delivery to the purchaser, and means for operating the conveyor means.

6. In a coin apparatus, a coin chute, a coin holder consisting of a member passing through the chute and a pair of spaced sections carried by the member, said sections being of a conducting material and the member of non-conducting material, a yieldable means for normally positioning the sections in the coin chute to receive a coin, a projection on one of the sections for holding a coin between the sections whereby said coin will bridge the sections, a circuit having one terminal connected with one of the sections and the other terminal connected with the other section, and electrical means in said circuit for moving the member to cause the sections thereof to move the coin out of the chute when engaged by a coin.

7. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, a pair of spaced contacts in each circuit, a sliding switch for bridging any desired pair of contacts and combined coin controlled circuit closers and coin selectors for closing the circuits of the article ejector means and electrically operated means arranged in the circuits for causing the ejection of the coins, conveyor means for conveying the articles ejected from the compartments to a point of delivery to the purchaser, and means for operating the conveyor means.

8. A coin controlled vending machine comprising a plurality of compartments containing articles to be vended, electrically operated article ejector means for each compartment, circuits for such means, selective switch means for selecting the ejector means of any desired compartment, a pair of coin chutes, a plurality of single coin holders associated with one chute, a plurality of double coin holders associated with the other chute, each holder comprising two spaced sections spaced apart to receive a coin between them whereby one section is electrically connected with the other section, each single holder having its sections arranged in each circuit of some of the article ejector means and one holder of each pair of double holders having its sections arranged in the positive side of each circuit of the other ejector means and the sections of the other holder arranged in the negative side of the circuit, electrically operated means for moving the single ejectors to coin ejecting position, electrically operated means for moving the double holders to coin ejecting position, said electrically operated means being arranged in the circuits, conveyor means for conveying the articles ejected from the compartments to a point of delivery to the purchaser, and means for operating the conveyor means.

In testimony whereof I affix my signature.

RUPERT WINFRED CABLE.