March 22, 1932. H. R. BRAND 1,850,093

COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 1

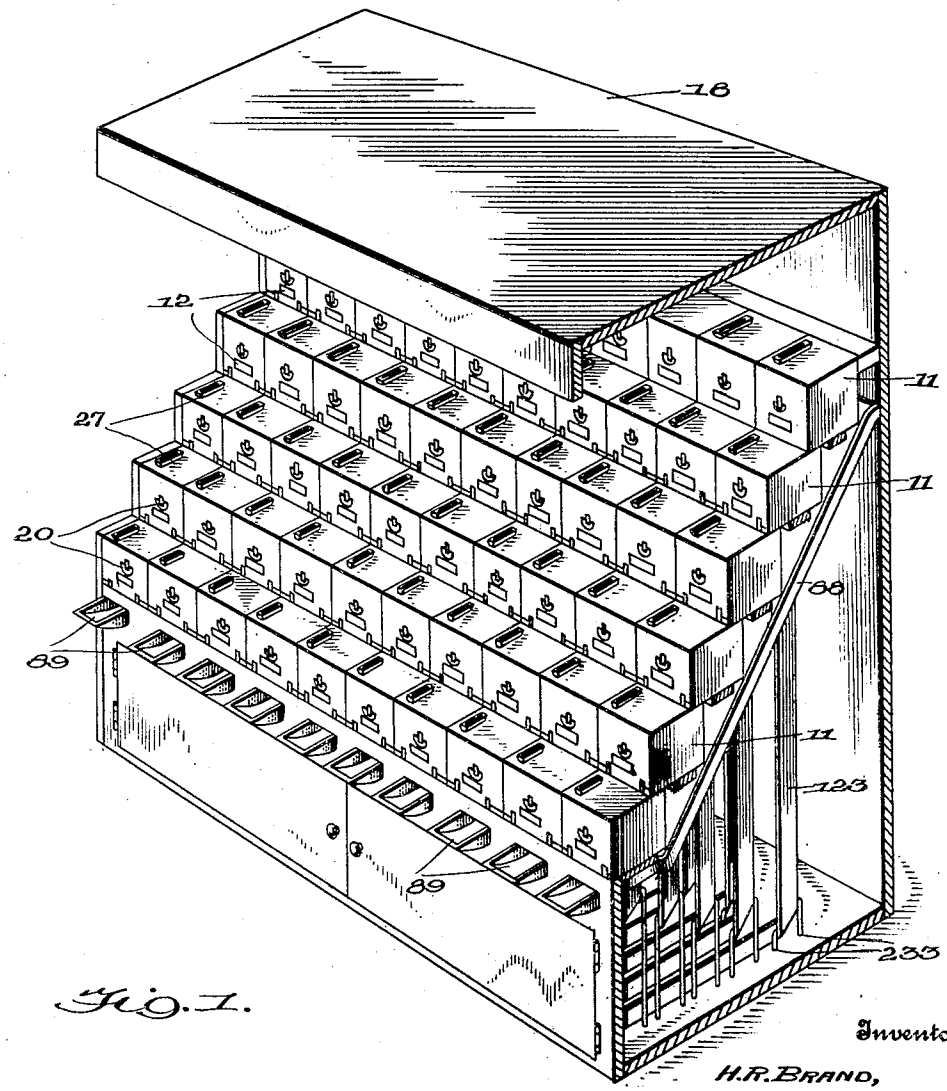


Fig. 1.

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COMMODITY CONTROLLING MACHINE

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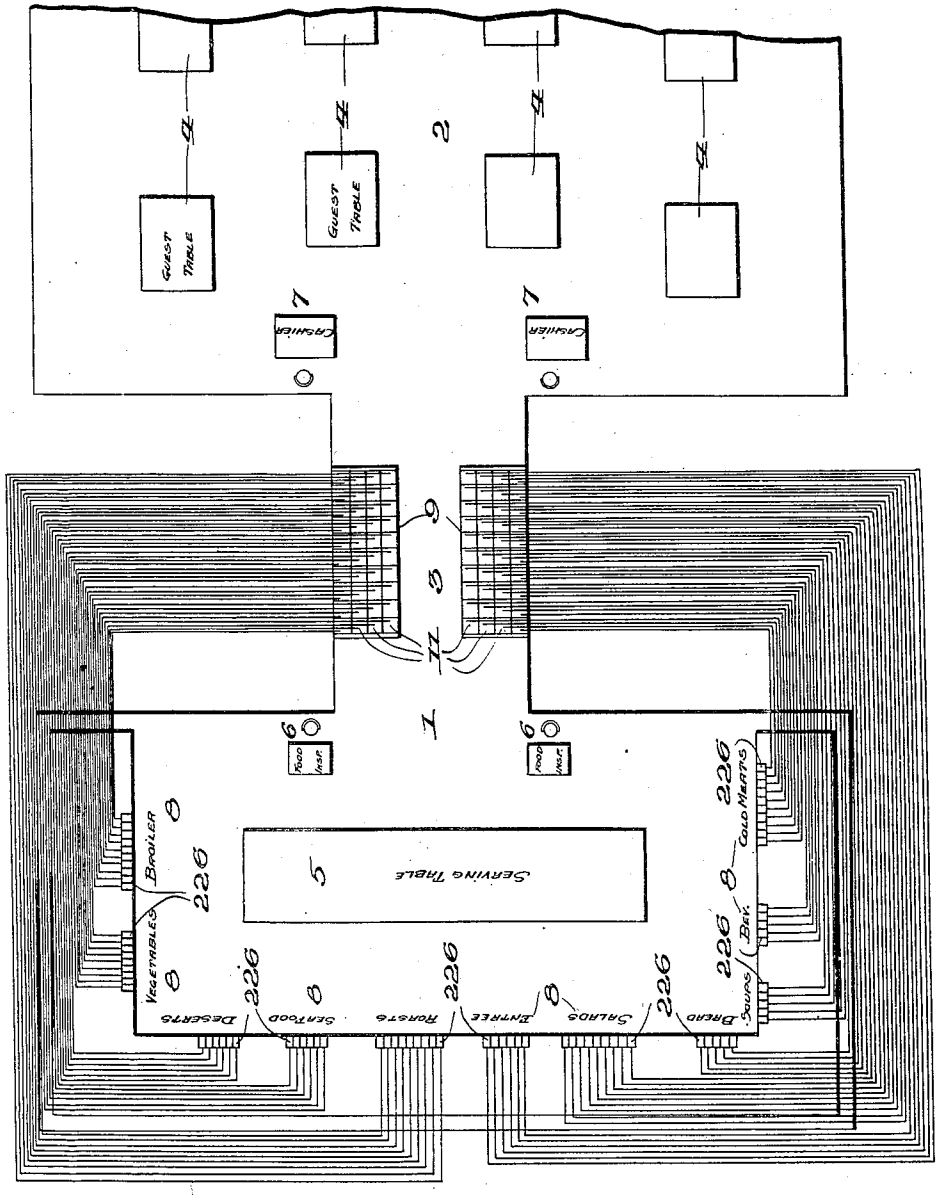


Fig. 2.

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COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 3

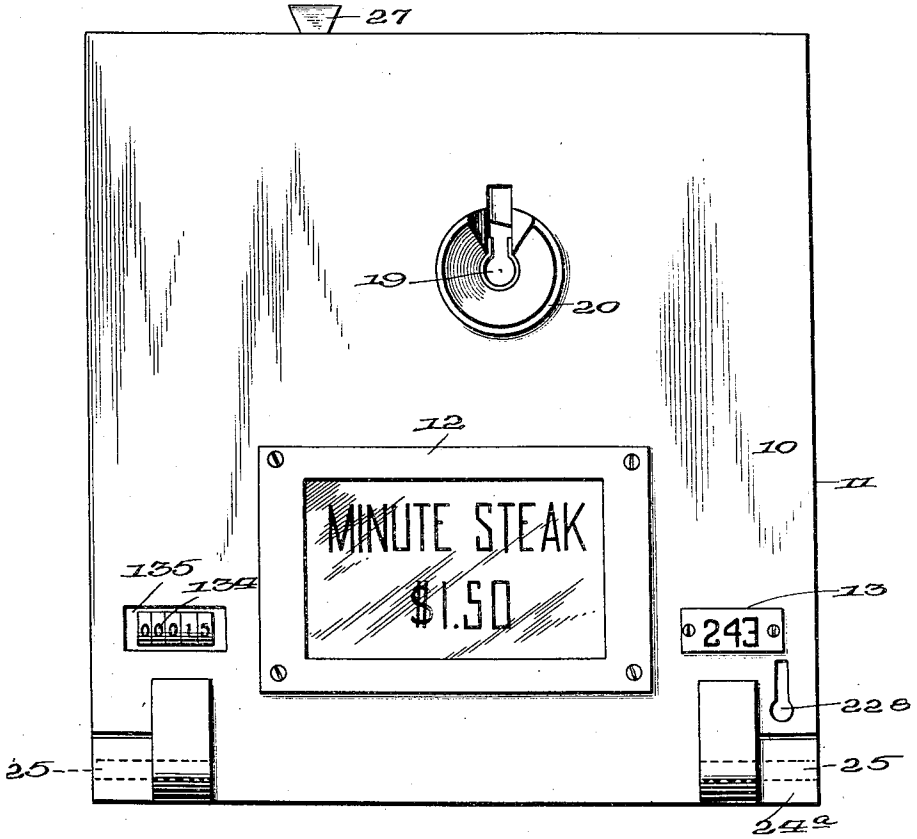


Fig. 3.

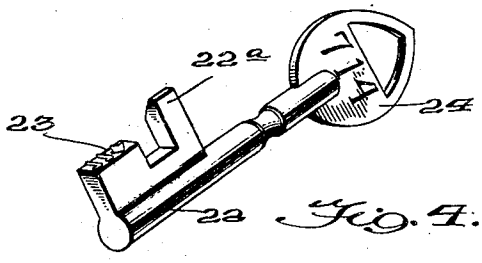


Fig. 4.

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COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 4

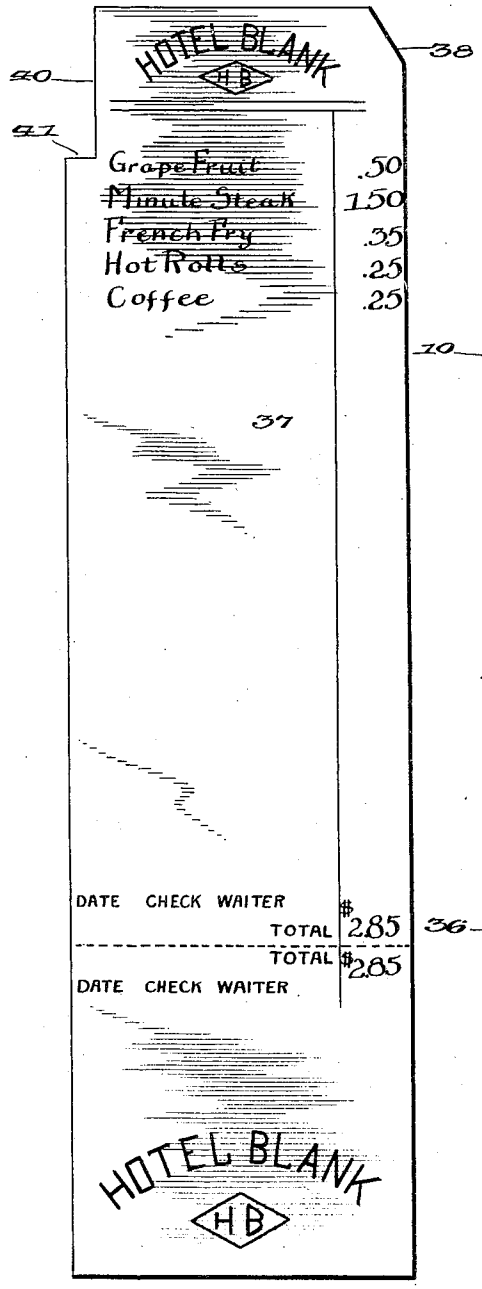


Fig. 5.

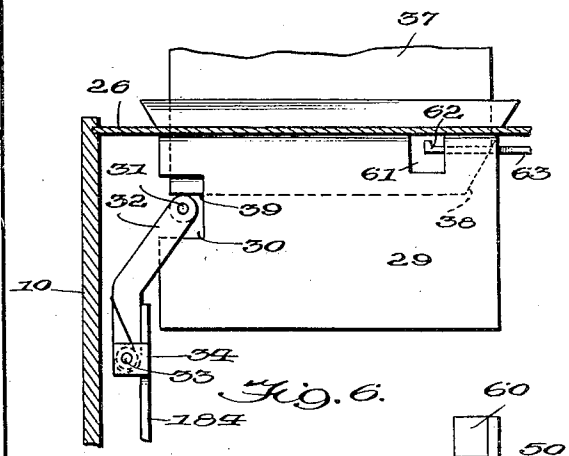


Fig. 6.

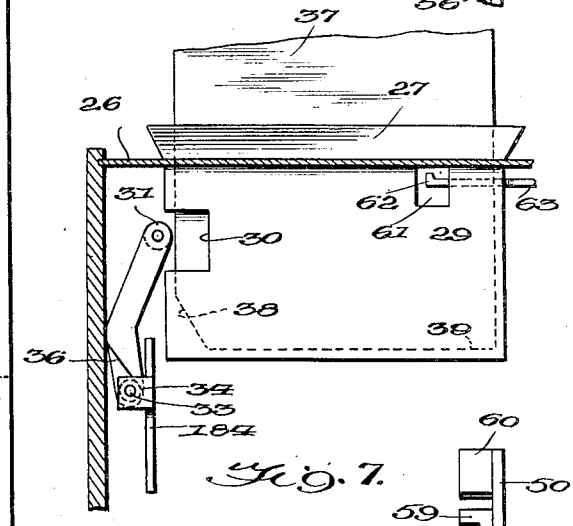


Fig. 7.

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COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 5

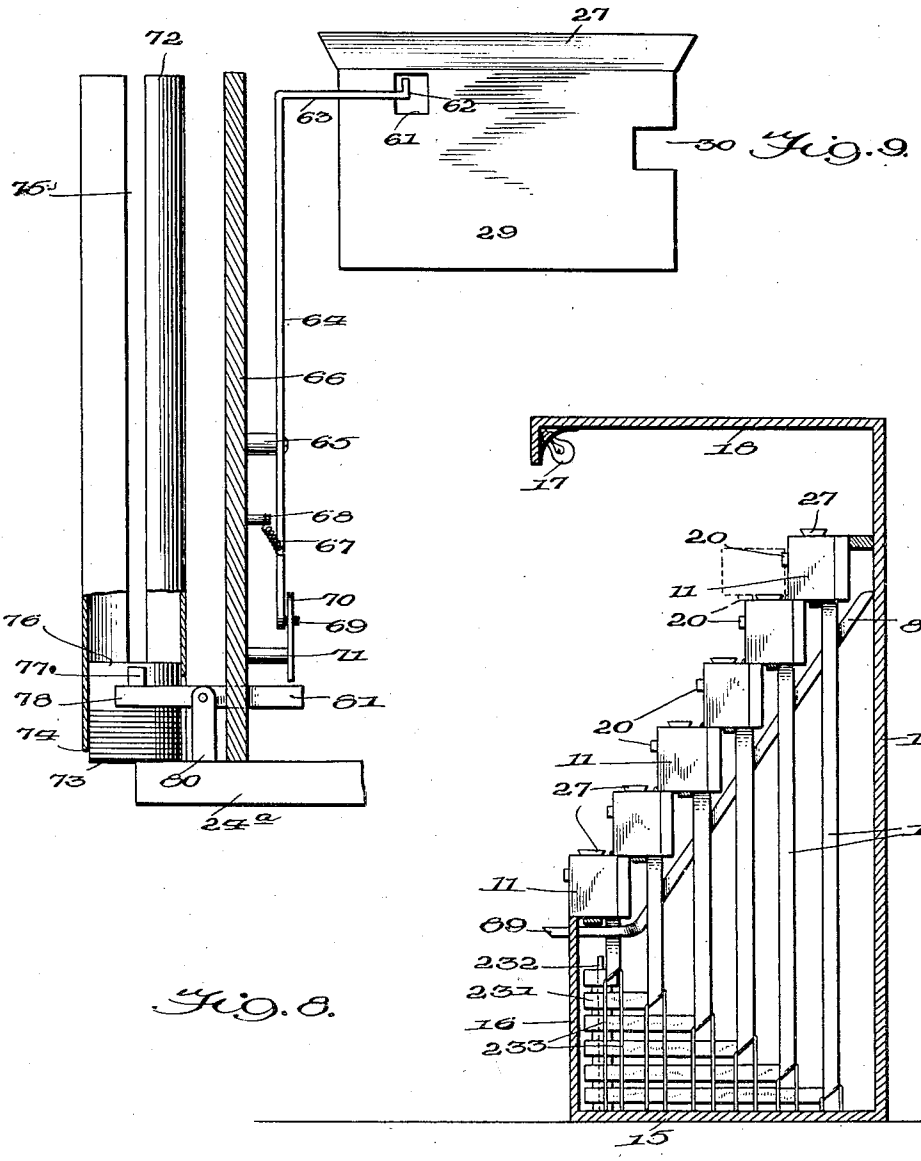


Fig. 9.

Fig. 8.

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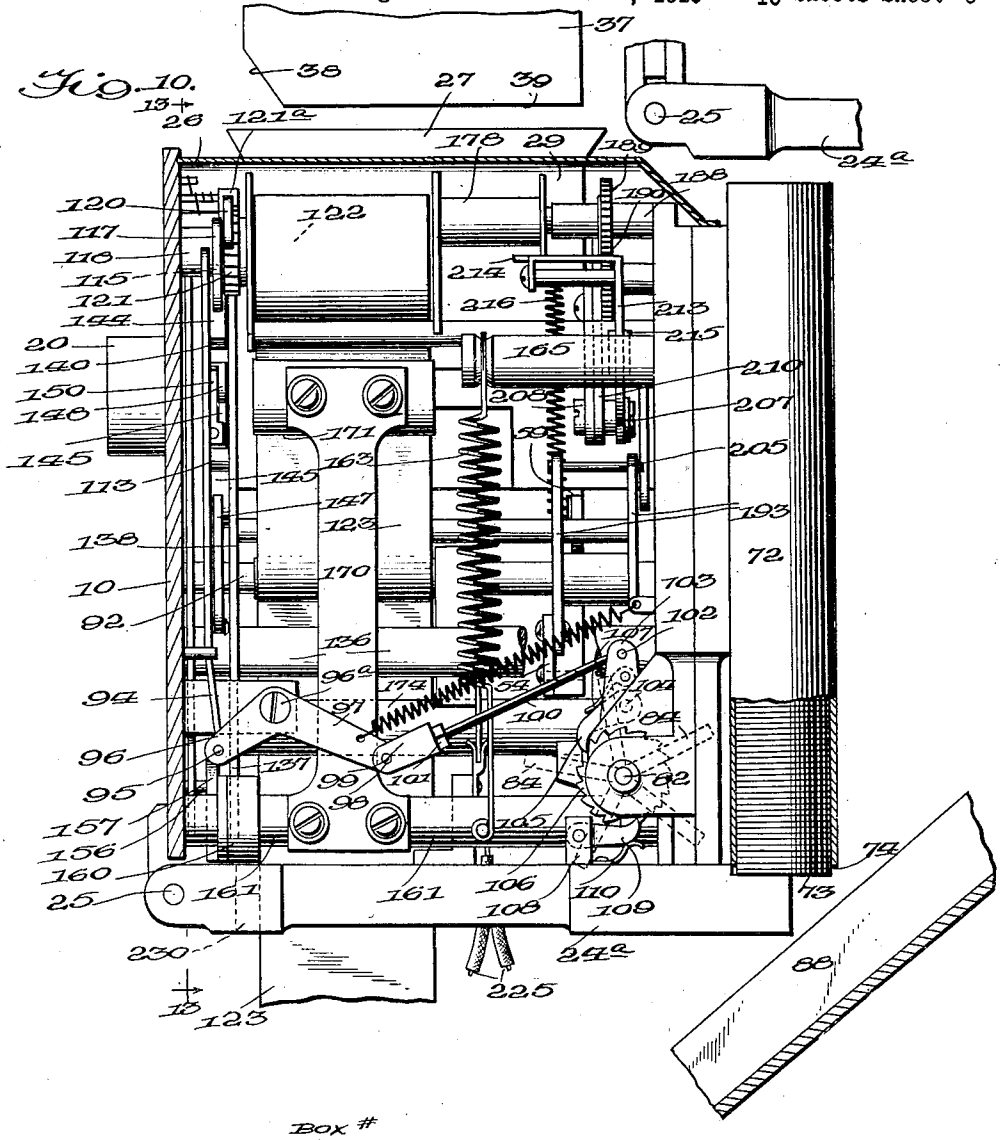
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COMMODITY CONTROLLING MACHINE

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Fig. 10.



PRICE	BOX #	KEY #
1.50-243		322
1.50-243		741
1.50-243		741
1.50-243		125
1.50-243		82
1.50-243		91
1.50-243		145
1.50-243		181
1.50-243		562

123

Fig. 10a.

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COMMODITY CONTROLLING MACHINE

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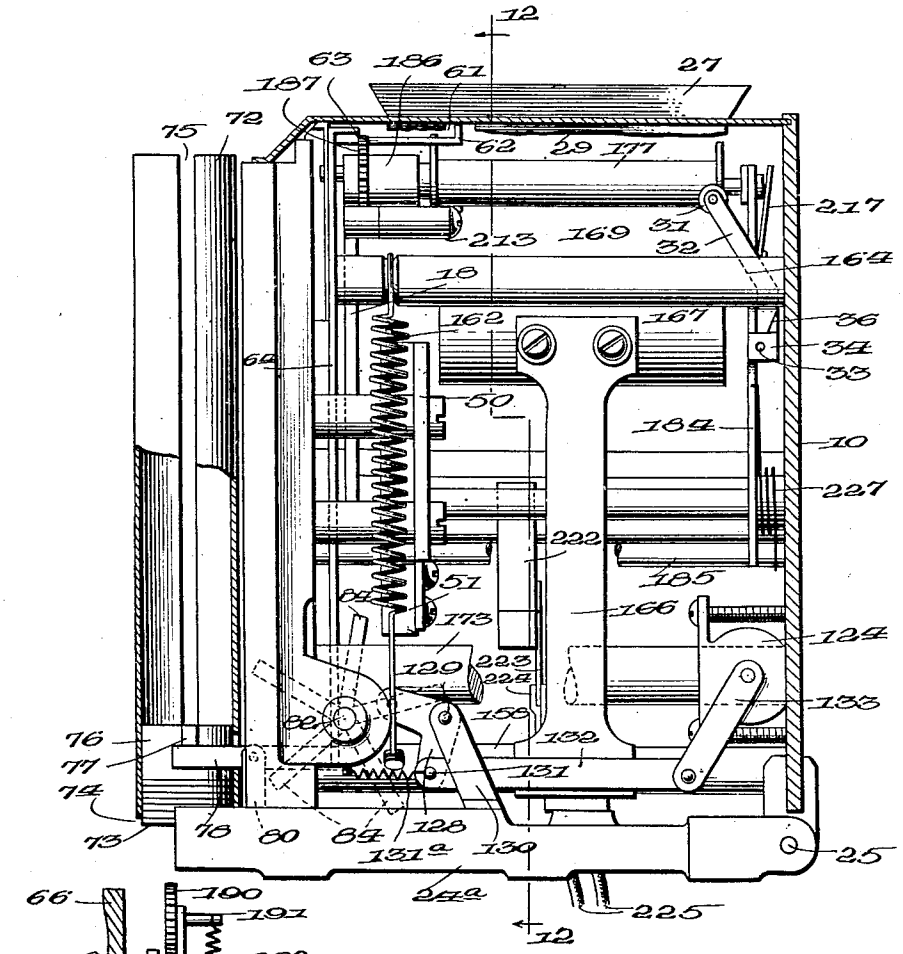


Fig. 11.

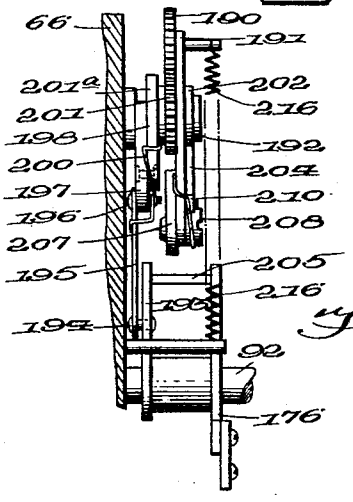


Fig. 12a.

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March 22, 1932. H. R. BRAND 1,850,093

COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 8

Fig. 12.

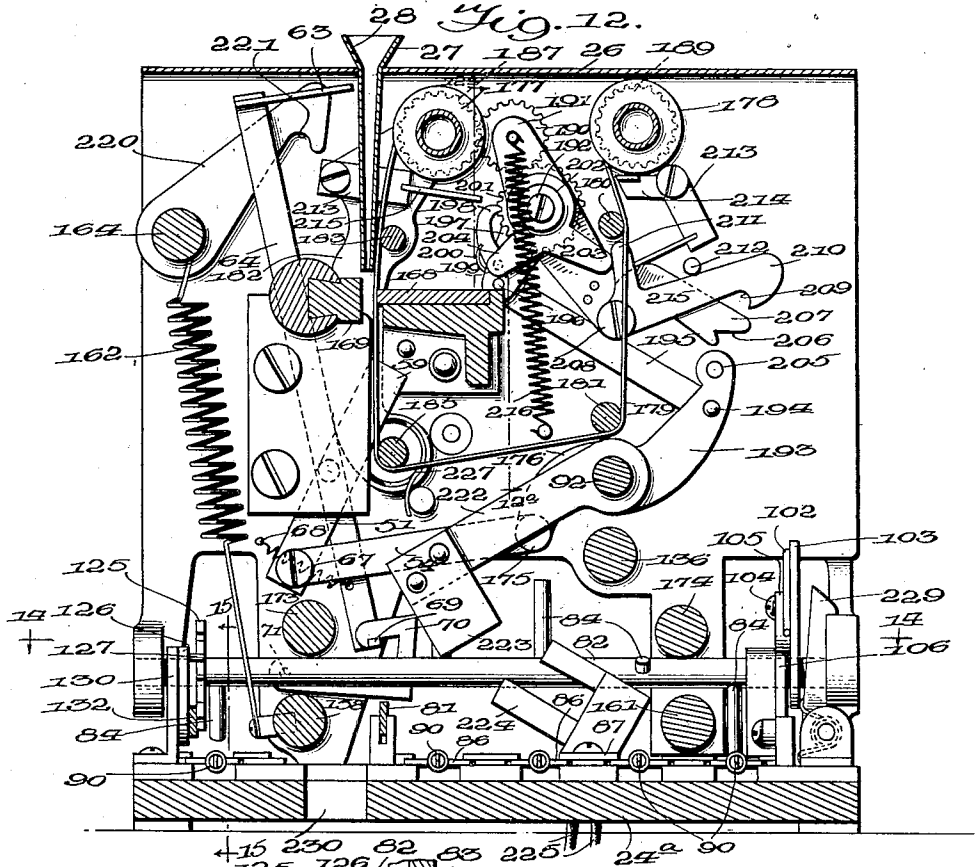
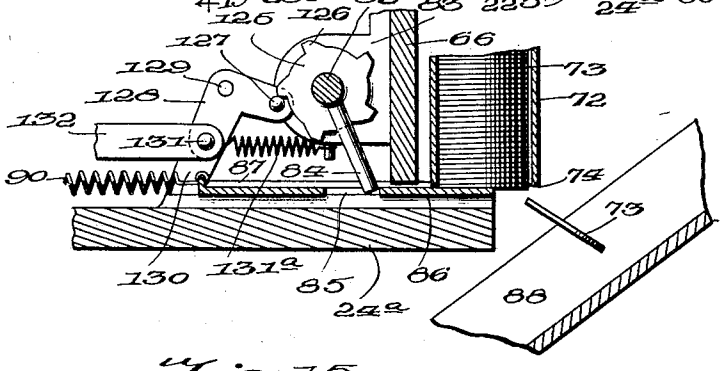


Fig. 15.



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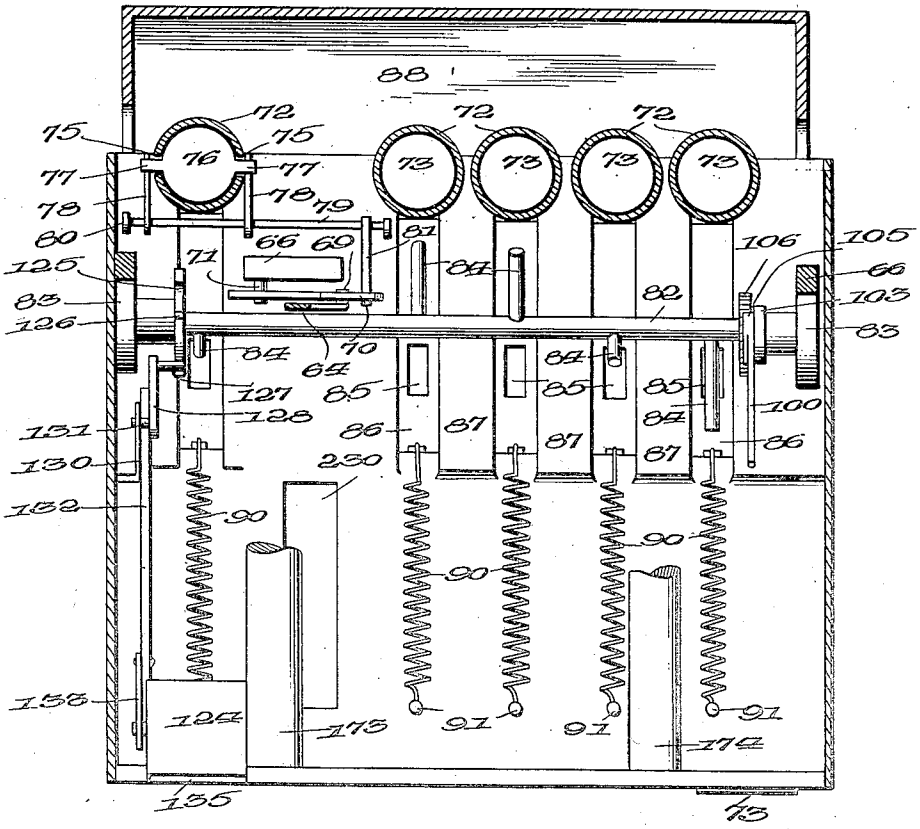
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COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 9

Fig. 14.



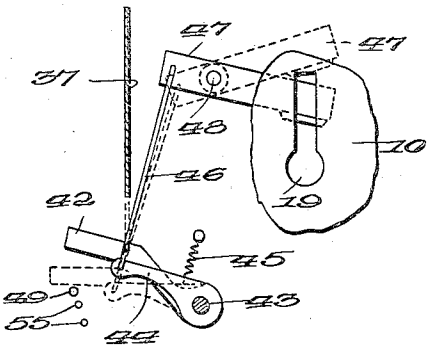


Fig. 18.

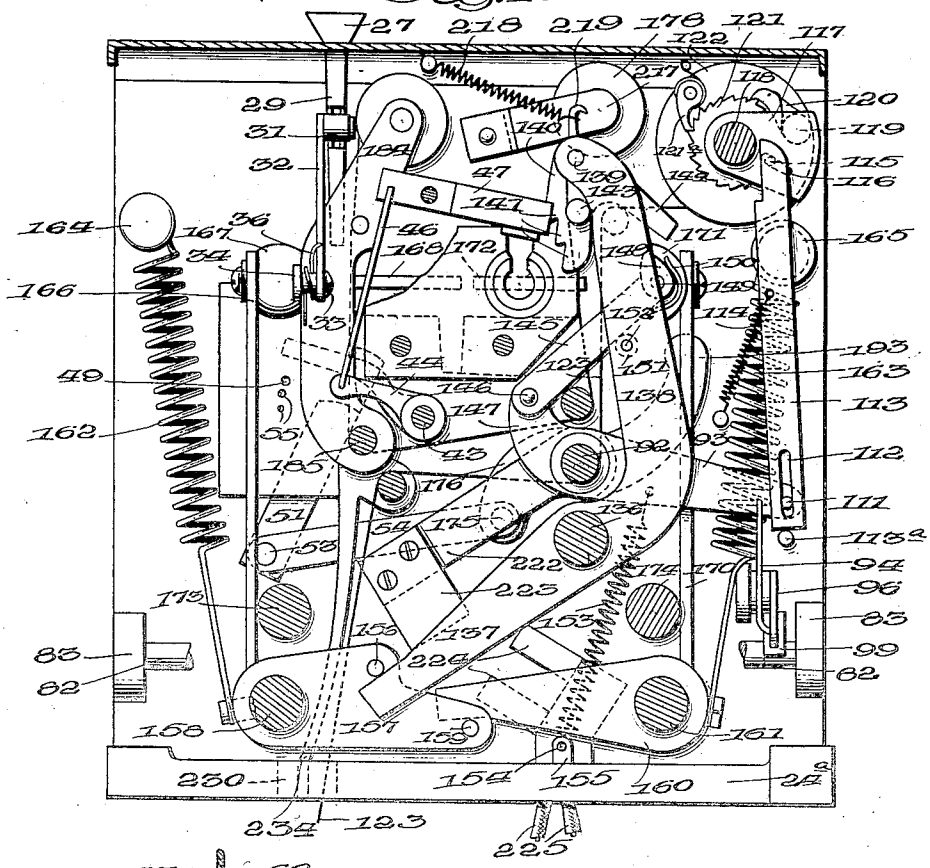
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COMMODITY CONTROLLING MACHINE

Original Filed March 20, 1919 10 Sheets-Sheet 10

Fig. 15.



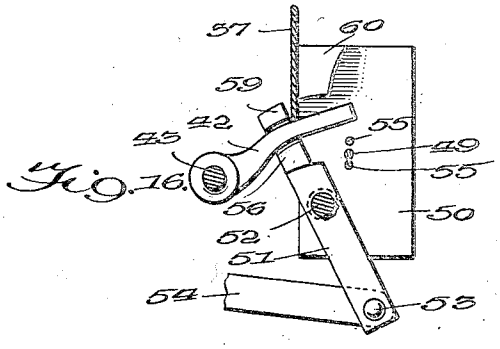


Fig. 16.

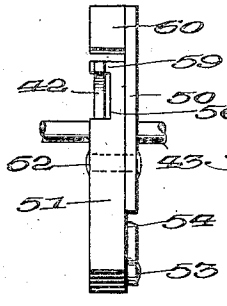


Fig. 17.

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Patented Mar. 22, 1932 1,850,093

UNITED STATES PATENT OFFICE

HARRY RUSSELL BRAND, OF NEW YORK, N. Y.

COMMODITY CONTROLLING MACHINE

Original application filed March 20, 1919, Serial No. 283,817. Divided and this application filed May 11, 1928. Serial No. 277,088.

The present invention relates to commodity control mechanism and is herein illustrated and described by way of example in connection with the control of food, for example, in hotels and restaurants, but the invention is not limited to the control of food, being applicable to the control of other commodities as well.

This application is a division of my application Serial No. 283,817, filed March 20, 1919.

In the following description the word "food" is used to describe a particular commodity by way of example and not by way of limitation.

Among the objects of the present invention are to provide means and mechanism for controlling any commodity, such, for example, as food, in a manner that insures greater handling capacity, increased speed, absolute accuracy and the necessary and unavoidable elimination of collusion among employés and between employés and purchasers to defraud the management; and to provide the management in a short time after the close of the day's business with an accurate tabulated statement of the day's sales, and all other data necessary to enable the managing authority to manage the business intelligently and with the greatest efficiency.

It is a feature of the present invention that the foregoing desirable results are accomplished automatically, that is to say, by the necessary and mere transaction of the business itself. In the present embodiment of the invention herein described by way of example, the cook is charged with the value of the food turned over to him to be prepared and served, and at the end of the day unless he is in possession of the necessary number of food-identifying tokens to account for the decrease in his food supply, it is at once apparent to the mangement that there has been an unauthorized distribution of food, and since the cook has been charged, he is responsible for the difference. The commodity-identifying token is first secured by the waiter, who gives it to the cook in exchange for one item or one food commodity. The present invention makes it necessary for the waiter, in order to obtain the token, to charge himself with the value of the commodity identified by the token. The waiter is thereby charged with the price of the particular food item and must collect this sum from the customer and turn it over to the management. If he fails to do so, it is immediately obvious to the management how much the waiter is short, and it is therefore impossible for the waiter to pilfer this money without immediately being caught.

It will be clear from the foregoing that the cook will not part with food unless he obtains from the waiter the commodity-identifying token, which clears the cook, and it is also evident that the waiter will not part with the food item without collecting the price for it, with which he is charged, and it is obvious, finally, that knowing that he has been charged with the selling price of the commodity, the waiter will turn over this sum to the managing authority, with the result that the house gets its money for each item of food dispensed.

More in detail, in using the apparatus of the present invention, the waiter obtains the order from the guest and writes the order on the guest check in any language or in any symbols intelligible to himself. Thereupon he inserts the guest check in the machine of the present invention in the proper card slot corresponding to the first item ordered by the guest. The waiter has been provided with an individual waiter's key, which he inserts in the machine and turns. This causes the machine to print the item and its price upon the guest check, at the same time making within the machne an inaccessible record of the item ordered and the waiter who took the order. It also charges the individual waiter with the price of the item ordered and at the same time ejects a commodity-identifying token corresponding to the particular item. The waiter then withdraws the guest check and inserts it in the proper card slot corresponding to the next item on the guest check, whereupon the above described series of results again occur, but with respect to the second item. This process is repeated with respect to each item on the guest check,

thereby providing the waiter with a commodity-identifying token for each of the items ordered.

Moreover, at each operation of a machine, a signal is transmitted to the cook to notify him to begin preparing the items for delivery to the waiter, so that the machine instead of the waiter, orders from the kitchen the food items printed on the guest check.

These tokens constitute a means of exchange between the waiter and the cook and enable the waiter to obtain from the cook the items ordered by the guest. The waiter is then in possession of the food ordered by the guests and is charged with the responsibility of turning over to the management the selling price thereof, and the cook is provided with a token corresponding to each item of food dispensed by him.

The present invention is directed more particularly to mechanism for carrying out the above described steps, and the drawings, corresponding to those of the above mentioned divisional application, illustrate an embodiment of mechanism for charging the particular waiter with the value of food items ordered by the guest, printing the item and its price on the guest check, ejecting a commodity-identifying token, which acts as the medium of exchange to enable the waiter to obtain the items from the cook and for accomplishing various additional results that will appear more in detail hereinafter as the description proceeds. It will be understood that the mechanism of the accompanying drawings is shown by way of example of one operative form which the invention may take, but the drawings are not to be taken as a definition of the limits of the invention, reference being had to the appended claims for that purpose.

In the drawings:

Fig. 1 is a perspective view, partly in vertical section from front to rear, showing a collection of units arranged in tiers for carrying out the invention;

Fig. 2 is a diagrammatic view of a kitchen and portion of a dining-room of a hotel, with two tiers of my devices arranged one upon either side of the passage from the kitchen to the dining-room;

Fig. 3 is an enlarged front elevation of one of the units;

Fig. 4 is an enlarged perspective view of one of the keys employed;

Fig. 5 is an enlarged front elevation of a guest check after five items have been printed upon it;

Fig. 6 is an enlarged detail elevation, partly in section, showing mechanism preventing insertion of the card in the machine in any but the predetermined proper relation thereto;

Fig. 7 is a similar view of the same mechanism showing it in the inoperative position which it occupies when the guest check is properly inserted in the machine;

Fig. 8 is an interior end elevation of the tier of units shown in Fig. 1;

Fig. 9 is an enlarged detail and side elevation of mechanism for preventing insertion of a guest check in the machine for a particular item when the supply of tokens corresponding to that item have been exhausted from the particular unit;

Fig. 10 is an end elevation showing the interior of one of the units;

Fig. 10*a* is a face view of a printed record made by one of the units;

Fig. 11 is a view of the interior mechanism of one of the units from the side opposite that shown in Fig. 1;

Fig. 12 is a vertical transverse sectional view through one of the units and taken substantially on line 12—12 of Fig. 11;

Fig. 12*a* is a fragmentary sectional view taken on the line 12*a*—12*a* of Fig. 12;

Fig. 13 is a vertical transverse section through one of the units, taken substantially on line 13—13 of Fig. 10;

Fig. 14 is a horizontal sectional view, looking downwardly, through one of the units and taken substantially on line 14—14 of Fig. 12;

Fig. 15 is an enlarged fragmentary vertical sectional elevation illustrating the token-ejecting mechanism in the act of ejecting a token, the section being taken substantially on the line 15—15 of Fig. 12;

Fig. 16 is an enlarged detail side elevation of the card depth-determining mechanism herein shown as being in the form of a cutter, the function of which is to prepare the card for insertion into successive units a distance varying by one printed line for each unit;

Fig. 17 is an edge view of the mechanism of Fig. 16;

Fig. 18 is an enlarged fragmentary detail face view of the key-hole guard and certain associated mechanism.

Referring in detail to the accompanying drawings, Fig. 1 illustrates a plurality of units, each complete in itself, and the units are shown as being arranged in tiers or rows for convenient access. The number of units employed depends upon the magnitude of the business and may be varied as desired. It has already been stated that the invention is illustrated herein as being applied in the art of food control, for example, for hotels or restaurants, and the following description, for the sake of clearness, will therefore frequently be in terms of articles of food. It is to be understood, however, that the description is merely exemplary and that the invention is equally applicable to the control of articles other than food.

Referring particularly to Fig. 2, this figure illustrates, diagrammatically, a lay-out or application of the present invention. A kitchen 1 is connected to a dining-room 2 by

a passageway 3. Guest tables 4 are provided in the dining-room, and in the kitchen there is a serving table 5, and there may also be two food inspectors' tables or desks 6 located in the kitchen one on either side of the passageway. Cashiers' desks 7 may be provided in the dining-room. In the present system the services of a checker are dispensed with. The different commodities or articles of food are prepared in the kitchen at their respective tables or stations located at the points 8 in the kitchen, as shown in Fig. 2.

Tiers or rows of units, such as are indicated in Fig. 1 for example, are located in the passageway 3 as shown at 9.

The units are all alike as far as their mechanical structure and operation are concerned, the only difference between the units being that each has its own name plate (see Fig. 3) representing a particular article of food, and in the distinguishing number of that particular unit corresponding to such food item. It will be understood, of course, that each unit prints the item to which it corresponds and the price of that particular item.

Referring now to Fig. 3, the front plate 10 of the unit 11 has secured thereon a plate 12 bearing, for example, the designation "Minute steak $1.50" and is also provided with a plate 13 bearing a number, such as "243", which number corresponds to and designates the particular commodity of this particular unit. This number, 243 in the present instance, for the managing authority in this restaurant, indicates the food item of this particular unit, in the present instance a minute steak (see for example Fig. 10*a*), where the number 243 indicates the minute steak box bearing that number. Each unit, of course, prints, as will hereinafter be described, its own number corresponding to a particular food item.

The units may be assembled together in any suitable manner, such as that shown in Figs. 1 and 8 for example, and may be supported upon the adjoining wall 14 and upon the floor or other base 15, the front wall 16 of which conceals and protects a plurality of spools upon which the paper strips 123, hereinafter referred to, are wound. Illumination, such as electric lights 17, may be provided to illuminate the units, the lights being carried by the ceiling or other suitable support 18.

Referring now more particularly to Figs. 3 and 13, the front plate 10 of the unit is provided with a key-hole 19, about which may be formed a projection 20 (Figs. 8 and 10) which may serve as an abutment stop to engage the top of the next lower tier (Fig. 8), where an upper unit is turned down upon a hinge by the managing authority, who alone has access to the interior of the unit for any purpose, such as changing the printing characters, renewing the carbons, replenishing tokens, resetting the counter, removing the audit slip, etc. It will be understood that the interior of each unit is absolutely locked and inaccessible to the waiter and all other persons except the managing authority. The projection 20 may also be so formed as to serve as a guide for the insertion of the key 22 (Fig. 4). The key 22 is shown as a convenient device to operate the unit and identify the employé operating the unit. In the present instance, therefore, the key 22 carries printing characters 23 representing the holder of the particular key. In the present example of the invention, the holder of the key shown in Fig. 4 would be waiter No. 714. The number 714 representing the waiter is printed upon the audit slip hereinafter referred to by the act of turning the key to release the other mechanism within the unit. The key also has formed thereon an actuating portion such as the lug 22*a*.

Referring again to Figs. 3 and 10, the base plate 24*a* of the unit receives the pivot 25 of a hinge, and any unit may be moved upon its pivot or hinge without interfering with adjacent units.

The top member 26 for each unit is designed to be movable in any convenient manner to provide access to the interior of the unit solely by the managing authority, the whole arrangement shown in Figs. 1 and 10 forming a casing for containing, inaccessibly except to the managing authority, the mechanism hereinafter described. The top plate 26 supports a guest check guide member 27, the upper end of which projects through the top plate and has its opposite walls 28 inclined (see Fig. 12), the depending walls of the guide member extending downwardly into the unit and approaching each other to fit more tightly around the guest check as it descends the guide member and approaches its predetermined position within the unit.

Referring to Figs. 6 and 7, the depending portion 29 of the guest check guide is provided at one end thereof with a notch 30, through which projects a roller 31 carried by the upper end of a roller arm 32 pivoted at its lower end to a pin 33 upon a supporting lug 34 projecting from the fixed support 184. The roller arm 32 is annular in form and normally occupies the position of Fig. 6 due to the weight of the roller 31. A spring 36 (Fig. 13), however, may be provided on the pivot 33 and bear upon the arm 32 to insure positively that it will normally occupy the position of Fig. 6.

The invention provides means for preventing the insertion of the guest check into any unit in any but the predetermined proper position to have printed thereon the items ordered by the guest. In the form of the invention shown, this means includes the roller 31, above referred to, which cooperates with a beveled corner 38 of the guest check 37

shown in Fig. 5. Referring to Figs. 6 and 7, it will be seen that where the beveled corner 38 is inserted in the card slot so it contacts with the roller 31 as the card is moved further into the slot, the beveled corner 38 forces the roller 31 into the position of Fig. 7, camming it clear of the guest check path, thereby permitting the guest check to be inserted in the proper position and to the full predetermined distance. Should the guest check 37 be inserted in the card slot in any position other than that of Fig. 7, a right-angled corner will abut the roller 31 as shown in Fig. 6 and any pressure on the guest check to force it further into position will merely maintain the roller 31 as an obstacle in the path of the guest check. By this construction it is impossible to insert the guest check into any unit in any but the predetermined desired relation thereto. The roller 31, as shown in Fig. 7, also serves the additional purpose of moving and holding each guest check 37 against the right-hand wall of the card slot so that the items will be printed exactly in a column and also assists in aligning the guest check for cooperation with the mechanism hereinafter described for regulating the distance the guest check is inserted into successive units.

In order to prevent the various items from being superimposed upon each other when printed on the guest check and to insure that they and their prices will be printed in a column as shown in Fig. 5, mechanism is provided to insure that upon each successive insertion of the guest check into any of the units, it will be moved further inwardly a distance equal to the spacing between the lines of printed items shown in Fig. 5. Referring to Figs. 13, 16 and 17, this mechanism comprises, in the present form of the invention, a cutting mechanism which, upon each insertion of the card, cuts a portion off the card so that after the five insertions evidenced in Fig. 5 there is a cutaway portion 40 which five cuttings have been required to produce and at the bottom of any cut there is always left the right-angled shoulder 41, whose position on the card is determined by the number of insertions.

The mechanism for producing these cuts, as shown in the present embodiment, includes a stationary cutter 50, with which cooperates a movable cutter 51 pivotally mounted with respect thereto on a shaft 52 and whose lower end is pivotally connected at 53 to a link 54, hereinafter further referred to. The stationary cutting member 50 is provided with a plurality of holes, into any one of which a pin 49 may be inserted to serve as an abutment stop for cooperation with and to determine its limit of the movement of the cutting depth-regulating arm 42, which is pivotally mounted on shaft 43.

A lateral projection 59 is provided on the free end of the movable cutter 51, and this projection is movable under the projecting portion 60 of the stationary cutter 50 and also extends above the arm 42, thus limiting upward movement thereof, and these projections cooperatively act together with an edge of the member 50 as shearing or cutting elements. The position of the pin 49 determines the distance downward to which the arm 42 may be moved, and thus determines the depth of the cut, whose width is determined by the extent of projection of the member 60 from the face of the stationary cutter 50 (see Fig. 17).

The invention provides means for preventing the actuation of the unit unless the guest check has been inserted in the unit in the required relation thereto and the exact predetermined distance therein. When the card is in the unit in the desired position, the key-hole 19 is unobstructed; at all other times an obstruction extending across the key-hole within the unit prevents the insertion therein of the key of Fig. 4 necessary to effect operation of the unit.

In the form shown, referring to Fig. 18, a rotatably mounted shaft 43 has fixed thereon, to rock therewith, an arm 42, which extends in the path of the guest check 37, which upon striking the arm 42 moves it downwardly a distance determined by the location of the pin 49, above referred to. Downward movement of the arm 42 rocks the shaft 43 and moves downwardly a second arm 44 fixed on said shaft which is connected by a link 46 to one end of a key-hole guard 47, which may take the form of an obstructing plate pivoted at 48 and having one end lying across the key-hole 19. The arm 44 has connected thereto one end of a coil spring 45, whose other end is attached to a fixed pin. The arms 42 and 44 on shaft 43 are thereby normally held in the full-line position of Fig. 18 and consequently the link 46 and key-hole guard 47 normally occupy the full-line position of Fig. 18. When the inserted guest check 47 strikes the arm 42, however, it moves this arm downwardly and through arm 44 and link 46 moves one end of the pivoted key-hole guard downwardly and the other obstructing end upwardly clear of the key-hole to permit the insertion of the actuating key of Fig. 4.

It will be recalled that the actuation of one of the units 11 causes the delivery to the waiter of a food item identifying token in exchange for which he may receive in the kitchen that particular food item; and at the time this token is issued to him the waiter is charged with the value of the item. It is therefore necessary to prevent the charging of the waiter with the value of an item unless he is at the same time supplied with the token by means of which to obtain the item and deliver it to the guest who has or-

dered it. Accordingly, the invention provides means for preventing the charging of the waiter with the value of an item whenever the supply of tokens in the unit is exhausted.

In the form herein shown, this means takes the form of mechanism for preventing the insertion of the card if the supply of tokens is exhausted, and this, of course, prevents any actuation of the unit and even the insertion of the key if the supply of tokens within the unit should become exhausted or diminished to a predetermined quantity.

Referring now particularly to Figs. 9 and 12, the guest check guide slot wall 29 is provided with an opening 61, into which is adapted to project a guest check obstructing finger 62 on a horizontal portion 63 of a relatively long arm 64 extending downwardly and adapted to swing about a pivot 65 intermediate its ends and fixed to a stationary wall 66 of the unit. A coil spring 67 has one end fastened to the lower end of the arm 64 and its other end fastened to a fixed pin 68, and the arm 64 is thus urged by said spring in a direction counterclockwise with respect to the pivot 65, that is to say, in such a direction as to force the finger 62 into the guest check slot to prevent the insertion therein of a guest check. At the lower end of the arm 64 is a horizontally projecting lug 69, which is normally engaged by a hook 70 pivoted at 71 to the fixed wall 66 of the unit. It will be evident that upon lifting of the hook 70 the lug 69 will be released from the hook and the arm 64 will be moved by spring 67 about pivot 65 to move the finger 62 into the guest check slot to prevent the insertion therein of a guest check. In accordance with the invention, the hook 70 is released, as just stated, when the supply of tokens in the machine becomes exhausted.

For this purpose, and referring to Figs. 9, 12 and 14, the lower horizontal reach of the hook 70 lies above one end of a lever arm 81 fixed on a horizontal shaft 79 pivotally mounted in supporting standards 80. Also fixed on the shaft 79 are a pair of parallel arms 78 extending substantially horizontally from the shaft 79 and in a direction opposite to that of the hook-releasing arm 81. As shown in Fig. 14, the pair of arms 78 lie on either side of a cylinder 72 provided with diammetrically opposite slots 75 and designed to hold in a column a plurality of stacked tokens 73. Resting upon the topmost token is a weight 76 freely slidable in the cylinder 72 and having a pair of oppositely extending short arms 77 projecting through the slots 75 and lying directly above the parallel arms 78, already described. The distance of the weight 76 above the arms 78 will depend upon the number of tokens 73 in the token column. It will be obvious from Figs. 9 and 12 that when the supply of tokens in the column nears exhaustion, the arms 77 of the weight 76 will ride downwardly upon the arms 78 and move these arms downwardly, thereby rocking shaft 79 and lifting lever 81 to raise the lower reach of hook 70 to release lug 69 on arm 64 and prevent the insertion of a guest check in the guest check slot as already described.

Any number of token containers may be provided, and in the present embodiment of the invention five containers 72 are shown (Fig. 14). The tokens are ejected successively, one from each token container from right to left, as viewed in Fig. 14. The slotted container above described will, therefore, be the last container to become exhausted and consequently the weight 76 and its associated mechanism need be provided only in connection with this container. The lower end of each tube or container 72 is open and extends beyond the end of the base plate 24*a*, as shown in Figs. 10 and 15, substantially half the tube having an opening or cutaway portion 74 through which the token may be ejected, the height of the cutaway portion being slightly greater than the thickness of the token. A chute 88 is provided under the token containers to receive ejected tokens, which are carried by gravity down the chute to the cup-shaped terminal 89 thereof (see Fig. 1).

Referring now to the mechanism for ejecting a token when the unit is operated by insertion of the guest check and waiter's key (Figs. 10, 12, 14 and 15), a rotatable shaft 82 extends transversely of the unit and is supported in suitable end bearings 83. The shaft 82 carries a plurality of token ejector arms 84, which are fixed to said shaft and extend radially therefrom. The arms 84 correspond in number to the number of token containers 72, one of said arms being located for convenience on the shaft 82 substantially opposite each token container so that the arms 84 are spaced axially along the shaft 82 as shown in Fig. 14.

In order to eject the tokens successively, one at a time, from each token container, the arms 84 extend angularly with respect to each other, the angle between any two adjacent arms being the same. In the present instance, there being five arms 84, the angle between any two adjacent arms is in this case 72°. This angle, of course, varies with the number of arms 84. Cooperating with each ejector arm 84 is a horizontally reciprocable token-ejecting slide 86 having therein a slot 85 to receive its token ejector arm, the slide being mounted to reciprocate horizontally in suitable guides 87 on the base plate 24*a*. Each slide 86 is adapted to move beneath a token cylinder 72 (Fig. 15) to engage and eject the bottom token of the stack of tokens contained in the cylinder. The shaft 82 is rotated (in the present instance) one-fifth of a revolution for each operation of

the unit by mechanism hereinafter described, and it will be evident from Fig. 15 that the ejector arm 84 engages the ejecting slide 86 in the slot 85 and moves it forwardly far enough to eject the bottom token into the chute 88. The ejector arm 84 having accomplished this purpose, rides out of the slot 85, whereupon a coil spring 90 having one end attached to the slide 86 and its other end secured to a fixed pin 91, returns the token-ejecting slide to its former position, with the slot 85 again in position to be engaged by the ejector arm 84 the next time said arm is brought into engagement with the slot. When the bottom token has been ejected and the slide has been returned by spring 90, the next token in the stack drops downwardly on the base plate 24*a* in the path of the slide 86 in position to be ejected by the next operation of said slide.

Mechanism is provided for moving the token ejector shaft 82 (in the present instance) through one-fifth of a revolution upon each operation of the unit, and in the present embodiment of the invention the token ejector shaft actuating mechanism is actuated upon rocking of the shaft 92 (Figs. 10 and 13) by mechanism hereinafter described, when the key 22 is inserted in the key-hole 19 and is rotated therein. Still referring to Fig. 13, however, fast on shaft 92 is an arm 93 which serves several purposes, one of which is to actuate the ejector shaft 82. Connected to the arm 93 is a downwardly extending link 94, whose lower end (Fig. 10) is pivotally connected at 95 with one arm 96 of a bell crank lever pivoted at 96*a* to a fixed bracket and whose other arm is pivotally connected at 98 to a yoke 99, to which is adjustably secured by a nut 101 the rod 100. The other end of the rod 100 is pivoted at 102 to a freely rotatable arm 103, which is loosely mounted on the shaft 82. Said arm 103 has pivotally mounted thereon at 104 a spring-pressed pawl 105 acted on by spring 107 and which cooperates with a ratchet 106 fast on said shaft 82. The parts are so constructed that each actuation of the shaft 92 in a clockwise direction, as viewed in Fig. 13, moves the ratchet 106 through one-fifth of a revolution (in the present instance) by the mechanism just described, that is to say, the arm 103, rod 100, bell crank lever 96, 97, link 94 and the arm 93 fixed on shaft 92. Retrograde movement of the ratchet 106 is prevented (Fig. 10) by a pawl 109 pivoted to a fixed lug 108 and urged against the ratchet by a flat spring 110.

The invention provides means for winding an audit strip (see Fig. 10*a*) into each unit from an outside source of supply, the audit strip being wound upon a spool within the unit intermittently to permit the printing mechanism to act thereon while the audit strip is stationary. It will be appreciated that the audit strip need not be wound upon a spool within the unit, the essential feature being merely that a record be made which is inaccessible to all except the managing authority.

It has already been stated that the arm 93 in the present embodiment of the invention accomplishes several purposes, one of which is to actuate the token-ejecting mechanism already described. Another purpose of the arm 93 is to wind into the unit from an outside supply an audit strip, the audit strip being wound upon a spool after being printed upon.

Referring particularly to Figs. 8 and 13, the arm 93 is provided near its outer end with a pin 111 working in a slot 112 in the lower end of a vertically extending arm 113 normally urged downwardly by a coil spring 114 against a stop pin 113*a*. At its upper end the arm 113 is provided with a projecting pin 115 which engages a slot 116 in a segment 117 loosely mounted on a horizontally extending shaft 118.

Pivotally mounted at 119 on the segment 117 is a spring-pressed pawl 120 engaging a ratchet 121 fixed on one end of an audit strip spool 122. An auxiliary spring-pressed pawl 121*a* is pivoted to a fixed pin and bears on the ratchet 121 to prevent retrograde movement thereof.

As already described, downward movement of the arm 93 actuates the token-ejecting mechanism. The reverse or upward movement of the arm 93 winds the audit strip 123 upon the spool 122. Upon upward movement of the arm 93, pin 111 in said arm moves upwardly to the end of the slot 112 in arm 113, and, continuing its movement, urges arm 113 upwardly. Upward movement of arm 113 partially rotates the segment 117 about shaft 118 by means of the pin and slot connection of the arm with the segment, and this causes pawl 120 to rotate ratchet 121 and hence spool 122 through a partial revolution in a counterclockwise direction, as viewed in Fig. 113.

The audit strip supply (Fig. 8) may be located below the units and wound strips may be loosely mounted on a vertical spindle 232, from which they may be unwound by the mechanism just described, suitable guides 233 being provided to guide the course of the audit strips into their respective units.

The invention provides registering means in the form of a visible counter to indicate the number of actuations of each unit.

In the present form of the invention, the register includes (Fig. 3) an opening 135 in the front wall 10 of each unit, this opening being protected by a cover glass, if desired, and forming a window through which the numbered wheels 134 of the register or counter may be inspected.

Referring to Figs. 11 and 14, the counter

mechanism is indicated generally at 124 and is not shown in detail herein since it forms per se no part of the present invention and may be of any well-known or approved form of construction. The register or counter is actuated for every operation of the unit and consequently registers the number of key manipulation which, as will be understood, is the same as the number of tokens ejected, and this number, of course, corresponds to the number of portions or particular food items ordered through the particular unit.

Referring to Figs. 11, 14 and 15, the token-ejecting shaft 82 has fixed thereon a star wheel 125 having teeth 126 (in the present instance five teeth) which are equally spaced apart and which correspond in number to the number of token containers, and consequently to the number of token ejector arms. Arranged to be actuated successively by each of the teeth 126 is a bell crank lever 128 oscillating on a fixed pivot 129 and having at the end of one arm a pin 127 arranged in the path of and adapted to be moved successively by the teeth 126. The other arm of said bell crank lever has pivotally connected thereto, at 131, a horizontally extending link 132 urged to the right, as viewed in Fig. 15, by a coil spring 131*a* connected to one end thereof. At its other end the link 132 is pivotally connected to the counter actuating lever 133 (Figs. 11 and 14). Thus each time the pin 127 is struck by a tooth 126, the link 132 actuates the counter mechanism to add one unit therein.

The present embodiment of the invention includes two power shafts. One of these shafts 92 (Fig. 13) acts through arm 93 to actuate the audit strip winding spool in the unit, the token-ejecting mechanism and the register or counter as already described, and also to actuate the cutter of Fig. 16, the announcing mechanism and the carbon strip feed of the printing mechanism, as will hereinafter appear. The other power shaft 136 initiates actuation of the printing mechanism and the carbon strip feed. The power shaft 136 is first rocked clockwise by the initial turning of the key 22 to the right, as viewed in Fig. 13, and is returned to its former position by a spring; and the power shaft 92 is thereafter rocked counterclockwise by return movement of said key to the left, as viewed in Fig. 13, as the key is rotated in the reverse direction for withdrawal from the key-hole 19, and the power shaft 92 is thereafter rocked back to its former position by a spring.

Referring now to the key-actuated mechanism for producing these movements of the two power shafts 92 and 136, the power shaft 136 has fixed thereon a two-armed lever, one arm 137 of which extends downwardly and to the left as viewed in Fig. 13, and the other arm 138 of which extends upwardly and carries at its upper end a pin 139, upon which is pivotally mounted a rocker element 140, one arm of which extends downwardly adjacent the key-hole 19 and is provided with teeth 141, over which the lug 22*a* on key 22 rides as the key is turned to the right, as viewed in Fig. 13. These teeth 141 are so shaped as to prevent retrograde turning of the key until it has been turned far enough to ride off the teeth 141. The rocker element 140 is provided with a pin 143 adapted to contact with the arm 138 and move it to the right as the key forces the rocker element 140 to the right upon its initial movement, as viewed in Fig. 13. This produces the initial rocking of the shaft 136 in a clockwise direction, as viewed in this figure.

When the key lug 22*a* has ridden off the rocker element teeth 141, and the arms 138 have been rocked to the right, as viewed in Fig. 13, a coil spring 218 having one end fastened to a pin 219 fixed on the upper end of one of the arms 138, and having its other end secured to a pin fixed in the unit casing, returns the arms 138 to their original position, shown in Fig. 13.

The rocker element 140 is provided with a tail piece 144, which rocks with the rocker element 140 and in whose path of movement lies a pawl or pivoted cam 148 urged constantly in the position of Fig. 13 by a flat spring 150, and pivotally mounted at 149 on a link 145 pivoted at its lower end at 140 to the arm 147 fast on shaft 92. The link 145 is adapted to rest intermediate its ends on a roller 151 carried by a pin 152 mounted in the arms 138, of which there are two spaced apart and parallel to each other and between which the rocker element 140 and link 145 are located. Both arms 138 are fast on shaft 136 and are provided with parallel downwardly extending arms 137.

The initial and return movements of the arms 138 as above described are accomplished without affecting the power shaft 92. Upon return rotation of the key 22, however, the lug 22*a* engages beneath the lowermost tooth 141 on the rocker element 140 and cams this element to the left or clockwise about its pivot 139, as viewed in Fig. 13. This moves the tail piece 144 clockwise also until it abuts against the cam 148 and forces said cam and the link 145, to which it is connected, to move downwardly and to the left to rock the arm 147 and consequently the power shaft 92, upon which said arm is fixed. This moves the arm 93 upwardly, as already described.

No movement of the arms 138 occurs during this action, since the rocker element pin 143 merely rides away from the edges of the arm. The arm 93 is returned to the position of Fig. 13 to rock the shaft 92 back to its original position by means of a coil spring 153 attached to the arm 93 and exerting a downward force on said arm and having its

other end 154 secured to a lug 155 fixed to the base plate 24*a*.

From the foregoing it will be apparent that, as viewed in Fig. 13, initial movement of the key rocks the power shaft 136 clockwise, after which said shaft is moved by spring 218 counterclockwise to its original position; and that return movement of the key causes rocking of the power shaft 92 in a counterclockwise direction, after which it is returned by a spring 153 in a clockwise direction to its original position.

As already indicated, the invention provides mechanism for printing upon the guest check 37, and in the present instance also provides mechanism for printing upon the audit strip 123, which forms a record locked within the machine and accessible only to the managing authority.

In the present embodiment of the invention, both printing mechanisms are actuated from the second power shaft 136. Referring to Figs. 10, 11 and 13, the lower end of the arm 137 lies under a horizontally projecting pin 156 fixed on an arm 157 secured on a rock shaft 158. A second pin 159 also fixed in arm 157 contacts with the lower edge of a second rocker arm 160 fast on a second rock shaft 161. The rock shafts 158 and 161 together with their rock arms 157 and 160 are normally held in their positions shown in Fig. 13 by coil springs 162 and 163 secured respectively to the rock arms 157 and 160 and having their other ends secured to the casing wall respectively by pins or studs 164 and 165.

The printing mechanisms are carried by a pair of spring arms 166 and 170 fastened at their lower ends respectively to the rock shafts 158 and 161 and carrying at their upper ends platens 167 and 171, each provided preferably with a resilient striking member such as the rubber insert 169 (Fig. 12). The rubber insert 169 on platen 167 is adapted to strike against the rear face of the guest check 37 and urging it against the face of the carbon strip 179, in rear of which strip is located a fixed printing slug 168. The other rubber insert on platen 171 is adapted to strike against the rear face of the audit strip 123 and force it against the face of the adjacent run of the carbon strip 179, in rear of which is the stationary printing slug 172. The slug 172 bears the price and box or item number shown in the section of audit strip illustrated in Fig. 10*a*. The key number or waiter's number shown at 23 on the key of Fig. 4 is aligned with the slug 172 the moment the key is turned past the lowermost tooth 141, and at this moment the arms 138 are quickly snapped back to initial position by spring 218, arm 137 moving away from pin 156, with the result that springs 162 and 163 return rock shafts 158 and 161 to their initial positions and the platens 167 and 171 on their spring arms 166 and 170 are snapped respectively against the back of the guest check 37 and the back of the audit strip 123, producing the impressions of their respective slugs thereon by means of the carbon strip 179.

Referring now to the mechinism controlling the carbon strip 179 and moving it to a fresh position after each actuation of the unit, the invention provides means for intermittently moving the carbon strip to unwind it from one of a pair of spools and to wind it on the other and to reverse the winding when the carbon strip is unwound from either spool. As shown in Fig. 12, the carbon strip 179 is guided to form a depending loop between the two carbon strip spools. The guest check is printed at a point on one of the vertical runs of this loop and the inaccessible audit strip is printed at a point along the other vertical run of said loop.

Referring now in detail to the carbon strip mechanism (Fig. 12), a pair of spools 177 and 178 are rotatably mounted near the top of the unit, and the carbon strip 179 is unwound from one of these spools as it is wound upon the other. The carbon strip is guided in its looped path by horizontally extending guide rods 180, 181 and 183 and also by shaft 185. The spool 177 is rotatably carried by the upper ends of a pair of spaced arms 182 and 184 located respectively adjacent the rear wall 66 and the front plate 10 of the unit (see Figs. 10, 11, 12 and 13), said arms being fixed upon the horizontal shaft 185, the construction being such that the spool 177 may be swung to the left, as viewed in Fig. 13, to provide ready access thereto when, for example, it is desired to renew the carbon. A spring 227 (Fig. 12) bears at one end against a fixed stop and at its other end against the arm 184 to urge said arm normally into the position shown in Fig. 13.

In order to maintain the roll 177 in retracted position when moved to the left, as viewed in Figs. 12 and 13, about the shaft 185, a hook arm 220 is mounted on the stud 164 and has formed at its outer end a hook 221 (Fig. 12) adapted to engage over the shaft of the roll 177 to hold this roll in retracted position when it is desired to renew the carbon or to gain access to the guest check printing slug 168.

The shaft 186 (Figs. 11 and 12) of the spool 177 carries a gear 187, and the shaft 188 (Fig. 10) engaging the spool 178 carries a gear 189. The spools 177 and 178 are caused to rotate in one direction or the other by means of a gear 190 (Fig. 12) engageable with either one or the other of the gears 187 and 189. A spring 217 fixed at its lower end bears at its upper end axially against the shaft of the spool 178 to retain said spool axially in position.

The gear 190 is rotatably carried at the

upper end of an arm 191 mounted on and adapted to be moved arcuately about a shaft 192, and the arm 191 is rocked about this shaft by mechanism actuated by the power shaft 92.

For this purpose, still referring to Fig. 12, an arm 193, fixed on power shaft 92 which may if desired be bifurcated (Fig. 10) or formed of two separate parallel members, has pivotally secured thereto near its upper end, at 194, a link 195, whose other end is pivotally connected at 196 to an arm 197 rotatably mounted on the shaft 192 (Fig. 12) and carrying a pawl 198 pivoted thereon at 199 and urged by a spring 200 into engagement (Fig. 12*a*) with a ratchet 201*a* fixed on the shaft 192 to rotate said shaft, and through gear 201 on the said shaft to rotate the gear 201 intermittently and also the intermeshing gear 190. The gear 190 will therefore rotate intermittently either one of the gears 187 or 189, depending upon which of these gears it engages, and will consequently rotate either one or the other of the carbon strip spools 177 or 178 intermittently every time the power shaft 92 is rocked by actuation of the unit.

Mechanism is provided for reversing the direction of the carbon strip wind when the carbon strip becomes unwound from one of the spools and it is desired to reverse its direction to wind it up on said spool.

For this purpose, as shown in Fig. 12, a two-armed lever is rotatably mounted on the shaft 192, and having its downwardly projecting arms 203 and 204 extending oppositely to each other.

A pin 205 carried at the upper end of the lever arm 193 is adapted to engage a notch 206 in the lower end of an arm 207 rotatably mounted on a shaft 208, and the pin 205 is also adapted to engage the hook 209 formed at the outer end of another arm 210 also rotatably mounted on shaft 208, and provided with the upwardly extending projection 211. A fixed stop pin 212 is provided to limit the upward movement of the arm 210. Together with the cooperating members 213, 214 and 215, the foregoing elements constitute a reversing mechanism for the carbon strip. This mechanism forms no part of the present invention and need not be described in detail. It will be understood, however, that the parts mounted on the shaft 192 are rocked bodily in one direction by engagement of the pin 205 in the notch 206 of the arm 207, and in the opposite direction by engagement of the pin 205 with the hook 209 formed at the outer end of the arm 210. A coil spring 216 acting on the outer end of the gear-carrying arm 191 serves to hold this arm in either of its two positions, that is, with the gear 190 in engagement with either one of the gears 187 or 189.

It has already been stated that the guest check cutter or notching mechanism is actuated by power shaft 92. Referring to Figs. 12 and 13, the cutter actuating link 54 of Fig. 16 is pivotally connected at its other end, at 175, to the lower end of an arm 176 fast on shaft 92. The first movement of the power shaft 92 being counterclockwise as viewed in Figs. 12 and 13, the link 54 is moved to the right as viewed in said figures or to the left as viewed in Fig. 16, and upon return or clockwise rocking movement of the power shaft 92, the link 54 is moved by arm 76 to the left as viewed in Figs. 12 and 13, and to the right as viewed in Fig. 16, and these movements of link 54 cause the cutting movement of the movable cuter 51, already described. Referring to Fig. 13, an elongated exit channel or slot 234 is provided adjacent the cutter, down which the pieces cut out from the guest check may fall by gravity and be guided out of the unit, after which they may be received, if desired, in any suitable receptacle.

The invention provides mechanism for announcing, to a cook in this instance, the fact that a particular unit has been operated and consequently that a guest has ordered a particular item of food. Upon receiving this announcement, the cook may begin at once to prepare the item ordered, thereby making it unnecessary for the waiter to go to the kitchen personally and announce the order verbally. The waiter may, since he need not go to the kitchen, return to the dining-room and resume his duties there, making only one trip to the kitchen to receive the item ordered in exchange for the token issued to him when the order was announced to the cook.

Referring particularly to Fig. 12, and to the embodiment of announcing mechanism shown in the present example of the invention, an arm 222 fixed on power shaft 92 extends downwardly and to the left, as viewed in Fig. 12, and carries at its outer end an insulated conductor plate or block 223 movable into and out of engagement with the pair of knife switch arms 224 carried by the base plate 24*a*. Wires 225 lead from the knife switch to the annunciator for the particular unit. The annunciators may be of any well-known or approved form of construction and are indicated at 226 in Fig. 2.

It will be apparent that upon initial or counterclockwise rocking movement of the power shaft 92, the movable knife switch arm 222 fast on said power shaft is moved forward to close the switch 224 and thereby to actuate the particular annunciator associated with the particular unit. The annunciator circuit is opened when the power rock shaft 92 is returned to the position of Figs. 12 and 13 by spring 153 acting on the arm 93.

It has already been stated that the interior mechanism of the unit and the audit strip record therein is inaccessible to waiters and cooks and all other persons except the managing authority, by whom alone the token con-

tainers are each preferably bodily removable as a whole. The invention provides means for rendering the interior of the machine and its record accessible to such managing authority, and in the present example of the invention, referring to Fig. 3, a key-hole 228 is provided near the base of the machine in the front plate 10 for the insertion of a key to actuate a locking latch 229 (Fig. 12) and thereby unlock the unit so that it may be turned down upon the front plate 10, as indicated in dotted lines in Fig. 8, for access to the interior by the managing authority for inspection or removal of the audit strip record, reloading the token containers, or for other purposes.

Since the operation of each of the mechanisms has been described in connection with its construction, it is believed unnecessary to repeat here as a whole a statement of the operation of the entire machine. It is evident, however, that insertion of the guest check removes the key-hole guard and permits the key to be inserted into the unit and turned to the right as viewed in Fig. 13. This brings the waiter's number on the key in position to be printed on the audit strip and at the same time rocks the power shaft 136 clockwise. This moves the striker platen arms outwardly and into position to be snapped back to effect printing on the guest check and audit strip the moment the key lug 22*a* rides off the bottom tooth 141, when spring 218 on arm 138 returns the power rock shaft 136 to its original position, thereby permitting the coil springs 162 and 163 to snap the platens against the guest check and audit slip and produce the printings thereon as already described.

Preliminary to withdrawing the key from the unit, it must be rotated in the reverse direction to return to its initial position, and upon commencing this movement the key lug 22*a* engages beneath the lowermost tooth 141 and rocks the rocker element 140 to bring the tail piece 144 against the cam 148, thereby through link 145 and arm 147 rocking the power shaft 192 in a counterclockwise direction.

This movement lifts the arm 93, which, through link 113, winds the audit strip further on its spool 122, and at the same time lifts link 94. The link 94 moving upwardly, acts through bell crank lever 96, 97, rod 100 and arm 103 to rotate the ejector shaft 82 to eject a token from the unit as already described. Rotation of the ejector shaft 82 actuates the counter or registering mechanism through star wheel 125, lever 128 and link 132.

The initial or counterclockwise rocking of the power shaft 92 also moves arm 193 and link 195 and the mechanism associated therewith to rotate one or the other of the carbon strip spool gears, thereby shifting the carbon strip to a fresh position each time the unit is actuated. The same clockwise rocking of the power shaft 92 actuates the guest check cutter through arms 176 and link 54.

Simultaneously this initial rocking of the power shaft 92 acts through arm 222 to close the switch 224 to operate the announcer which informs the cook that a particular item has been ordered, so that he may begin the preparation of this item without waiting for the waiter to walk into the kitchen and order the item verbally.

Initial or clockwise rocking of the power shaft 136 moves the printing platens outwardly in position to be released on return movement of shaft 136 to effect the printing on the guest check 37 and the audit strip 123.

From the foregoing description it is evident that the machine of the present invention, upon actuation, calls for the preparation and delivery of an item ordered; makes an accessible record of the item and its price; makes an inaccessible record of the item and its price and the identity of the person charged with the duty of turning over to the managing authority the price of such item; ejects a commodity-identifying token, in exchange for which the person charged with the price of the item may obtain such item from its sources, and in addition is provided with certain safety mechanisms which make it impossible to actuate the machine except in the proper manner and which prevent the charging of a person with the price of an item unless he is at the same time provided with the means for obtaining that item and collecting its price. Moreover, it is to be noted that all of the foregoing results are accomplished by the mere and necessary conduct of the business itself, while actually increasing the speed with which the business may be transacted.

I claim:

1. A commodity control machine including apparatus for ejecting a token representing a commodity, and mechanism called into operation by actuation of said token-ejecting apparatus for transmitting to a distance a commodity-ordering impulse.

2. A commodity control machine including operator-identifying apparatus for ejecting a token representing a commodity, and mechanism called into operation by actuation of said token-ejecting apparatus for transmitting to a distance a commodity-ordering impulse.

3. A commodity control machine including apparatus operable at will for ejecting a token representing a commodity, and mechanism called into operation by actuation of said token-ejecting apparatus for charging the operator of said machine with the value of the commodity represented by the token.

4. A commodity control machine including apparatus for ejecting a token representing a commodity, manually operable means for initiating actuation of said apparatus,

and mechanism called into operation by actuation of said token-ejecting apparatus for charging the operator of the machine with the value of the commodity represented by the token.

5. A commodity control machine including apparatus for ejecting a token representing a commodity, operator-identifying actuating means therefor, and mechanism called into operation by actuation of said token-ejecting apparatus for charging the operator of said machine with the value of the commodity represented by the token.

6. A commodity control machine, including apparatus for ejecting a token representing a commodity, and mechanism called into action by operation of said token-ejecting apparatus for making an accessible record of said commodity and its price.

7. A commodity control machine, including apparatus for ejecting a token representing a commodity, operator-identifying actuating means therefor, and mechanism called into action by operation of said token-ejecting apparatus for making an accessible record of said commodity and its price.

8. A commodity control machine, including apparatus for ejecting a token representing a commodity, mechanism called into action by operation of said token-ejecting apparatus for recording on a check the identity and price of said commodity, and a position-determining device called into action by each operation of said token-ejecting apparatus for decreasing the surface area of said check by a predetermined amount.

9. A commodity control machine, including apparatus for ejecting a token representing a commodity, operator-identifying actuating means therefor, mechanism called into operation by actuation of said token-ejecting apparatus for recording on a check the identity and price of said commodity, and a position-determining element called into action by each operation of said token-ejecting apparatus for altering said check.

10. A commodity control machine, including apparatus for ejecting a token representing a commodity, operator-identifying actuating means therefor, mechanism called into operation by actuation of said token-ejecting apparatus for recording on a check the identity and price of said commodity, record-making devices cooperating therewith for charging the operator of said machine with the price of said commodity, and a position-determining element called into action by each operation of said token-ejecting apparatus for altering said check.

11. A commodity control machine, including apparatus for ejecting a token representing a commodity, mechanism called into operation by actuation of said token-ejecting apparatus for recording on a check the identity and price of a commodity, and record-making devices cooperating therewith for charging the operator of said machine with the price of said commodity.

12. A commodity control machine, including apparatus for ejecting a token representing a commodity, mechanism called into operation by actuation of said token-ejecting apparatus for recording on a check the identity and price of a commodity, and record-making devices cooperating therewith for recording the commodity, its price and the identity of the operator of said machine.

13. A commodity control machine including mechanism operable upon actuation of said machine for transmitting to a distance a commodity-ordering impulse, and apparatus cooperating therewith and called into action upon operation of said mechanism for evidencing the identity of the commodity ordered.

14. A commodity control machine including apparatus for ejecting a token representing a commodity, mechanism called into operation by actuation of said token-ejecting apparatus for transmitting to a distance a commodity-ordering impulse, and devices cooperating therewith and called into action by said token-ejecting apparatus for recording the identity of the commodity ordered.

15. A commodity control machine including apparatus for supplying to the operator a token representing a commodity, mechanism called into operation by actuation of said token-supplying apparatus for charging the operator with the price of such commodity, and devices preventing operation of said charging mechanism unless a token is supplied to the operator by said token-supplying apparatus.

16. A commodity control machine including a token supply, apparatus for ejecting a token from said supply, mechanism called into operation by actuation of said token-ejecting apparatus for charging the operator of said machine with the value of a commodity represented by such token, and devices preventing operation of said machine when said token supply is reduced to a predetermined minimum.

17. A commodity control machine including apparatus for ejecting a token representing a commodity, mechanism for recording on a check when inserted in said machine the identity of such commodity and called into action by operation of said token-ejecting apparatus, means similarly called into action for charging the operator of the machine with the value of said commodity, and a locking element preventing operation of the machine until said check has been inserted therein.

18. A commodity control machine including apparatus for ejecting a token representing a commodity, mechanism for recording on a check when inserted in said machine the

identity of such commodity and called into action by operation of said token-ejecting apparatus, means similarly called into action for charging the operator of the machine with the value of said commodity, a device insuring insertion of said check in said machine only in a predetermined relation thereto, and a locking element preventing operation of the machine until said check has been inserted therein.

In testimony whereof, I have signed this specification.

HARRY RUSSELL BRAND.