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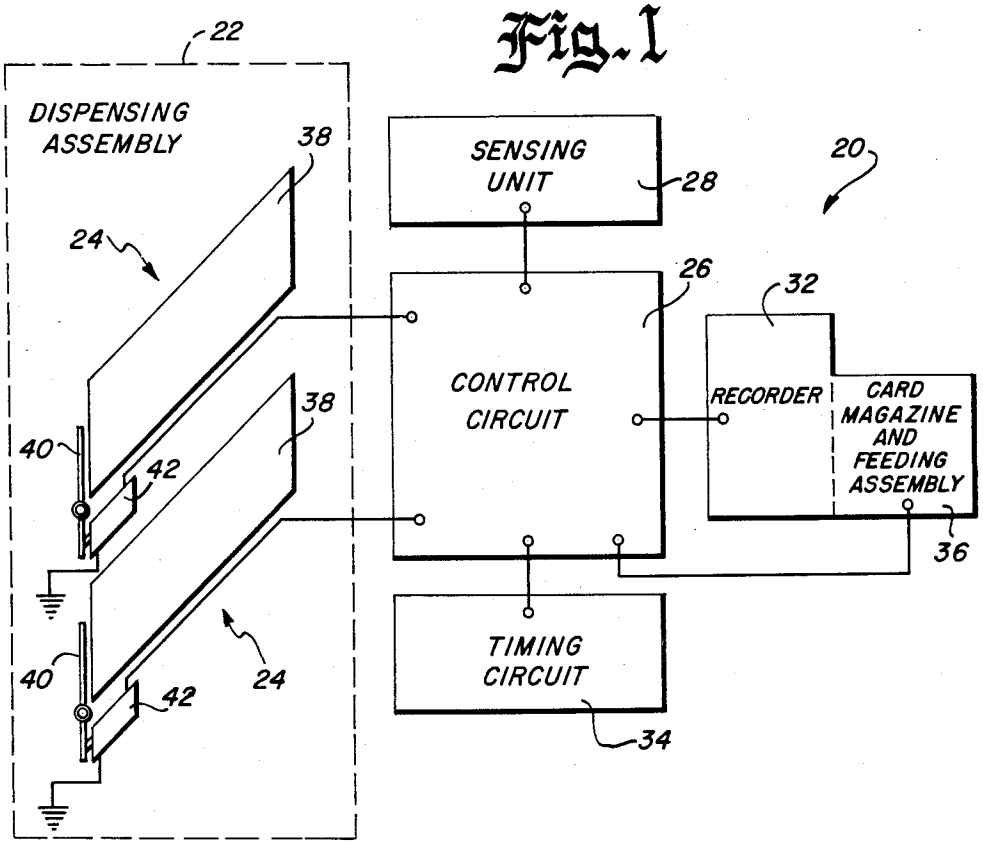
VENDING SYSTEM

Filed July 25, 1957 4 Sheets-Sheet 1

Fig. 1



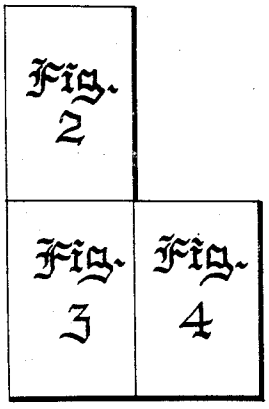


Fig. 5

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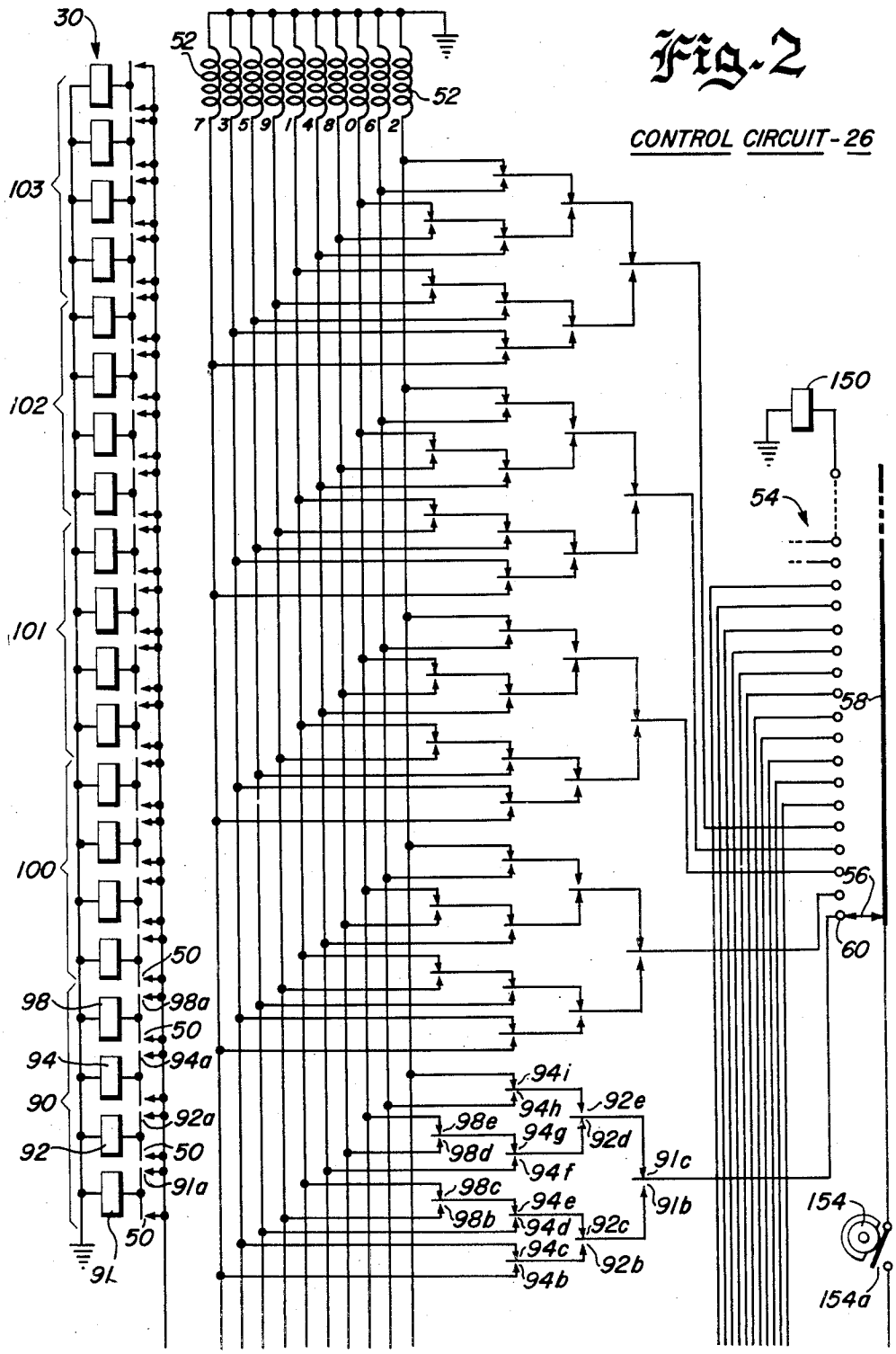
Fig. 2



VENDING SYSTEM

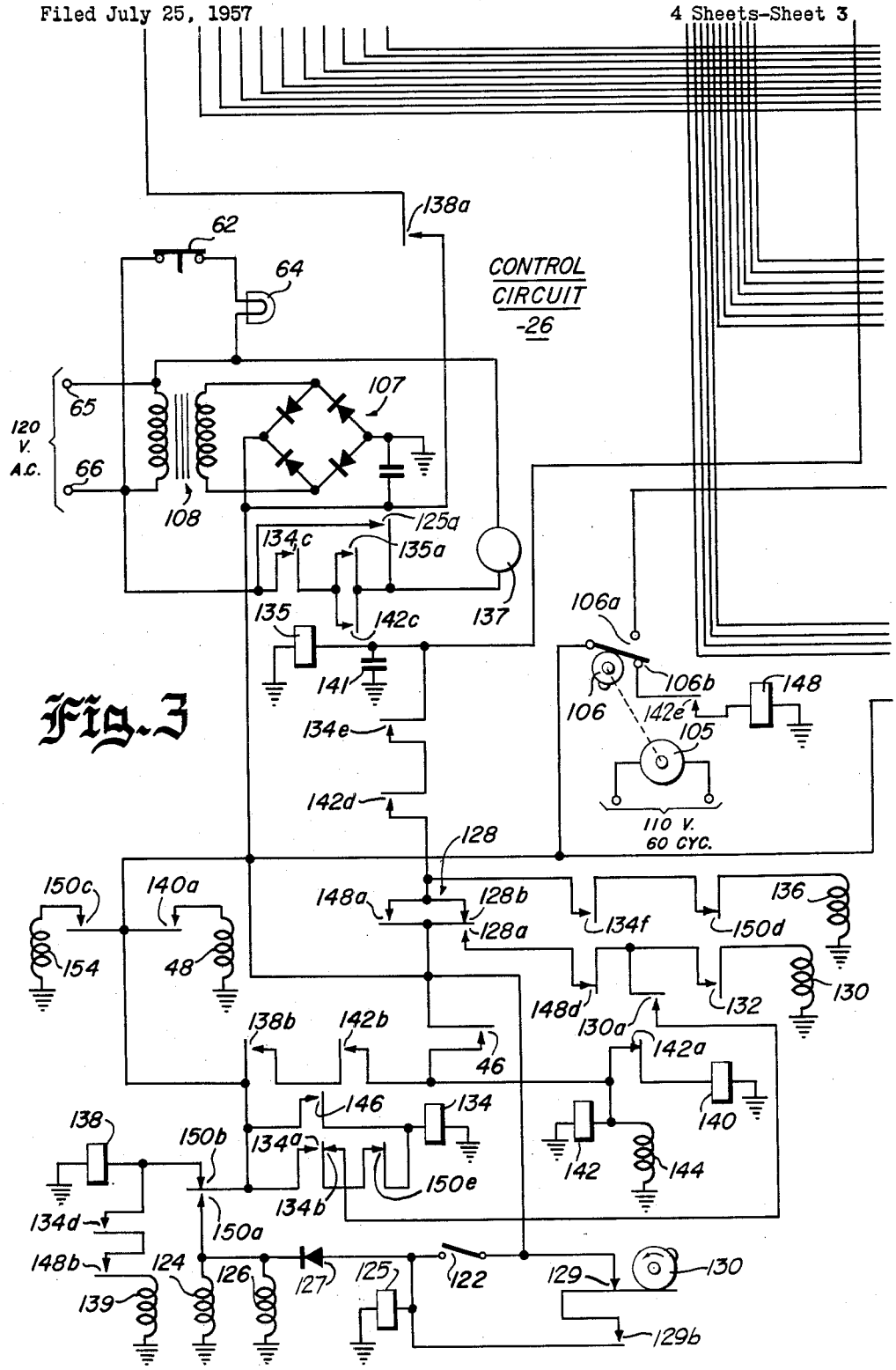


Fig. 3

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VENDING SYSTEM

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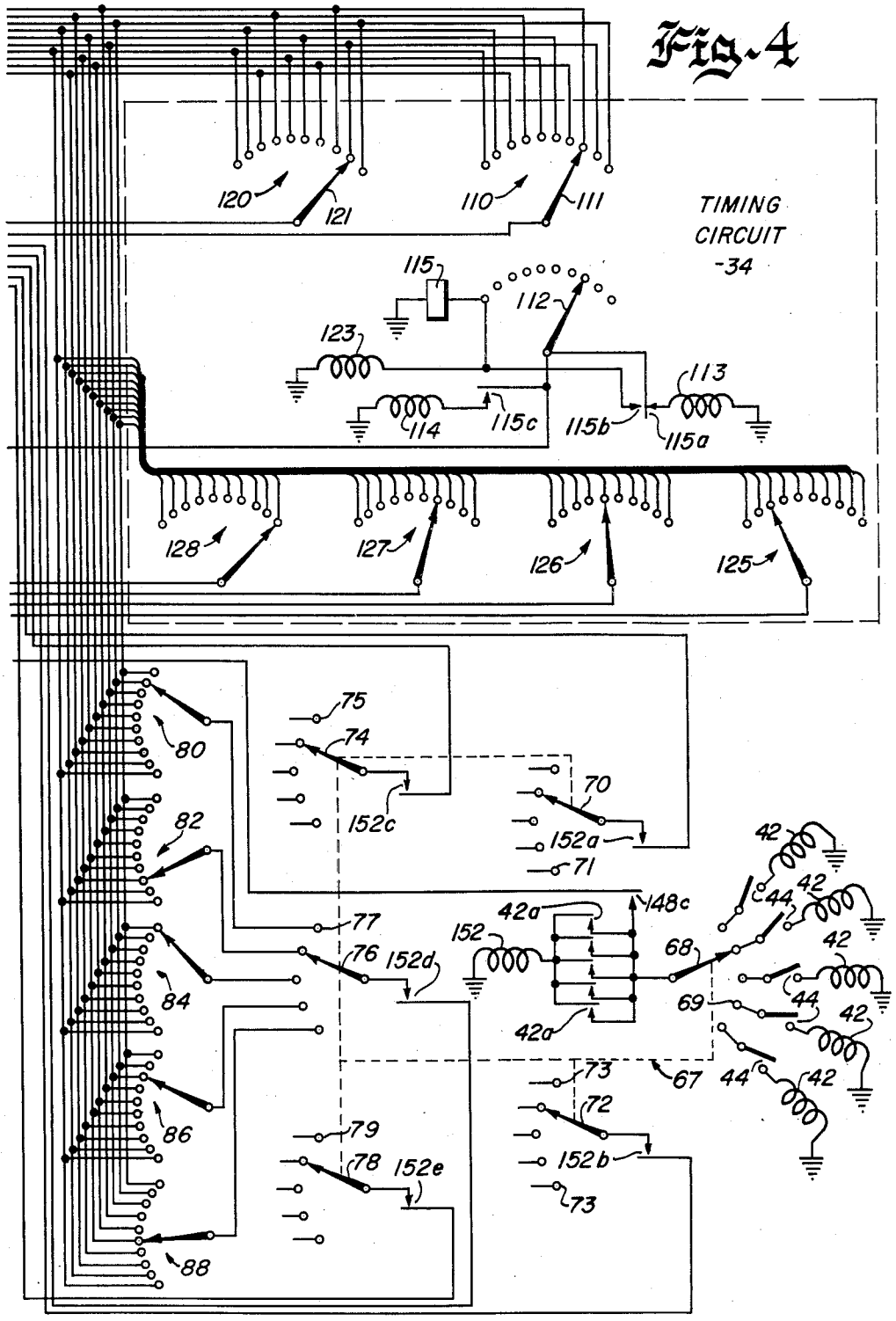
Fig. 4



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2,970,877

VENDING SYSTEM

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Filed July 25, 1957, Ser. No. 674,125

14 Claims. (Cl. 346—34)

This invention relates to a vending system and apparatus and, more particularly, to a check controlled vending and recording unit for dispensing selected items and for automatically recording data pertaining to the dispensing operation.

In the vending industry, a large variety of items, such as solid and liquid food products in bulk or package form, tobacco products, etc., are automatically dispensed by coin operated vending units. In order to insure that these coin operated units handle as great a volume as possible, it is necessary to provide a readily available source of coins in the proper values for operating these units. The necessary coins are commonly available from cashiers in the establishments in which the vending units are located. However, in factories and plants and in other locations where a cashier is not available, one expedient which commonly has been adopted is the provision of either coin changing mechanisms separate from the vending units or coin changing mechanisms which are part of the vending unit and which return a sum of money equal to the difference between the cost of the item dispensed and the value of the inserted coin or coins. The problem of providing change for operation of the vending units has been increased as the variety of the items automatically dispensed have expanded. This problem is further aggravated by the pricing of some of the dispensed items at costs which can be accumulated in coin only by the insertion of a number of coins of different values. The necessity of inserting a number of coins of different values into a vending unit requires the provision of a greater number of coin changing mechanisms in a given location and further aggravates the problem of designing coin rejecting and accumulating mechanisms in the vending units which will distinguish between the coins and spurious tokens and place the vending units in operation only following the accumulation of the requisite sum in the coin operated mechanisms.

Accordingly, one object of the present invention is to provide a new and improved vending system and apparatus which overcomes the above problems.

Another object is to provide a vending apparatus controlled by keys representing the identification of the purchaser which obviates the need for coin controlled mechanisms.

Another object is to provide a vending system including recording means for recording data pertaining to each of a plurality of vending operations.

A still further object is to provide a vending apparatus selectively operated by a check or key having coded indicia thereon representing the identification of the purchaser.

A still further object is to provide a vending system including means for automatically recording the identification of the purchaser and data relating to the item or items dispensed in response to each operation of a vending apparatus.

Another object of the present invention is to provide a vending system for use with keys coded with purchaser identification data which includes a plurality of vending units controlled by a selecting mechanism and recorder means controlled by one of said coded keys and the selecting mechanism for automatically recording the dispensed item data in conjunction with the purchaser's identification.

Another object is to provide vending apparatus including timing means and a recorder controlled by operation of the vending apparatus for automatically recording the date on which items are dispensed by the vending apparatus.

Another object is to provide a vending system including means for automatically recording the date of purchase, the identification of the purchaser, and the cost and designation of the items dispensed in response to each vending operation.

In accordance with these and many other objects, an embodiment of the present invention comprises an automatically operated key controlled vending apparatus and system in which the use of coin controlled mechanisms is obviated by the provision of recorder means for recording the identification of the purchaser and the data pertaining to the item dispensed in response to each vending operation. This vending system includes a vending apparatus for selectively dispensing items in bulk or package form from one of a plurality of separate vending units selected by a manually operable selecting means under the control of a sensing device into which a key bearing purchaser identifying codes is inserted. A recording assembly in the system is controlled by a timing circuit, the sensing means, and a dispensed item register controlled by the selecting means to automatically record the cost and designation of the item dispensed, the date on which the item is dispensed, and the identification of the purchaser in response to each vending or dispensing operation.

The vending assembly includes a plurality of separate vending units for dispensing or discharging solid or liquid items in package or bulk form which are selectively conditioned for operation under the control of a manually actuated selector mechanism. The selector mechanism also conditions a first register means for storing the designation and the cost of the item to be dispensed in accordance with the separate vending unit which is conditioned for operation. When a coded key is inserted into the sensing unit, second register means are selectively operated in accordance with the sensed indicia on the inserted key to store the identification of the purchaser and a control circuit is placed in operation so that the conditioned vending unit is actuated to dispense the selected item. In response to the vending of the selected item, the first register means is rendered effective to store the cost and designation thereof, and a cycle of recording operation of the recorder assembly is initiated.

The recorder assembly includes a card punching or perforating assembly to which a card is supplied by an automatically operated card transport mechanism including a card magazine. A control circuit selectively controls the card transport mechanism and includes switching means for sequentially rendering the card punching assembly responsive to control by the first and second register means and the timing means which is automatically adjusted to settings representing instant date. Upon the insertion of a key into the sensing unit, the control circuit operates the previously selected vending means and places the switching means in operation so that the punching assembly is sequentially provided with the information pertaining to the identification or designation of the purchaser, as determined by the second register means, the cost and designation of the vended item, as determined by the first register means, and the day on which the purchase is made, as determined by the set-

tings of the timing circuit. Upon the completion of the recording operation, the punched card is ejected from the punching assembly and the card transport mechanism is rendered effective to advance a blank record card from the magazine into a punching position in which it is capable of receiving the items of information pertaining to the next vending operation.

In this manner, the key controlled vending system and apparatus of the present invention provides means for obviating the use of coin controlled mechanisms in a vending apparatus by automatically recording the identification of the purchaser, the cost and the designation of the vended item, and the date on which the item is dispensed in conjunction with each vending operation. The operation of the recording apparatus is so interlocked with that of the vending assembly that a vending operation cannot take place without the automatic recording of the necessary items of information. By thus providing a punched card or primary source record in conjunction with each vending operation, it is possible to maintain a continuous inventory of material on hand and an accurate indication of volume of sale by the use of existing automatic tabulating equipment and without the necessity of performing the time consuming methods presently practiced.

Many other objects and advantages of the present invention will become apparent from a consideration of the following description thereof when taken into conjunction with the drawings wherein:

Fig. 1 is a block diagram illustrating the major components of an automatic system and apparatus embodying the present invention;

Figs. 2, 3 and 4 are circuit diagrams illustrating the electrical components of the system and apparatus of the present invention and;

Fig. 5 is a block diagram illustrating the manner in which Figs. 2, 3 and 4 are positioned adjacent each other to form a complete circuit diagram of the present invention.

Referring now to Fig. 1 of the drawings, therein is shown a block diagram of an automatically controlled vending system and apparatus **20** embodying the present invention. The vending system **20** includes a dispensing or vending assembly **22** including a plurality of separate electrically controlled vending units **24**, any one of which can be conditioned for operation under the control of manually actuated selecting means included in a control circuit **26**. When the manual selecting means has been adjusted to a setting to select the item to be dispensed by one of the units **24**, a coded key bearing indicia identifying the purchaser is inserted into a sensing unit **28** so that a register relay circuit **30** (Fig. 2) is operated by the sensing unit **28** to store the identification of the purchaser. Concurrently with storing the identification of the purchaser in the register relay circuit **30**, the control circuit **26** is operated to actuate the vending unit **24** which has previously been conditioned for operation under the control of the manual selecting means. The operation of the selected vending unit **24** operates register means included in the control circuit **26** to store the cost and designation of the dispensed item.

In addition to causing the selective operation of the dispensing assembly **22**, the insertion of a key into the sensing unit **28** operates the control circuit **26** so that a cycle of operation of a recorder **32** is initiated during which the items of information designating the purchaser, the cost and identification of the item dispensed, and the date on which the item is dispensed are recorded on a punched card. To initiate this recording cycle, the control circuit **26** starts step-by-step movement of a commutator which provides switching means for sequentially rendering a card punching assembly responsive to control by the various data sources so that the items of digital information are recorded in spaced columns on a blank record card, the card being advanced step-by-step by an indexing drive assembly which operates in synchronism with the movement of the commutator and the operation of the punching assembly. The switching means or commutator first renders the punching assembly responsive to control by the register relay circuit **30** so that the designation of the purchaser is recorded on the card. Thereafter, the register means in the control circuit **26** controlled by the selective operation of of dispensing assembly **22** is rendered effective so that the recorder **32** records the cost and designation of the dispensed article. Thereafter, the switching means in the control circuit **26** renders a timing circuit **34**, which is continuously operative to settings representing the date, effective to record the date on which the item is dispensed on the punched card. At the completion of the recording operation, the control circuit **26** operates an ejecting mechanism in the recorder **32** to eject the punched card and thereafter operate a card magazine and feeding assembly **36** so that a blank card is fed into the recorder **32** and advanced to a position in which it is capable of receiving the items of information pertaining to the next item dispensed.

Thus, in response to the insertion of a coded key into the sensing unit **28** and in response to the manual selection of the item to be dispensed by the assembly **22**, the vending assembly and apparatus **20** of the present invention automatically provides a punched card containing the identification of the purchaser, the cost and designation of the item dispensed, and the date on which the item is dispensed. The system and apparatus **20** obviates the need for coin controlled mechanisms and provides a punched card which is capable of use in existing automatic tabulating equipment for providing a day by day control over inventory and a similar day by day indication of sales volume. These punched cards, in the event that the vending system **20** is located in a plant or factory, can be used by the payroll office of the company to automatically determine a payroll deduction to be made for the cost of the items vended.

Referring now more specifically to the dispensing assembly **22**, this assembly may comprise any of the conventional well known means for dispensing items in either liquid or solid form, or, in the case of insurance policy vending machines, an apparatus for advancing successive portions of a web of record material. As an example, the dispensing assembly **22** is illustrated in Fig. 1 of the drawings as including a plurality of separate vending units **24**, each of which comprises an inclined article or merchandise receiving chute **38** having an article releasing and retaining gate **40** which is displaced by the operation of a related control solenoid **42** to dispense one or a plurality of items. Although the individual electrically controlled vending units **24** are shown only in schematic form in Fig. 1, they may be of the type disclosed and described in detail in Wynn Patent No. 2,743,820, issued May 1, 1956.

In order to provide the control circuit **26** with information indicating the presence or absence of articles to be dispensed in the chutes **38**, each of these chutes is provided with a switch having an operating element extending into the chute so that when articles to be dispensed are provided in the chutes **38**, a pair of contacts **44** (Fig. 4) are closed. Each of these pairs of contacts is connected in series with the operating winding of the related gate release solenoid **42** so that, when any of the contacts **44** are opened to indicate the absence of an article to be dispensed in the related chute **38**, the associated gate release solenoid **42** cannot be actuated. Further, to provide information to the control circuit **26** indicating the satisfactory operation of the gate release solenoids **42** upon selective actuation thereof, each of these solenoids is provided with a pair of normally open contacts **42*a*** (Fig. 4) which is closed in response to the operation of the related gate release solenoid. Thus, the closure of the contacts **42*a*** indicates the satisfactory

operation of the related gate release solenoid and, accordingly, the discharge of the item to be dispensed. Although the contacts 42*a* are closed by the operation of the related solenoid 42, the contacts 42*a* could also be provided by a switch which is actuated by the physical discharge of the item from the chute 38 so as to provide a positive indication that the item to be dispensed has been released from the chute 38.

The sensing unit 28 is adapted to removably receive an inserted key bearing indicia representing the designation or identification of the purchaser and operates upon the insertion of a key both to store the identification of the purchaser in the register relay circuit 30 in the control circuit 26 and to place the control circuit 26 in operation so that the dispensing assembly 22 is operated to dispense the selected article and the recorder 32 is operated to record the data pertaining to the dispensing operation. The sensing unit 28 together with the keys which are removably inserted therein are identical to the sensing unit and keys disclosed and described in detail in the copending application of John T. Parsons and Floyd E. Harwood, Serial No. 674,131, filed July 25, 1957, which copending application is assigned to the same assignee as the present application. As disclosed therein, the individual keys are provided with spaced rows of perforations in accordance with the binary representation of the badge number of a plant employee so that the coded representation provided on each key is different from the coded representations of all of the other employees in a given plant or location. The sensing unit 28 includes a switch which is operated upon the insertion of a key into the sensing unit 28 to close a pair of contacts 46 (Fig. 3). The closure of the contacts 46 places the control circuit 26 in operation so that a solenoid 48 (Fig. 3) is energized to move a plurality of sensing pins toward the inserted key. The selective displacement of these sensing pins during the operation of the coding solenoid 48 causes the selective operation of a plurality of contact pairs 50 (Fig. 2) which selectively operate a plurality of relays in the register relay circuit 30. The selective operation of these relays in the register relay circuit 30 stores the binary coded representation of the employee's designation in the control circuit 26. Following the completion of the storage of this information, the coding solenoid 48 is released so that the sensing pins are withdrawn to permit the withdrawal of the inserted key. The removal of the inserted key opens the contacts 46.

The recorder 32 and the card magazine and feeding assembly 36 are operated under the control of the circuit 26 to automatically feed a blank record card into a recording position within the recorder 32 and thereafter to advance the card step-by-step in synchronism with the intermittent operation of the recorder 32 under the control of the data supplied by the control circuit 26 so that the data pertaining to each dispensing operation is recorded on the card which is then ejected from the recorder 32. The recorder 32 and the card magazine and feeding assembly 36 are identical to the card punching and feeding construction disclosed and described in detail in the copending application of Floyd E. Harwood and John T. Parsons, Serial No. 674,124, filed July 25, 1957, which copending application is assigned to the same assignee as the present application. In general, the card punching assembly disclosed therein includes a plurality of interposer solenoids 52 (Fig. 2) which are sequentially rendered responsive to control by various items of stored data under the control of a commutator indicated generally as 54 (Fig. 2). The commutator 54 includes a wiper 56 engaging a common contact 58 and which is advanced step-by-step in synchronism with the operation of the punching assembly to successively engage each of a plurality of individual contacts 60. In addition, the card feeding magazine and feeding assembly 36 includes a switch 62 (Fig. 3) for controlling the illumination of a lamp 64. The switch 62 is normally held in a closed condition when a supply of blank cards is provided in the assembly 36 so that the lamp 64 is connected across a pair of power input terminals 65 and 66 to be illuminated and provide a visible indication of the adequacy of the card supply in the magazine and feeding assembly 36. However, when the supply of cards is depleted, the switch 62 is opened to terminate the illumination of the lamp 64.

Referring now to the control circuit 26 (Figs. 2–4), this circuit includes a manually operable selector switch 67 (Fig. 4), which is adjustable to different settings to condition one of the vending units 24 for operation in accordance with the item which is to be dispensed. In the various settings of the switch 67, different marking paths are prepared for effectively registering the cost and designation of the article dispensed. The switch 67 includes six wipers 68, 70, 72, 74, 76 and 78 which are mechanically connected to concurrently move over banks of individual contacts 69, 71, 73, 75, 77 and 79 disposed adjacent thereto, respectively.

To provide means for conditioning one of the individual vending units 24 for operation, the operation of the selector switch mechanism 67 advances the wiper 68 over the contacts 69 until such time as the wiper 68 engages one of the contacts, as shown in Fig. 4, which is connected to the gate solenoid 42 associated with the individual vending unit 24 in the chute 38 of which is disposed the article or item to be dispensed. If the selected vending unit 24 is provided with articles to be dispensed, the associated contacts 44 are closed, thereby electrically connecting the wiper 68 through the engaged contact 69 and the closed contacts 44 to the operating winding of the gate solenoid 42 in the selected vending unit 24.

In order to provide marking conditions or to register the cost of the article to be dispensed and the designation thereof, the remaining wipers 70, 72, 74, 76 and 78 together with their associated contacts are provided. The wipers 76 and 72 provide marking conditions representing the tens and units cents of the cost of the item to be dispensed, and the wipers 74, 70 and 78 provide marking conditions representing a three digit designation of the selected item.

When the switch 67 is adjusted so that the wiper 68 conditions one of the gate solenoids 42 in one of the vending units 24 for operation, the wiper 76, for instance, engages one of the contacts 77 in accordance with the selected item. The setting of the wiper 76 is translated into a tens cents digit by a plurality of separate manually adjusted switches 80, 82, 84, 86 and 88. The contact banks of all of these switches are connected in multiple to the operating windings of the interposer solenoids 52 in the recorder 32, and the wiper in each of these switches is adjusted to a setting representing the value of the tens cents digit of the cost of the related item. For instance, if the tens cents digit of the cost of the item dispensed by the vending unit 24 which is conditioned for operation in the first setting of the selector switch 66 is "1," the wiper of the switch 80, which is connected to the first contact 77 in the bank engaged by the wiper 76, is connected to the second contact in its bank representing the tens cents digit "1." Similarly and as illustrated in Fig. 4, if the value of the tens cents digit of the article to be dispensed by the second vending unit 24 is "7," the wiper of the switch 82, which is connected to the second contact 77 in the bank engaged by the wiper 76, is adjusted to engage the contact in its bank which is connected to the winding of the interposer solenoid 52 representing the digit "7." The switches 84, 86 and 88 are similarly adjusted to settings representing the values of the tens cents digits of the costs of the articles dispensed by the third, fourth, and fifth dispensing units 24.

In order to provide information relating to the value of the units cents digit of the cost, each of the contacts 73 in the contact bank engaged by the wiper 72 is connected to one of a plurality of five manually adjusted

switches similar to the switches 80, 82, 84, 86 and 88. These similar switches are adjusted to settings representing the values of the units cents digits of the costs of the items dispensed by the five vending units 24. In a similar manner, the individual contacts 75, 71 and 79 engaged by the wipers 74, 70 and 78 are each individually connected to one of five manually adjusted switches similar to the switches 80, 82, 84, 86 and 88 in accordance with the values of the hundreds, tens and units digits of the designations of the items dispensed by the five vending units 24 in the dispensing assembly 22.

Thus, by the manual adjustment of the selector switch mechanism 66, a particular one of the vending units 24 in the dispensing assembly 22 is conditioned for operation and, concurrently therewith, marking conditions are established in the control circuit 26 in accordance with the values of the tens and units cents digits of the cost of the selected item and the hundreds, tens and units digits of the designation of the selected item. In essence therefore, the selecting mechanism 67 not only provides a means for selecting one of the articles provided in the dispensing assembly 22 for release, but also provides a register for storing the cost and designation of the selected item. Although the settings of the wipers 70, 72, 74, 76 and 78 of the selector switch mechanisms 66 are translated into marking conditions representing decimal cost and designation information by the provision of manually adjusted switches similar to the switches 80, 82, 84, 86 and 88, it is obvious that a patch cord circuit could be used in place of these switches.

The register relay circuit 30 (Fig. 2) is provided in the control circuit 26 for storing the designation of the purchaser under the control of the sensing unit 28. The register relay circuit 30 includes five register relay groups 90 and 100–103, each of which includes four register relays similar to four register relays 91, 92, 94 and 98 in the group 90. As described above, when the sensing unit 28 is operated, different groups of the contacts 50 are closed in accordance with the binary coded representations of the various digits of the designation of the purchaser, as represented by the perforations on the inserted key. The selective closure of different ones of the contacts 50 selectively operates different ones of the relays in the register relay groups 90 and 100–103 so that the binary coded representations of the digits of the purchaser's identification are stored in the control circuit 26.

Assuming that the first digit of the badge number or other identification of the purchaser is "5," this digit is stored in the register group 90 by closing the springs 50 to complete the operating circuits for the relays 91 and 94 so that these relays operate to close a plurality of contacts 91*a*, 91*b*, 94*a*, 94*b*, 94*d*, 94*f* and 94*h* and to open a plurality of contacts 91*c*, 94*c*, 94*e*, 94*g* and 94*i*. The closure of the contacts 91*a* and 94*a* completes holding circuits for the relays 91 and 94 extending to a source of holding potential in the control circuit 26 to prevent the release of these relays when the sensing unit 28 is restored to a normal condition and the inserted key is withdrawn. The remainder of the contact operations produced by the actuation of the relays 91 and 94 translates the binary representation of the first digit of the designation of the purchaser into a single marking path representing the value of the decimal digit. In the illustrative example in which the value of the first digit of the designation is assumed to be "5," a positive voltage at a first contact 60 in the commutator 54 is forwarded through the closed contacts 91*b*, a pair of normally closed contacts 92*c* and the closed contacts 94*d* to the operating winding of the interposer solenoid 52 representing the decimal digit "5," as indicated by the characters appearing adjacent the windings in Fig. 2 of the drawings. Thus, when the commutator 54 supplies a positive voltage to the translating network or decoding "tree" controlled by the relays in the first relay group 90, this positive potential is forwarded to the interposer solenoid 52 representing the value of the first digit of the designation of the purchaser. In a similar manner, the register relay groups 100–103 store and decode the remaining four digits of the designation of the purchaser.

The timing circuit 34 (Fig. 4) is provided for supplying the control circuit 26 and, subsequently, the recorder 32 with information relating to the date on which items are vended by the dispensing assembly 22 and, to this end, the timing circuit 34 includes a pair of serially connected and automatically adjusted stepping switches 110 and 120 operable to settings representing tens and units days digits and four manually adjusted switches 125, 126, 127 and 128 for storing a two digit month designation and a two digit year designation. To automatically adjust the stepping switch 110 to settings representing the value of the units days digits, a timing motor 105 is provided which continually operates to rotate a cam 106. At midnight of each day, the cam 106 momentarily opens a pair of normally closed contacts 106*b* and momentarily closes a pair of normally open contacts 106*a* so that a positive voltage is forwarded through a pair of normally closed contacts 115*a* to energize and operate a motor magnet 113 for the stepping switch 110. The positive voltage is provided by a full wave rectifier 107 which is coupled across the input terminals 65 and 66 by an input transformer 108.

The momentary operation of the motor magnet 113 advances a pair of wipers 111 and 112 a single step relative to their contact banks. The contact bank adjacent the wiper 111 is connected in multiple to the windings of the interposer solenoids 52 so that the selective positioning of the wiper 111 determines the value of the units days digit. The wiper 112 together with the contacts associated therewith controls the selective operation of the tens days register switch 120 so that this switch is advanced at the expiration of each ten day interval. Further, it should be noted that, as illustrated in Fig. 4 the wipers 111 and 112 are offset from each other a single step so that, when the wiper 112 engages the second contact in the bank associated therewith, the wiper 111 engages a third contact in its contact bank.

At midnight following each ten day interval, the positive voltage provided by the momentary closure of the contacts 106*a* operates the motor magnet 113 so that the wiper 112 is moved into engagement with the tenth contact in the bank associated therewith, the wiper 111 being moved out of engagement with the contacts in its bank. The movement of the wiper 112 into its engagement with its tenth contact completes an obvious operating circuit for a reset relay 115 extending to the positive voltage provided at the closed contacts 106*a* through the wiper 112. The operation of the relay 115 opens the contacts 115*a* and closes a plurality of contacts 115*b* and 115*c*. The opening of the contacs 115*a* interrupts the above described operating circuit for the motor magnet 113. The closure of the contacts 115*b* completes a shunt around the wiper 112 so as to maintain the relay 115 operated when the wipers 111 and 112 are restored to their normal condition. The closure of the contacts 115*c* completes an obvious operating circuit for a reset magnet 114 in the stepping switch 110 so that the wipers 111 and 112 are mechanically restored to their normal positions in which the wiper 112 does not engage any of the contacts in the bank associated therewith and in which the wiper 111 engages the first contact in its bank representing "0." The restoration of the wiper 112 to its normal position does not release the relay 115 because of the holding circuit therefor completed through the closed contacts 115*b*.

In addition to resetting the units days register switch 110 to its normal position, the expiration of the ten day interval indicated by the movement of the wiper 112 into engagement with the tenth contact in the bank associated therewith completes an obvious operating circuit

for a motor magnet 123 in the tens days register switch 120. The operation of the motor magnet 123 advances a wiper 121 a single step relative to the contact bank associated therewith. These contacts are connected in multiple to the interposer solenoids 52 in the manner of the contacts engaged by the wiper 111, thereby to provide a marking path representing the value of the tens days digit. When the contacts 106*a* are then opened and the contacts 106*b* are closed, the holding potential for the reset relay 115 and the motor magnet 123 is removed, thereby releasing the motor magnet 123 and the relay 115 to close the contacts 115*a* and to open the contacts 115*b* and 115*c*. The opening of the contacts 115*c* releases the reset magnet 114 so that the wipers 111 and 112 can be advanced under the control of the motor magnet 113 whose operating circuit is prepared by the closure of the contacts 115*a*. In this manner, the units days register switch 110 and the tens days register switch 120 automatically provide a continuous registration of the values of the tens and units days digit of the date.

In order to provide marking conditions or registrations representing the values of a two digit year designation and a two digit month designation, the switches 125, 126, 127 and 128 are provided. These switches are set by adjusting the wipers thereof relative to their associated contact banks, which are connected in multiple to the interposer solenoids 52, so that, during a cycle of operation of the recorder 32, two digits representing the month are recorded on the card under the control of the switches 127 and 128 and two digits representing the year are recorded on the card under the control of the switches 125 and 126.

The timing circuit 34 may also include date correcting means of the type disclosed in the above identified copending Parsons et al application for adjusting the settings of the switches 110 and 120 to those representing the correct date. In addition, if it is desired to provide a completely automatic registration of date, including year and month, date registering circuits of the type well known in the field of automatic telephony for use in automatic toll ticketing systems can be provided.

Referring now to an illustrative cycle of operation of the automatic vending system and apparatus 20 of the present invention, when the recorder 32 is to be placed in operation a plurality of blank cards are inserted in the card magazine and feeding assembly 36 so that the switch 62 is closed to illuminate the lamp 64, thereby providing a visible indication that a supply of blank cards has been provided. A manually operated switch 122 is momentarily closed to connect the positive potential provided by the full wave rectifier 107 to the operating winding of a motor start relay 125 and through a blocking diode 127 to the winding of a feed clutch solenoid 124. The operation of the relay 125 closes a plurality of contacts 125*a* and 125*b*. The closure of the contacts 125*b* completes a holding circuit for the relay 125 including a pair of normally closed contacts 129 so that the relay 125 remains operated after the switch 122 is released. The closure of the contacts 125*a* connects the operating winding of a common drive motor 137 across the input terminals 65 and 66 so that the motor or prime mover for the recorder 32 and the assembly 36 is placed in operation. The operation of the feed clutch solenoid 124 engages a one revolution clutch mechanism in a first card feeding means in the card magazine and feeding assembly 36 so that the lowermost card in the magazine is advanced into a guideway in the recorder 32. Simultaneously with the operation of the feed clutch solenoid 124, a single stroke gong 126 is energized to provide an audible indication that a blank card has been fed into the recorder unit 32.

When the leading edge of the card supplied under the control of the solenoid 124 enters the guideway in the recorder 32, a switch 128 is operated to close a pair of contacts 128*a* and to open a pair of contacts 128*b*. The closure of the contacts 128*a* prepares an operating circuit for a feed roll solenoid 130. When the card has further been advanced into the guideway in the recorder 32 to a position in which a second card feeding assembly is effective to rapidly advance the card to a punching position, a second switch means is actuated to close a pair of contacts 132, thereby completing an operating circuit for the feed roll solenoid 130 extending from the positive voltage source through the closed contacts 128*a*, a pair of normally closed contacts 148*d*, and the closed contacts 132. In operating, the feed roll solenoid 130 shifts an idler roller to a displaced position in which the second card feeding assembly is rendered effective to rapidly advance the card to a punching position in the recorder 32 determined by a card locating assembly.

As the blank card moves into the punching position determined by the card locating assembly, the switch 128 is released to open the contacts 128*a* and to close the contacts 128*b*. The opening of the contacts 128*a* releases the feed roll solenoid 130 so that the record card advancing mechanism is rendered ineffective in response to feeding the first card to a punching position. The closure of the contacts 128*b* forwards the positive voltage through a pair of normally closed contacts 150*d* to operate an index roll solenoid 136. The operation of this solenoid conditions a step-by-step feeding drive for operation during a recording operation.

In operating, the solenoid 130 also closes a pair of contacts 130*a* so that the positive potential supplied through the closed contacts 128*a* and 148*d* is further extended through the closed contacts 130*a* and two pairs of normally closed contacts 134*b* and 150*e* to energize a card relay 134. The operation of the card relay 134 opens the contacts 134*b* and closes a plurality of contacts 134*a*, 134*c*, 134*d*, 134*e* and 134*f*. The closure of the contacts 134*a* completes a holding circuit for the relay 134 while the opening of the contact 134*b* interrupts the above described operating circuit. The closure of the contacts 134*e* prepares an operating circuit for a timing relay 135 and a circuit for extending positive voltage to the commutator 54. The closure of the contacts 134*c* prepares another energizing circuit for the drive motor 137, and the closure of the contacts 134*d* prepares an operating circuit for a clutch solenoid 139. The closure of the contacts 134*f* prepares an operating circuit for an index feed roll solenoid 136.

A cam 130, which preferably is connected to the shaft of the one revolution cutch shown in the above identified Harwood application, rotates through one cycle of revolution as the card is fed from the assembly 36 into the punching position in the recorder 32. During this cycle of revolution, the cam 130 opens the contacts 129 to release the clutch solenoid 124 and the relay 125 and to terminate the energization of the gong 126. In releasing, the solenoid 124 prevents the feeding of an additional card into the recorder 32 and the relay 125 opens the contacts 125*a* and 125*b*. The opening of the contacts 125*b* further interrupts the holding circuit for the above components and the opening of the contacts 125*a* terminates operation of the common drive motor 137. The control circuit 26 remains in this condition until such time as the first vending operation is to be performed.

In this normal condition of the control circuit 26, a relay 138 is held in an operated condition by a circuit extending to the full wave rectifier 107 through a pair of normally closed contacts 150*b*. In its operated condition, the relay 138 closes a plurality of contacts 138*a* and 138*b*. The closed contacts 138*a* forward the positive potential provided by the full wave rectifier 107 to the register relay circuit 30 to provide a source of holding potential therefor. The closed contacts 138*b* forward the positive potential supplied by the full wave rectifier 107 to an open holding circuit for a code latch relay 142 and a card stop solenoid 144.

When an item is to be dispensed by the vending assembly 22, the selector mechanism 67 is actuated so that the wiper 68 is moved into engagement with the contact 69 to which is connected the gate solenoid 42 associated with the individual vending unit 24 containing the desired item. Assuming that the selector mechanism 67 is adjusted to the position illustrated in Fig. 4 of the drawings, the wiper 68 engages the contact 69 to which is connected the second gate release solenoid 42. Assuming that the desired articles are contained in the chute 38 in the second dispensing unit 24, the contacts 44 are closed to prepare an operating circuit for the solenoid 42. Concurrently with adjusting the wiper 68 to the position illustrated in Fig. 4, the remaining wipers 70, 72, 74, 76 and 78 of the selector mechanism 67 are adjusted to the positions illustrated in Fig. 4 to provide marking conditions or registrations indicative of the designation of the article to be dispensed and the cost thereof.

The purchaser then inserts a key containing perforations representing his badge number or other designation into the sensing unit 28 so that the contacts 46 are closed. The closure of the contacts 46 initiates the vending operation and a cycle of recording operation of the recorder 32 during which the necessary information is punched on the card supplied by the card magazine and feeding assembly 36. The closure of the contacts 46 concurrently completes an operating circuit for the card stop solenoid 144 and the slow-to-operate code latch relay 142 and for a slow-to-release code relay 140 through a pair of normally closed contacts 142*a*. The operation of the solenoid 144 lifts the stop element shown in the above identified Harwood application to permit the card in punching position to be advanced step-by-step during the data recording operation. The elevation of the stop element also closes a pair of contacts 146 to complete another holding circuit for the card relay 134. The operation of the relay 140 closes a pair of contacts 140*a* so that the coding solenoid 48 is operated. The operation of the coding solenoid 48 actuates the sensing unit 28 so that the register relay groups 90 and 100–103 in the register relay circuit 30 are selectively operated in accordance with the binary coded representation of the digits forming the badge number of the purchaser.

Assuming, as in the illustrative example above, that the value of the first digit of the badge number of the purchaser is "5" the relays 91 and 94 in the register group 90 are operated to actuate the contacts controlled thereby. The closure of the contacts 91*a* and 94*a* completes holding circuits for the relays 91 and 94 extending through the closed contact 138*a* to the source of positive voltage. The remaining contact operation produced by the operation of the relays 91 and 94 decode the binary representation of the digit "5" into a marking path which extends through the decoding "tree" controlled by the relays in the group 90 to the proper interposer solenoid 52. In a similar manner, the operation of the sensing unit 28 under the control of the coding solenoid 48 selectively operates the register relays in the groups 100–103 to store the binary representations of the remaining four digits of the purchaser designation, to complete holding circuits for these relays to the positive potential provided at the closed contacts 138*a*, and to provide four additional marking paths in the decoding "trees" controlled by these register relay groups representing the values of the remaining four digits of the designation of the purchaser.

After the slow-to-operate interval of the relay 142, this relay operates to open the contacts 142*a* and to close a plurality of contacts 142*b*–142*e*. The opening of the contacts 142*a* interrupts the above described operating circuit for the code relay 140 so that this relay releases to open the contacts 140*a*. The opening of the contacts 140*a* releases the coding solenoid 48 so that the sensing unit 28 is restored to its normal condition by withdrawing the sensing pins. This permits the inserted key to be withdrawn so that the contacts 46 are opened and so that the contacts 50 in the sensing unit 28 are opened. The opening of the contacts 50 does not release the operated relays in the relay register circuit 30 due to the prior completion of the holding circuits therefor. Further, since the code relay 140 is slow-to-release and since the contacts 142*b*, which are closed by the operation of the code latch relay 142, complete a holding circuit for this relay extending to the source of positive potential source, the relay 142 is not released by the opening of the contacts 46 in response to withdrawing the inserted key from the sensing unit 28.

The closure of the contacts 142*c* completes another energizing circuit for the drive motor 137 extending through the closed contacts 134*c*. In rendering the drive motor 137 operative, the recorder 32 is condition to advance the card to be punched during the data recording operation. The closure of the contacts 142*d* completes an operating circuit for a timing relay 135 which extends through the closed contacts 128*b* and 134*e*. The operation of the relay 135 closes a pair of contacts 135*a* which shunt the contacts 142*c*, thereby to provide an alternative circuit for maintaining the drive motor 137 in operation. Concurrently with operating the relay 135, the completion of the above described circuit also charges a condenser 141 which is connected in parallel with the winding of the relay 135. This condenser discharges through the winding of the relay 135 when the operating circuit for this relay is opened to delay the release thereof.

The closure of the contacts 142*e* completes an operating circuit for a punch relay 148 which extends through the cam controlled contacts 106*b*. If the key is inserted into the sensing unit 28 at other than the very short time interval used to advance the setting of the timing circuit 34, the contacts 106*b* are in a closed condition so that the positive potential is forwarded to the operating winding of the punch relay 148, thereby operating this relay to close a plurality of contacts 148*a*, 148*b* and 148*c* and to open the contacts 148*d*. The opening of the contacts 148*d* interrupts an additional point in the operating circuit for the feed roll solenoid 130 to prevent a second card from being advanced to the recorder 32 during the recording of the items of information pertaining to the dispensed item. The closure of the contacts 148*a* provides a shunt around the contacts 128*b* to supply the positive potential to the commutator 54 and to maintain the relay 135 operated in the event that the switch 128 is inadvertently operated. The closure of the contacts 148*c* operates the vending assembly 22 so that the selected article is discharged and so that the cost and designation data pertaining to the dispensed item is rendered capable of use in controlling the operation of the recorder 32.

More specifically, the closure of the contacts 148*c* extends the positive potential from the rectifier bridge 107 to the wiper 68 of the selector mechanism 67. As described above, if the selected dispensing unit 24 is provided with articles to be dispensed, the associated contacts 44 are closed so that the positive potential operates the gate release solenoid 42 in the selected dispensing unit 24. The operation of the solenoid 42 trips a release mechanism so that the selected article is dispensed. In addition, the operation of the solenoid 42 closes the related pair of contacts 42*a* so that the positive voltage forwarded through the closed contacts 148*c* operates a relay 152 to close a plurality of contacts 152*a*–152*e*. The closure of the contacts 152*a*–152*e* connects the eighth to twelfth contacts 60 in the comutator 54 through the price and designation translating paths controlled by the selector mechanism 67 to the ten interposer solenoids 62, thereby conditioning these solenoids for selective operation under the control of the stored cost and designation information relating to the vended item. Accordingly, if the selected solenoid 42 fails to operate and thus the relay 152, the marking paths representing the cost and

designation of the dispensed article are not conditioned for sequential energization under the control of the commutator 54 and, accordingly, no vended item information is recorded on the card. This indicates that the insertion of the key into the sensing unit 28 did not result in the vending of the selected article and, accordingly, provides an indication that a charge should be made.

Referring back to the above described operation of the punch relay 148, the closure of the contacts 148*b* completes an operating circuit for the clutch solenoid 149, which circuit extends from the source of positive potential through the closed contacts 150*b*, 134*d* and 148*b*. The operation of the clutch solenoid 139 renders a drive mechanism including a slip clutch driven by the motor 137 effective to rotate a main control shaft from which are driven mechanisms for operating the punching means in the recorder 32, the indexing or step drive which advances the punched card step-by-step incident to each punching operation, and the commutator 54. Following the operation of the clutch solenoid 139 to place the main control shaft in operation, a cam 154, which moves in synchronism with the main control shaft, is placed in rotation to close a pair of contacts 154*a*. The closure of the contacts 154*a* extends the positive potential forwarded through the closed contacts 128*b*, 142*d* and 134*e* to the common ring 58 in the commutator 54 and thence through the wiper 56 to the contact 60 in the first stepping position of the communtator 54.

As described above, this first contact 60 is connected to the decoding "tree" controlled by the relays in the first register relay group 90 so that the interposer solenoid 52 representing the digit "5" is operated. During the continuing rotation of the main control shaft, the punching assembly perforates the card in the first column and fifth row thereof to represent the digit "5." Following the perforation of this digit in the card, the indexing drive assembly, whose effectiveness is controlled by the indexing feed roll solenoid 136, advances the card a single step and the cam 154 opens the contacts 154*a*. The commutator 54 is then operated to advance the wiper 56 so that the common conductive ring 58 is connected to the contact 60 in the second stepping position. This renders the decoding relay "tree" controlled by the second register relay group 100 effective to control the recording of the second digit on the card. Therefore, during the next four cycles of rotation of the main control shaft, the remaining four digits of the designation or badge number of the purchaser are recorded on the punched card.

During this fourth additional or fifth cycle of rotation of the main control shaft, the wipe 56 is advanced into engagement with the contact 60 in the sixth stepping position so that, when the contacts 154*a* are next closed, the positive voltage is forwarded to the wiper 121 in the tens days register switch 120 so that one of the interposer solenoids 52 is operated in accordance with the value of the tens days digit. During the remaining portion of this sixth cycle, the value of the tens days digits is punched in the card and the commutator 54 is advanced a single step in synchronism with a step of movement of the punched card so that, during the seventh cycle of rotation of the main control shaft, the positive potential forwarded by the commutator 54 to the units days register switch 110 selectively operates the interposer solenoids 52 to record the value of the units days digit in the seventh column of the card.

During the seventh cycle of rotation of the main control shaft, the wiper 56 is advanced to the contact 60 in the eighth stepping position and the cam 154 again closes the contacts 154*a* to forward the positive potential over the wiper 56, the contact 60 in the eighth stepping position, the closed contacts 152*d*, the wiper 76, the second contact 77 in the bank associated with the wiper 76, and through the switch 82 to the interposer solenoid 52 representing the digit "7." Therefore, during this eighth cycle of rotation of the main control shaft, the value of the tens cents digit of the cost of the article dispensed is recorded on the card. During the ninth, tenth, eleventh and twelfth cycles of rotation of the main control shaft, the translating switches selected by the wipers 72, 74, 70 and 78, respectively, are rendered effective to selectively operates the interposer solenoids 52 so that the values of the units cents digit of the cost of the dispensed article and the hundreds, tens, and units digits of the designation of the dispensed article are recorded on the card.

To complete the recording of the date information on the card, the commutator 54 is then advanced to the thirteenth, fourteenth, fifteenth and sixteenth stepping positions in which the tens and units months digits provided by the switches 128 and 127 and the tens and units year digits provided by the switches 126 and 125 are selectively recorded by the punching assembly under the control of the interposer solenoids 52. Following the completion of the recording of the date information, the commutator 54 is advanced so that the wiper 56 interconnects the contact 60 in the last stepping position thereof with the common segment 58, thereby preparing an operating circuit for a last column relay 150.

When, during this last cycle of rotation, the cam 154 closes the contacts 154*a*, the last column relay 150 is operated to close a plurality of contacts 150*a* and 150*c* and to open the contacts 150*b*, 150*d* and 150*e*. The opening of the contacts 150*b* interrupts the operating circuit for the relay 138 and for the clutch solenoid 139. The release of the solenoid 139 renders a detent mechanism effective so that, following the completion of the present cycle of rotation of the main control shaft, further operation of the recorder 32 under the control of this shaft is terminated. The release of the relay 138, in opening the contacts 138*a* and 138*b*, releases the operated relays in the relay register circuit 30, the code latch relay 142, and the stop solenoid 144 to aid in restoring the control circuit 26 to a normal condition. The release of the solenoid 144 releases the stop element so that it moves partially downward to engage the card bearing the recorded data. The opening of the contacts 150*d* releases the index feed roll solenoid 136 so that the indexing drive assembly is no longer effective. The opening of the contacts 150*e* interrupts one holding circuit for the card relay 134, but this relay remains operated over the holding circuit provided by the contacts 146 controlled by the stop element in the card stop assembly.

The closure of the contacts 150*c* completes an obvious operating circuit for a card eject solenoid 154. The operation of the solenoid 154 renders an ejecting drive assembly effective to discharge the punched card from the recorder 32 into a suitable receptacle therefor. As the punched card is ejected from the recorder 32, the stop element controlled by the solenoid 144 is fully displaced to a card intercepting position to open the contacts 146. The opening of the contacts 146 releases the card relay 134 so that the contacts controlled thereby are restored to their normal condition to aid in restoring the control circuit 26.

The release of the relay 142 to open the contacts 142*e* interrupts the above described operating circuit for the punch relay 148 so that this relay releases to restore the contacts controlled thereby to their normal condition. Further, the opening of the contacts 134*e* and 142*d* and of the contacts 154*a* interrupts the above described operating circuits for the relays 135 and 150. However, the relay 135 does not immediately release due to the delay circuit provided by the timing condenser 141 which discharges through the winding of the relay 135 to maintain this relay operated. The opening of the contacts 150*c* due to the release of the last column relay 150 interrupts the operating circuit for the eject roll solenoid 154 so that the ejecting drive assembly in the recorder 32 is rendered ineffective. The remaining contact operations produced by the release of the last column

relay 150 merely aid in restoring the control circuit 26 to a normal condition. During the last cycle of rotation of the main control shaft following the release of the clutch solenoid 139, the commutator 54 is restored to its normal condition in which the wiper 56 engages the contact 60 in the first stepping position thereof.

The opening of the contacts 148c in response to the release of the punch relay 148 releases the operated gate solenoid 42 and also opens the related pair of contacts 42a so that the pricing control relay 152 is released to restore the contacts controlled thereby to their normal condition. The release of the pricing control relay 152 renders the marking conditions prepared by the operation of the selector mechanism 67 ineffective to control the interposer solenoids 52 under the control of the commutator 54.

Referring back to the above described operation of the last column relay 150, the momentary closure of the contact 150a in response to the operation of this relay actuates the audible indicator 126 and also momentarily energizes the clutch solenoid 124 so that the single revolution clutch controlled thereby is released. The blocking diode 127 prevents the operation of the relay 125. During the single cycle of operation of the mechanism controlled by the solenoid 124, the lowermost card in the card magazine and feeding assembly 36 is advanced into the guideway in the recorder 32. As the leading edge of this card enters the guideway, the switch 128 is operated to open the contacts 128b and to close the contacts 128a and the contacts 132 are also closed, as described above, to complete an operating circuit for the feed roll solenoid 130. The feed roll solenoid 130, in operating, renders the second card feeding assembly in the recorder 32 effective by shifting the idler therein into a card driving position. The operation of the solenoid 130 also closes the contacts 130a to complete the above described operating circuit for the card relay 134.

When the card relay 134 operates to close the contacts 134c, among others, an operating circuit for the drive motor 137 is completed through the contacts 135a, which are maintained closed because of the slow-to-release characteristic of the timing relay 135. The energization of the drive motor 137 immediately advances the card fed into the guideway in the recorder 32 to the recording position determined by the card locating or stop assembly and incident to which the switch 128 is released to open the contacts 128a and to close the contacts 128b. The opening of the contacts 128a releases the feed roll solenoid 130 to render the second card driving mechanism ineffective and the closure of the contacts 128b completes the above described operating circuit for the index feed roll solenoid 136. The operation of the solenoid 136 shifts the idler roller in the indexing feed drive assembly into an effective position so that, when the clutch solenoid 139 is next energized, the indexing feed drive assembly is effective to advance the card step-by-step in synchronism with the operation of the punching means.

The control circuit 26 remains in this condition with the recorder 32 conditioned for initiating a cycle of recording operation and with the drive motor 137 in an energized condition until the expiration of the delayed release period of the timing relay 135. If a key is inserted into the sensing unit 28 before the relay 135 is released, a cycle of recording operation is immediately initiated, as described above, during which the items of information pertaining to the vending operation are recorded on the card. However, if a key is not inserted into the sensing unit 28 within the delay interval of the relay 135, this relay releases to open the contacts 135a. The opening of the contacts 135a terminates the energization of the drive motor 137 until such time as a key is inserted into the sensing unit to cause the operation of the code latch relay 142 which closes the contacts 142c to complete another operating circuit for the motor 137. The provision of the delayed release of the relay 135, which may have a time delay interval on release of between three to five seconds, avoids the intermittent starting and stopping of the drive motor 137 incident to each vending operation by providing means for maintaining this motor in operation if the vending assembly 22 is in continuous use. However, the relay 135 terminates the energization of the motor 137 to extend the operating life thereof in the event that the vending assembly 22 is subjected to only intermittent use.

In summary therefor, the key controlled and automatically operated vending apparatus and system of the present invention provides a means for recording the identification of purchaser, the cost and the designation of a vended item, and the date on which the item is vended on a record card so as to obviate the need for coin controlled mechanisms of any type in conjunction with the vending assembly. By the automatic recording of these items of information on the card incident to each vending operation, a primary source record is provided which enables the maintenance of a complete and prompt sales and material inventory control which cannot be provided by the use of existing vending apparatus.

Although the present invention has been described in conjunction with a single embodiment thereof, it is obvious that numerous other embodiments utilizing different types of recording and vending mechanisms may be devised by those skilled in the art which will fall within the spirit and scope of the principles of this invention.

What is claimed and desired to be secured by Letters Patent in the United States is:

1. In a vending apparatus for use with a check having indicia thereon representing the designation of an entity, a sensing device for sensing the indicia on an inserted check, article dispensing means, means controlled by said sensing device for operating said dispensing means to dispense an article, a recorder, means controlled by said sensing device for operating said recorder in accordance with the sensed indicia to record the entity designation in conjunction with each operation of said article dispensing means, and means controlled by the operation of said dispensing means for operating said recorder to record data pertaining to the article dispensed.

2. A vending system for use with checks having indicia representing a purchaser designation comprising a dispensing assembly, sensing means controlled by a check for sensing the indicia thereon, means for operating said dispensing assembly to perform a dispensing operation, a recorder using a record medium, control means controlled by said sensing means and by said dispensing means in response to a dispensing operation for operating said recorder to record the purchaser designation on said record medium in accordance with said sensed indicia, and means controlled by said dispensing assembly and included in said control means for operating said recorder to record data pertaining to said dispensing operation on said record medium in conjunction with said purchaser designation.

3. The vending system set forth in claim 2 including means adjustable to represent the instant date and in which said control means includes means controlled by said adjustable means for operating said recorder to record the date on said record medium in conjunction with said purchaser designation.

4. In a vending apparatus for use with checks having indicia representing a purchaser designation, sensing means for removably receiving an inserted check and for sensing the indicia on said inserted check, first register means controlled by said sensing means for storing the purchaser designation represented by the sensed indicia, article dispensing means for dispensing different selected articles each identified by an individual article designation, means controlled by the insertion of a check into said sensing means for operating said dispensing means to dispense a selected article, second register means operated incident to the operation of said dispensing means for storing the individual designation of the dispensed article,

and a recorder controlled by said first and second register means for recording the stored article designation in conjunction with the stored purchaser designation.

5. In a vending apparatus for use with checks having indicia representing the designation of an entity; sensing means for removably receiving an inserted check and for sensing the indicia on said inserted check; first register means controlled by said sensing means for storing the entity designation represented by the sensed indicia; second register means for storing instant date; article dispensing means for dispensing selected articles; third register means controlled by said dispensing means for storing data pertaining to a selected and dispensed article; a recorder connected to and controlled by said first, second and third register means; and control means responsive to the insertion of a check into said sensing means for operating said dispensing means and for operating said recorder to record the sensed designation, the instant date, and the stored data pertaining to the dispensed article.

6. In a vending apparatus for use with checks having indicia representing entity identifications, first register means, sensing means controlled by a check for operating said first register means to store the sensed identification, article dispensing means including a plurality of separate control elements, each of said separate control elements controlling the dispensing of different articles, second register means controlled by said elements to store data pertaining to the articles dispensed, means for operating said article dispensing means by operating one of said control elements to dispense a selected article, means controlled by the operation of said one control element for operating said second register means to store data pertaining to the dispensed article, a recorder connected to and controlled by said first and second register means, and a control circuit for operating said recorder to record the sensed identification and the article data for each operation of the dispensing means.

7. A vending apparatus for use with checks having indicia representing purchaser designations comprising a plural article dispensing assembly including a plurality of separate dispensing control units, each of said units being operable to dispense a different article, selecting means for rendering one of said units effective to dispense an article, first register means controlled by said selecting means for storing data pertaining to the selected article, second register means for storing a purchaser designation, sensing means controlled by the indicia on a check for operating said second register means, means controlled by the operation of said sensing means for operating said one unit in said dispensing assembly, means controlled by the operation of said one unit for operating said first register means to store said article data, and a recorder controlled by said first and second register means for recording the purchaser designation and the stored article data in conjunction with each operation of said dispensing assembly.

8. The apparatus set forth in claim 7 including means for preventing operation of said first register to store dispensed article data when said one unit fails to dispense an article.

9. A vending apparatus adapted to be controlled by checks having indicia representing purchaser designations comprising a plural article dispensing assembly including a plurality of separate control units, each of said units being operable to dispense a different article, manually operable means for conditioning one of said units for operation, switching means controlled by said manually operable means for selecting data relating to the article dispensed by the conditioned one of the units, register means, sensing means controlled by the indicia on one of said checks for operating said register means to store the purchaser designation, means controlled by the sensing means for operating said conditioned unit to dispense the selected article, a recorder, and means including said register means and said switching means for operating said recorder to record the purchaser designation and the article data incident to each operation of said dispensing assembly.

10. The apparatus set forth in claim 9 in which said switching means comprises a plurality of separate and conjointly operated switches, some of said switches being operable to settings representing the designation of the article to be dispensed and others of said switches being operable to settings representing the cost of the article dispensed.

11. A vending apparatus for use with checks having indicia representing purchaser designations comprising a plural article dispensing assembly including a plurality of separate control units, each of said control units being adapted to control the dispensing of a different article, selecting means for operating one of said units to dispense a selected article, register means controlled by said selecting means for storing data relating to the selected article, sensing means for sensing the indicia on one of said checks, a recorder using a card, card feeding means for feeding a card into said recorder, and control means responsive to each operation of said article dispensing assembly for operating said recorder under the control of said register means and said sensing means to record said article data and said purchaser designation on a card and for operating said card feeding means to feed a card into said recorder.

12. A vending system for use with checks each having a dispensing assembly including a plurality of control indicia representing a purchaser designation comprising units each operable to dispense a different item, manually operable selecting means for conditioning one of said units for operation, first register means controlled by said selecting means for storing data pertaining to the item dispensed by the conditioned unit, timing means adjustable to settings representing the date, second register means for storing a purchaser designation, sensing means controlled by the indicia on one of said checks for operating said second register means to store a purchaser designation, a recorder controlled by first and second register means and by said timing means for recording data on a card, switching means for sequentially rendering said first and second register means and said timing means effective to control said recorder, control circuit means for operating said conditioned control unit to dispense an item and for operating said switching means so that said recorder records the date and the purchaser designation on a card in conjunction with the data pertaining to the item dispensed, and card feeding means controlled by said switching means for feeding a card into said recorder.

13. The vending system set forth in claim 12 including means controlled by the operation of the conditioned control unit for operating said first register means to store the data pertaining to the dispensed item.

14. The vending system set forth in claim 12 including means in said dispensing assembly for preventing operation of said conditioned control unit when said conditioned control unit is incapable of dispensing an item.

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UNITED STATES PATENT OFFICE

CERTIFICATION OF CORRECTION

Patent No. 2,970,877 February 7, 1961

John T. Parsons et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 8, for "of", second occurrence, read -- the --; column 8, line 55, for "contacs" read -- contacts --; column 10, line 48, for "cutch" read -- clutch --; column 12, line 16, for "condition" read -- conditioned --; line 70, for "62" read -- 52 --; column 13, line 7, after "should" insert -- not --; line 50, for "wipe" read -- wiper --; column 14, line 6, for "operates" read -- operate --; line 16, for "year" read -- years --; column 16, line 33, for "an" read -- said --; column 18, line 32, strike out "indicia representing a purchaser designation comprising" and insert the same after "having" in line 30, same column.

Signed and sealed this 27th day of June 1961.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents

UNITED STATES PATENT OFFICE

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Column 4, line 8, for "of", second occurrence, read -- the --; column 8, line 55, for "contacs" read -- contacts --; column 10, line 48, for "cutch" read -- clutch --; column 12, line 16, for "condition" read -- conditioned --; line 70, for "62" read -- 52 --; column 13, line 7, after "should" insert -- not --; line 50, for "wipe" read -- wiper --; column 14, line 6, for "operates" read -- operate --; line 16, for "year" read -- years --; column 16, line 33, for "an" read -- said --; column 18, line 32, strike out "indicia representing a purchaser designation comprising" and insert the same after "having" in line 30, same column.

Signed and sealed this 27th day of June 1961.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents