J. J. DUFFIE.

CASH REGISTER.

APPLICATION FILED NOV. 22, 1910.

1,170,480.

Patented Feb. 1, 1916.

4 SHEETS—SHEET 1.

Fig. 1.

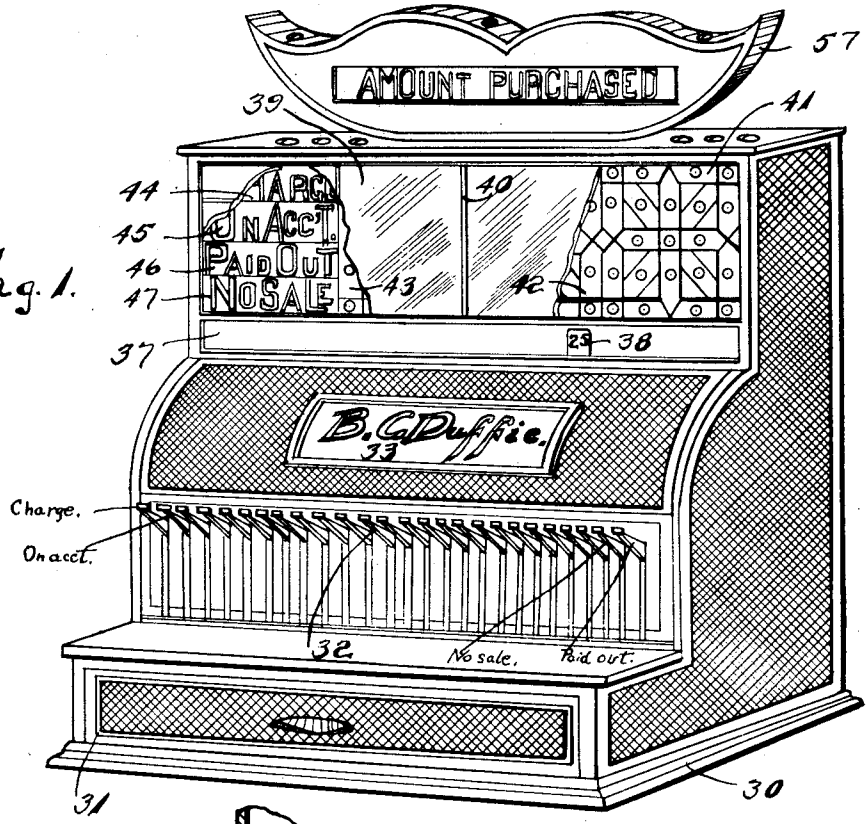



Fig. 2.

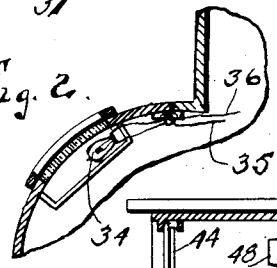



Fig. 3.

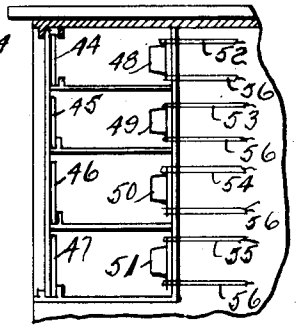
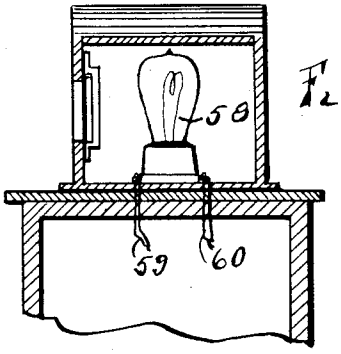



Fig. 4.




Witnesses

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4 SHEETS—SHEET 2.

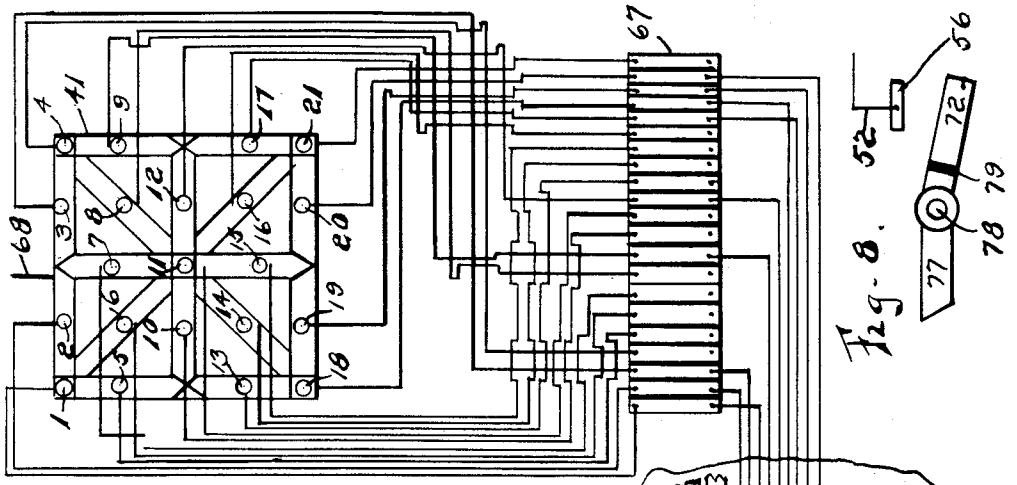


Fig. 8.

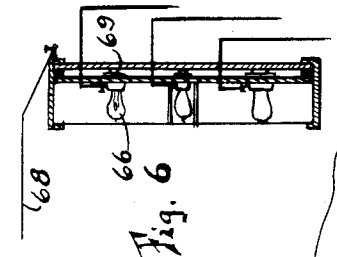


Fig. 6

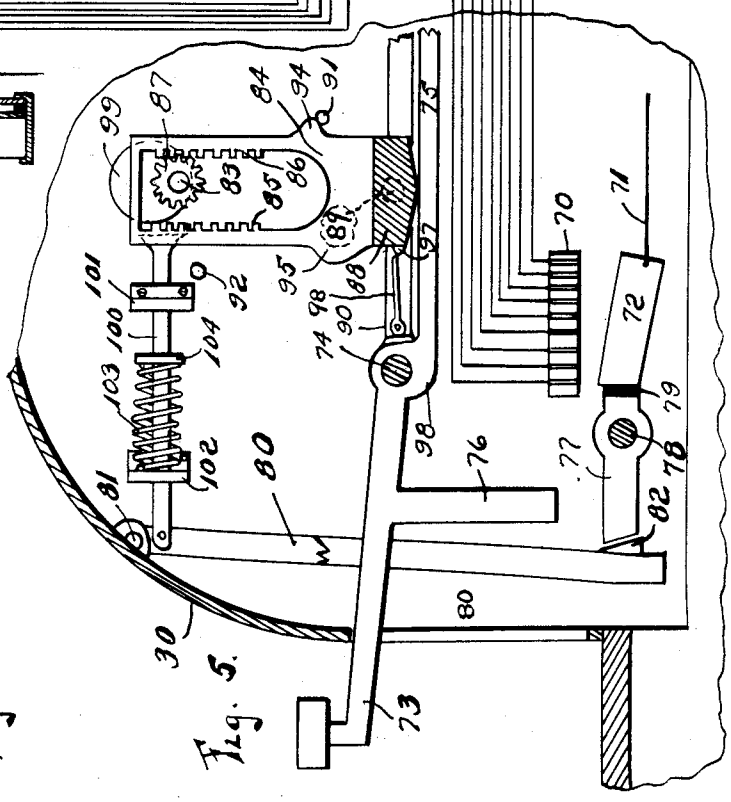


Fig. 5.

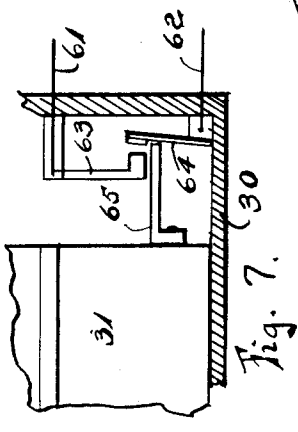


Fig. 7.

Witnesses

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4 SHEETS—SHEET 3.

Fig. 10.

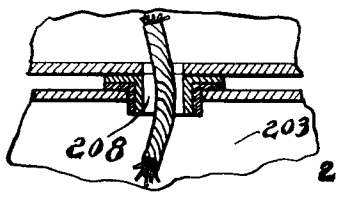
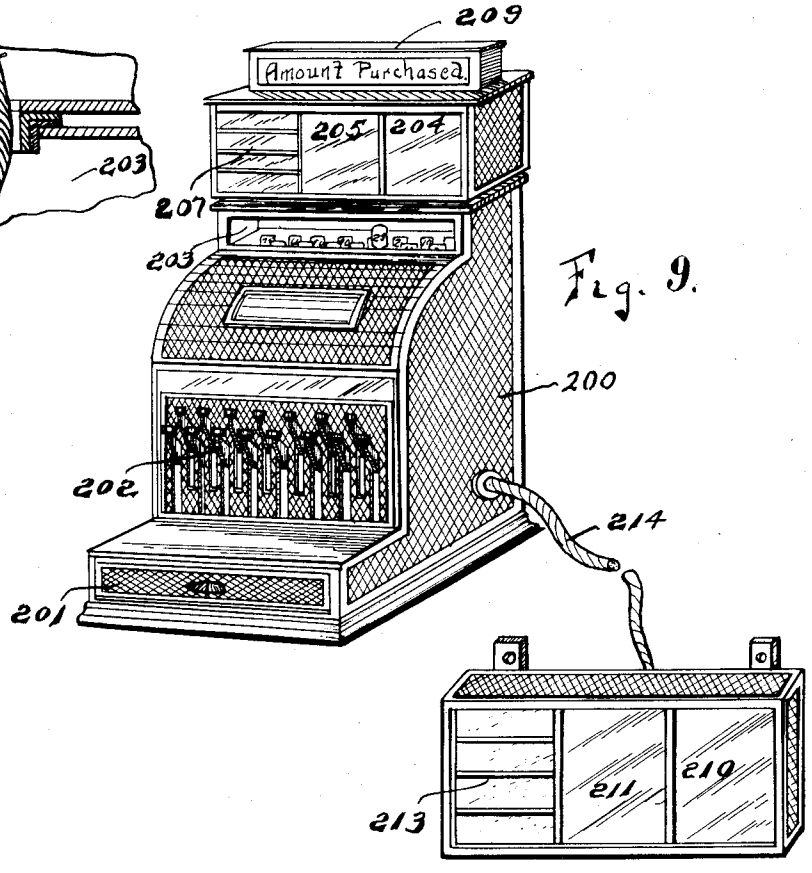



Fig. 9.




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4 SHEETS—SHEET 4.

Fig. 13.

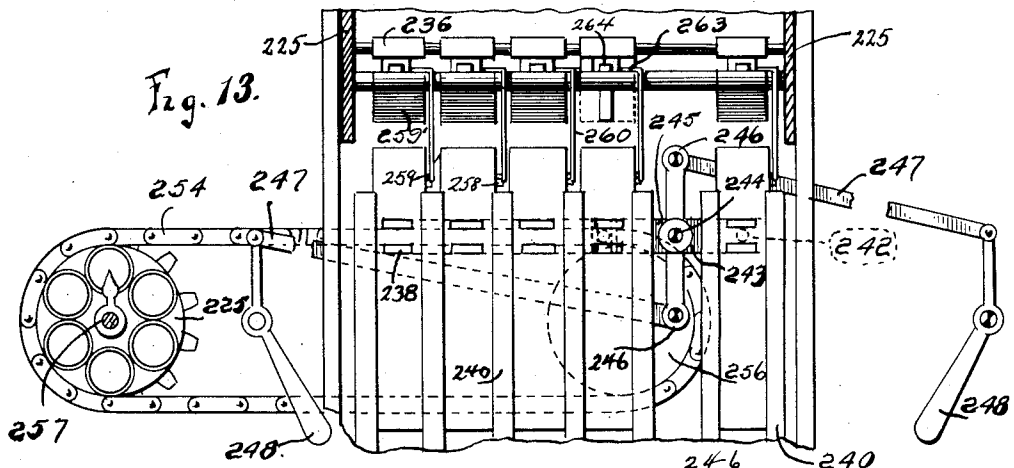



Fig. 14.

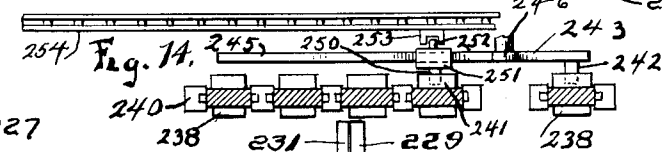



Fig. 11.

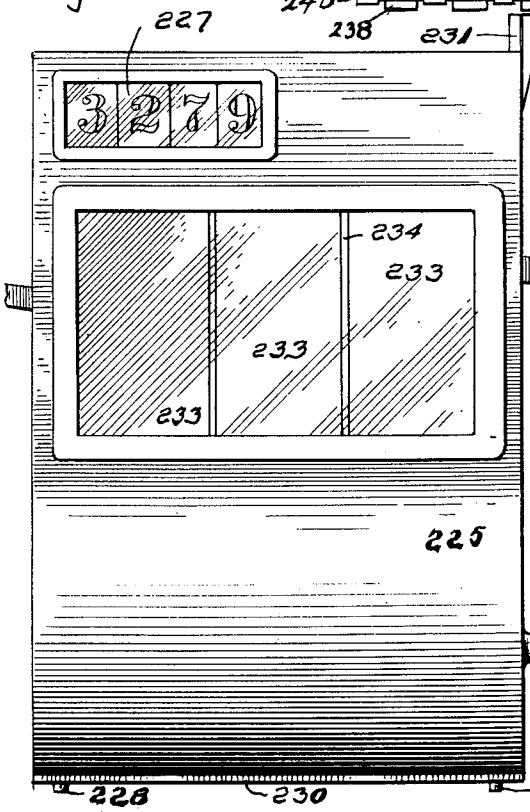
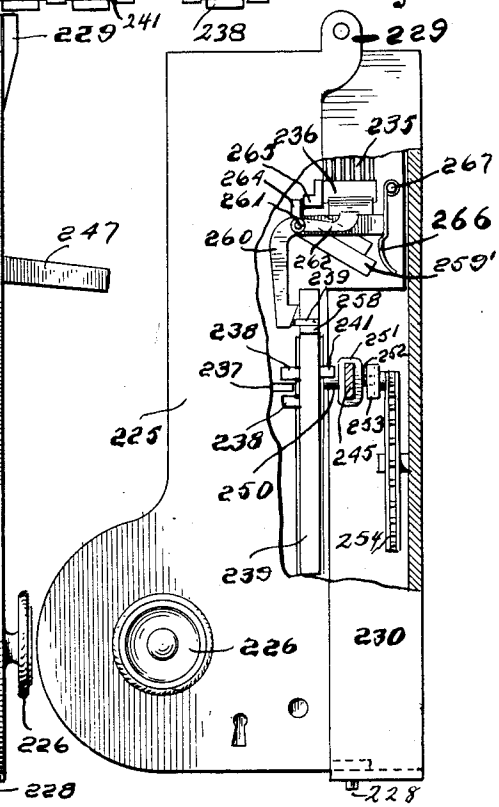



Fig. 12.




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# UNITED STATES PATENT OFFICE.

JOHN J. DUFFIE, OF SAN FRANCISCO, CALIFORNIA.

## CASH-REGISTER.

1,170,480. Specification of Letters Patent. Patented Feb. 1, 1916.

Application filed November 22, 1910. Serial No. 593,714.

*To all whom it may concern:*

Be it known that I, JOHN J. DUFFIE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Cash-Register, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a cash register and its object is to provide an illuminated signal to indicate to the purchaser the amount of his purchase.

Another object of the invention is to set forth the character upon such a large scale as to be readily visible at a considerable distance from the cash register.

Another object of the invention is to provide means whereby some legend may be illuminated when one or more of the keys of the cash register is depressed, and the machine operated. It is to be noted that a continuous and steady light may be overlooked by the casual passerby, but a sudden illumination will draw the attention of almost everyone.

A further object of the invention is to provide means whereby the usual legends such as "Charge," "On account," "Paid out" and "No sale" or other legends may be illuminated by the clerk whenever he operates the machine.

A further object of the invention is to provide means whereby different types of registers may be equipped with illuminated signals.

Another object of the invention is to provide means to illuminate a sign at a distance from the register, whereby the proprietor may have a check on the clerk, or whereby passengers in a car may observe the signals whether they are facing toward or away from the register proper.

In the drawings is shown only so much of the cash register as is necessary to the proper illustration of the invention, the same numeral is used throughout the several views for the same portion.

Figure 1 is a perspective view of the cash register, a portion of the glass front in front of the illuminated characters being broken away for the purpose of illustrating them. Fig. 2 is a sectional view of a portion of the front of the cash register showing the means for illuminating one of the name plates used. Fig. 3 shows the means for illuminating the "charge," "on account," "paid out," and "no sale" plates. Fig. 4 is a sectional view through a portion of the register illustrating the manner of lighting the sign on the top of the register; Fig. 5 is a sectional view through a portion of the register and illustrating diagrammatically the manner of operating the lights; Fig. 6 is a sectional view through one of the monograms showing the manner of wiring the lamps; Fig. 7 is a diagrammatic view showing the manner of lighting the sign on the top of the register and on the side thereof when the cash drawer is opened. Fig. 8 is a view showing the manner of lighting the "charge," "on account," etc., signs at the end of the register; Fig. 9 is a perspective view of a register having the indicating panels movably mounted and connected with a secondary set of panels adapted to be placed at a distance from the register; Fig. 10 is a view in section of the boss upon which the movable panels are rotated; Fig. 11 is a front elevation of a fare register for cars having the invention applied thereto; Fig. 12 is a side elevation of said register, a portion thereof being broken away to illustrate the manner of operating the electric lighting apparatus; Fig. 13 is a view in front elevation of that portion of the fare register which is secured to the car, the register proper being removed therefrom for the purpose of illustration, and Fig. 14 is a view in plan of the slidable bars and selecting mechanism used to operate the different figures of the register.

The numeral 30 represents the casing of the machine; 31 indicating the drawer. The machine has the usual set of keys 32; a key at one end having the word "Charge" upon it and its adjoining key reading "On account". At the opposite end of the set of keys, one key reads "No sale" and the other reads "Paid out".

The remaining keys have the usual designations from five cents to several dollars. On the curved front of the register there is a name plate 33 upon which may be placed the name of the merchant or any other suitable legend. This legend is on a glass or other translucent plate and is illuminated by means of a lamp 34 having the wires 35 and 36 leading thereto.

At the top of the register there is the usual window 37 through which flags 38 show when a key has been depressed. Above the flag window 37 there is a translucent panel 39 which is divided into four spaces by means of three bars 40, two of which are shown. The third bar is placed over the junction of the monogram fully shown, and the one partly shown at the right hand end of the window 39. The object of these bars is to space off the several figures illuminated when more than one monogram is illuminated. Back of the window 39 there are three monograms, 41, 42 and 43 as well as four signs 44, 45, 46 and 47. The signs 44 to 47 are illuminated by means of lamps 48, 49, 50 and 51 respectively, suitable wires 52, 53, 54 and 55 leading therefrom to the several keys for closing said circuits. The wires on the other side of each lamp are all connected together by means of a suitable wire 56. On the top of the cash register there is a sign 57 bearing any suitable legend thereon and within this sign there is a lamp 58 having wires 59 and 60 which lead to a suitable point for connecting together. The lamp 58 and the lamp 34 have their wires connected to wires 61 and 62 which lead to contact points 63 and 64 within the casing of the machine. The contact point 64 is secured to the casing of the machine by means of a properly insulated block and it is removed from contact with the point 63 by means of a projecting bar 65 secured on the end of the drawer 31. The result of this construction is that whenever the drawer is opened the switch will be closed and the sign on the front and at the top of the cash register will be illuminated.

The monograms 41 are constructed in a well known manner and are provided with a series of lights 66, each light having a wire running therefrom to a bus board 67. It will be observed that there are 21 lights used in each monogram and that there are 21 wires leading therefrom to the bus board, while one wire leads from the metallic plate 69 to the opposite pole of the generator.

It will be noted that the several wires leading from the monogram are numbered from 1 to 21, and it thus becomes possible to at once determine what lights should be illuminated to produce any desired figure. It will thus be observed that to produce the figure "3" the lights 1, 2, 3, 4, 9, 12, 17, 21, 20, 19 and 18 should be illuminated, therefore wires leading from the bus bars of the same number lead to an insulated junction plate 70 for the purpose of being connected with the live wire 71 by means of the plate 72.

The cash register keys 73 are operated in the usual manner by depressing the same, and they are all supported upon a long transverse shaft 74; each key having a portion 75 projecting into the casing of the machine for the purpose of operating the usual adding mechanism and lifting the flags when a transaction is to be registered. The adding mechanism and flag mechanism are not shown in this drawing since it forms no part of this invention. Each key is provided with a depending arm 76 for the purpose of depressing the lever 77 on the shaft 78, said lever having the plate 72 secured thereto and insulated therefrom at 79.

Suspended from the casing of the machine are two links 80 one at each end of the register. These two links 80 are pivoted to the casing at 81 and have a transverse bar 82 connected therewith. Said bar 82 extends from one end of the cash register to the other, forming the means whereby the connection to light the lamps is held in contact with the junction bar 70.

In the cash register above the set of keys there is a shaft 83 which is rotated by means of a rack 84, at the end of the cash register. This rack 84 is provided with two sets of teeth 85 and 86, the latter being in mesh with the pinion 87 on the shaft 83 when the key is depressed, while as soon as the key has been depressed to its fullest extent the rack will be thrown over so that the teeth 85 will be in mesh with said gear 87 and will cause the shaft 83 to be rotated one complete turn upon each complete movement of the key. The rack 84 is connected to a heavy bar 88 which rests upon the top of all of the keys of the machine. This bar is pivoted at 89 to an arm 90, journaled on the shaft 74.

Projecting from the casing of the machine is a pin 91 and a pin 92. The object of said pins being to cause the rack to move from one position to the other upon the completion of its movement in one direction or the other. For example, as illustrated the rack teeth 86 are shown in contact with the pinion, the pin 91 having forced the rack over into the given position by striking the cam 94. When the key has been depressed to its fullest extent the cam 95 will strike the pin 92 and thus cause the teeth 85 to move over and engage with the pinion 87.

Since the bar 88 is pivoted to the arm 90 it may be moved transversely of the shaft 83 a small amount, and is so moved by means of the cams 94 and 95 when they strike the pins 90 and 92, but in order to hold the rack teeth 85 and 86 in mesh with the teeth of the pinion 87 as may be re-

quired, the bar 88 is provided with a projecting point 97 which engages a spring 98, said spring being secured upon the arm 90 and being of such length as to slip from one side to the other of the point 97 as may be required. The shaft 83 is provided with a cam 99 at each end thereof each of which bears upon a long rod 100. These rods pass through brackets 101 and 102 secured to the end of the casing of the machine. Springs 103 bear against the brackets 102 and against washers 104 secured to the rods 100. The end of each rod 100 adjacent the casing 30 is pivoted to the upper ends of the links 80. The result of the above construction is that when any key is depressed the rods 100 are pushed outwardly by means of the cams 99 which thus cause the bar 82 to be disengaged from the end of any bar of the series of bars 77 which may happen to be caught thereon, thus breaking contact with all of the lights in the three monograms, but as soon as a key has been depressed enough to bring any of the levers 77 below the bar 82, the latter is permitted to catch and retain said lever, thus illuminating the desired set of lamps.

It will be understood that the keys representing the usual legends "Charge", "Paid out", etc., at each end of the set of keys will contact with but a single wire, as is shown in Fig. 8, in which the wire 52 is shown secured to a bar 56 which will be connected with the plate 72 when one of these keys is depressed. It will also be understood that where a key is to illuminate two of the monograms that it will have a suitable number of wires connected with its junction board to accomplish that object.

The invention above described applies to one very popular model of cash register, but since there are other models of cash registers upon the market it is necessary to vary the mechanism for illuminating the signals somewhat with such forms.

In the form of the invention shown in Fig. 9 the register is shown at 200, 201 indicating the cash drawer, while the keys are indicated at 202. This register may be of any desired type and may have the usual window 203 for the inspection of the flags raised by the register mechanism within the machine. This machine is equipped with substantially the same light operating mechanism within the casing as that shown in Fig. 1, the only difference being that the monograms appearing through windows 204, 205, and illuminated panels 207 are placed upon a ring 208 which permits the panels to be rotated 180° or more, thus enabling the same cash register to be used either in back of the salesman's counter or on the front of the counter, as may be desired. The necessity for this lies in the fact that while the ordinary form of signals which are viewed through the window 203 have reversely placed characters upon them, the monograms formed by the electric lights are readable only from one side, the reverse side thereof showing the numerals in an improper position. The casing carrying the monogram panels may be provided with a legend 209 substantially the same as that shown on Fig. 1 and illuminated in the same way if desired. In this figure is shown a separate set of monograms 210, 211, and 213, each of which is so connected as to display characters thereon in the same manner as the characters displayed upon the panels 204 to 207, a cable 214 connecting the panels 210 to 213 with the register. The object of providing this extra set of panels is to enable the proprietor to have a check upon the salesman by placing a set of monograms at a distance from the cash register, thus affording him an additional check upon the work of the salesman.

All of the above forms of the invention are adapted for use with the ordinary cash register, but the invention may equally well be applied to car cash registers and such a modification is shown in Figs. 11 and 14. In this form of the invention the casing of the cash register is indicated at 225, the numeral 226 representing the usual return trip wheel, while the number of passengers may be indicated at 227 in the usual manner. The register proper is provided with lugs 228 at the bottom and with a lug 229 at the top for the purpose of securing the register to the casing 230 which is carried by the car. After the register 225 is inserted in the casing 230, a pad lock may be placed through the opening in the lug 229 and lug 231 to hold the register and casing together secure from interference. The register is provided with three monograms 233 which are separated from each other by means of strips 234 to make the characters stand apart. Suitable wiring 255′ connects the lamps of the desired monograms with contact plates 236, there being one of said contact plates for each character to be exhibited by the machine. This wiring is substantially the same as that shown in the previous forms of the invention and it may be used to either designate a transfer or numerals, as desired.

The adding and recording mechanism of the machine is operated by means of an arm 237 which projects between two lugs 238 carried by a vertically movable bar 239. There is a bar 239 for each character which it is desired to have the machine show and each bar is slidable in guides 240. On the back each of the bars 239 is provided with a lug 241, thus enabling the bars to be lifted by means of a projecting pin 242 on the arm 243. This arm is pivoted to the back of the casing 230 at 244 and it has an arm

245 secured thereto as well as two vertically extending arms 246. Each of the arms 246 is connected to links 247 which are operated by means of the handles 248.

The result of the above construction is that trans' rs may be rung up by an outward movement of the handles 248 while cash is rung up by means of an inward movement thereof. The different cash items, as for example, five cents, ten cents, 15 cents and 25 cents are rung up upon the four slides 239 at the left of Figs. 13 and 14. These slides are operated by means of a pin 250 carried by a collar 251 which is slidable on the arm 245. The collar 251 is provided with a backwardly extending pin 252 which is movable through a slide 253. This slide 253 is secured to a chain 254 which passes over sprocket wheels 255 and 256, thus enabling the conductor to raise any one of the four cash slides. The indicator hand 257 is used for the purpose of determining the position of the collar 251, thus enabling the conductor to know what cash slide he is going to raise.

Each of the slides 243 is provided with a lug 258 on the side thereof, said lug forming the means whereby a pawl 259 is prevented from rotating downwardly, said pawl being pivoted to the side of the slide. The object of this pawl is to release each contact arm 259′ the instant any slide begins to rise. This is accomplished by means of a series of arms 260 which are rigidly secured to a shaft 261. Projecting outwardly from the shaft 261 the arms 260 are provided with an arm 262 which has a portion 263 overlying the top of the contacts 259′.

Each of the contacts 259′ is loosely hung upon the shaft 261 and each contact is provided with an upwardly extending heel 264 which is adapted to contact with a stop 265 to prevent said contacts from dropping downwardly too far. Each contact 259′ is held in place against the contact block 236 by means of a spring 266 each of which springs is rigidly secured to the shaft 267.

The result of the above construction is that as soon as any one of the slides begins to rise the arm 260 adjacent the same will be forced away from the slide by means of the pawl 259. This will move all of the arms 262 downwardly and will snap any contact 259′ away from the contact 236. The result of any movement of said slides therefore will be that all of the lights shining through the panels 233 will be darkened as soon as the lever 248 is moved in either direction and will again flash into view as soon as the fare has been recorded.

It is to be noted that where only a few characters are to be exhibited upon a fare register, as for example where only the five cents and "T" standing for transfer or ticket is used, that but a single light behind the screen will be required, as shown in Fig. 3, in which event but a single wire will be required to run to each of the contact blocks of the fare register.

It is also to be noted that an especial advantage of the use of the double series of electric lights, such as is shown in Fig. 9 will be seen in connection with the fare register for the reason that it will provide the means whereby the flashing of the signal may be observed by the passengers of the car whether they are facing in one direction or another, the only requirement being that the register be at one end of the car while the secondary set of lights is placed at the opposite end of the car and facing the fare register.

The revoluble indicator box is of especial advantage with car registers or other registers where at one time the register is to be faced one way, and at other times the register is to be faced in the opposite direction.

It will be understood that the term "monogram" as used herein means such a series of electric lamps as may be illuminated in different series for the purpose of outlining any given character. It will also be observed that the word "key" as used herein is intended to mean any portion of the register which is used for the purpose of operating the register mechanism therein. That is to say, the bars shown in Figs. 12 and 13 are for the purpose of this invention to be deemed "keys" just as much as the operating keys shown in the other forms of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, is as follows:—

1. In a register, a casing, register mechanism therein, devices to operate said mechanism, a plurality of electric lamps, electric circuits to operate any series of lamps to produce given characters, a shaft, a plurality of circuit closers pivotally mounted on said shaft, a plurality of releasing catches rigidly connected with the shaft, one for each circuit closer, means whereby a given circuit closer may be operated to close its circuit and means connected with each operating device for opening all of the circuits near the beginning of movement of the operating device, substantially as described.

2. In a register, a casing, register mechanism therein, means to operate said mechanism, a plurality of electric lamps, a series of electric circuits to illuminate any series of lamps to produce a given character, a shaft, a plurality of circuit closers pivotally mounted on said shaft, a latch for each circuit closer, means whereby upon the operation of the register a given circuit closer will be operated to close its circuits and means whereby upon the operation of the

register all of the circuit closers will be operated to open all of the circuits near the beginning of movement of the register operating device, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of Nov. A. D. 1910, in the presence of the two subscribed witnesses.

JOHN J. DUFFIE.

Witnesses:
CARLOS P. GRIFFIN,
A. K. DAGGETT.