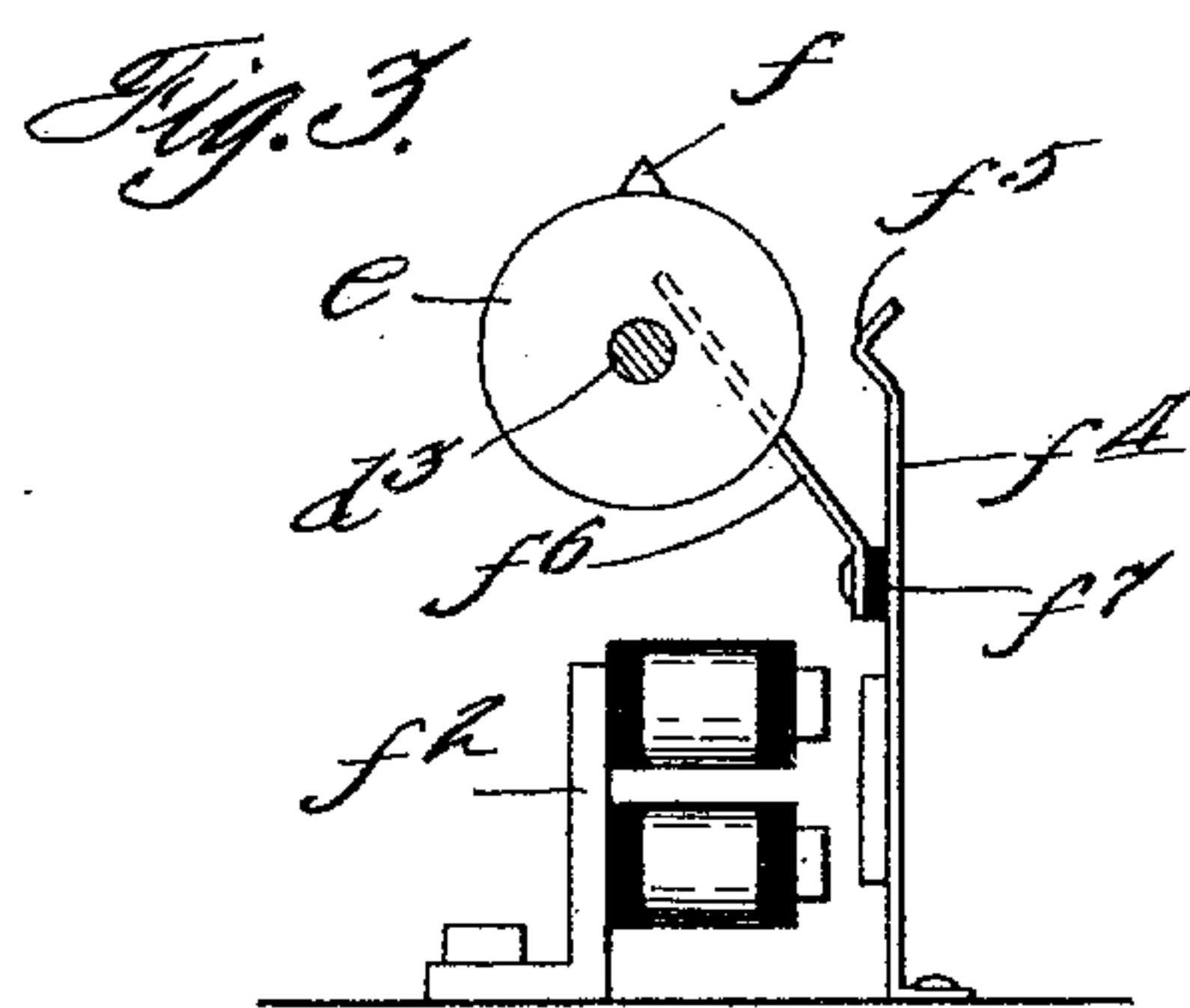
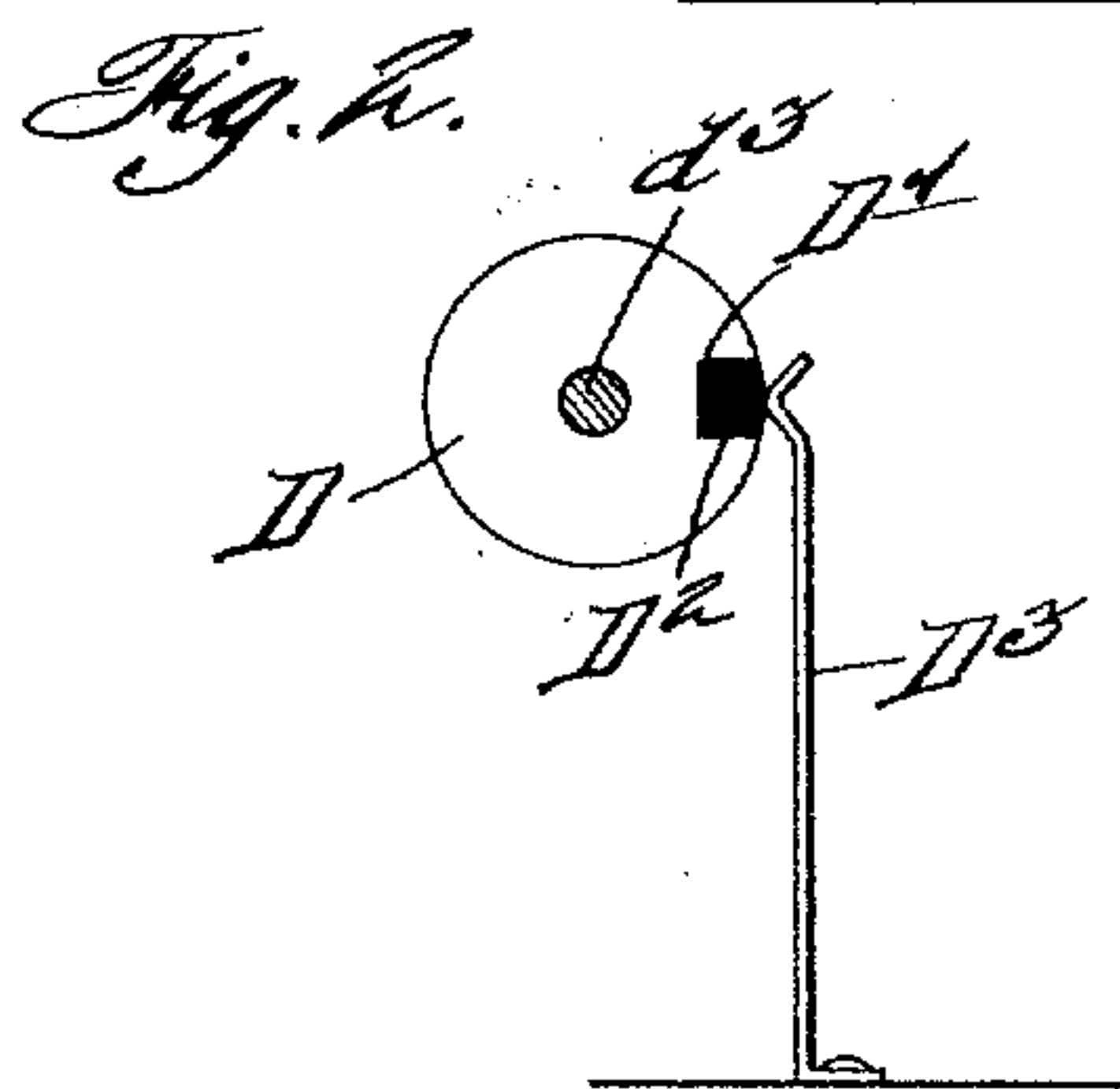
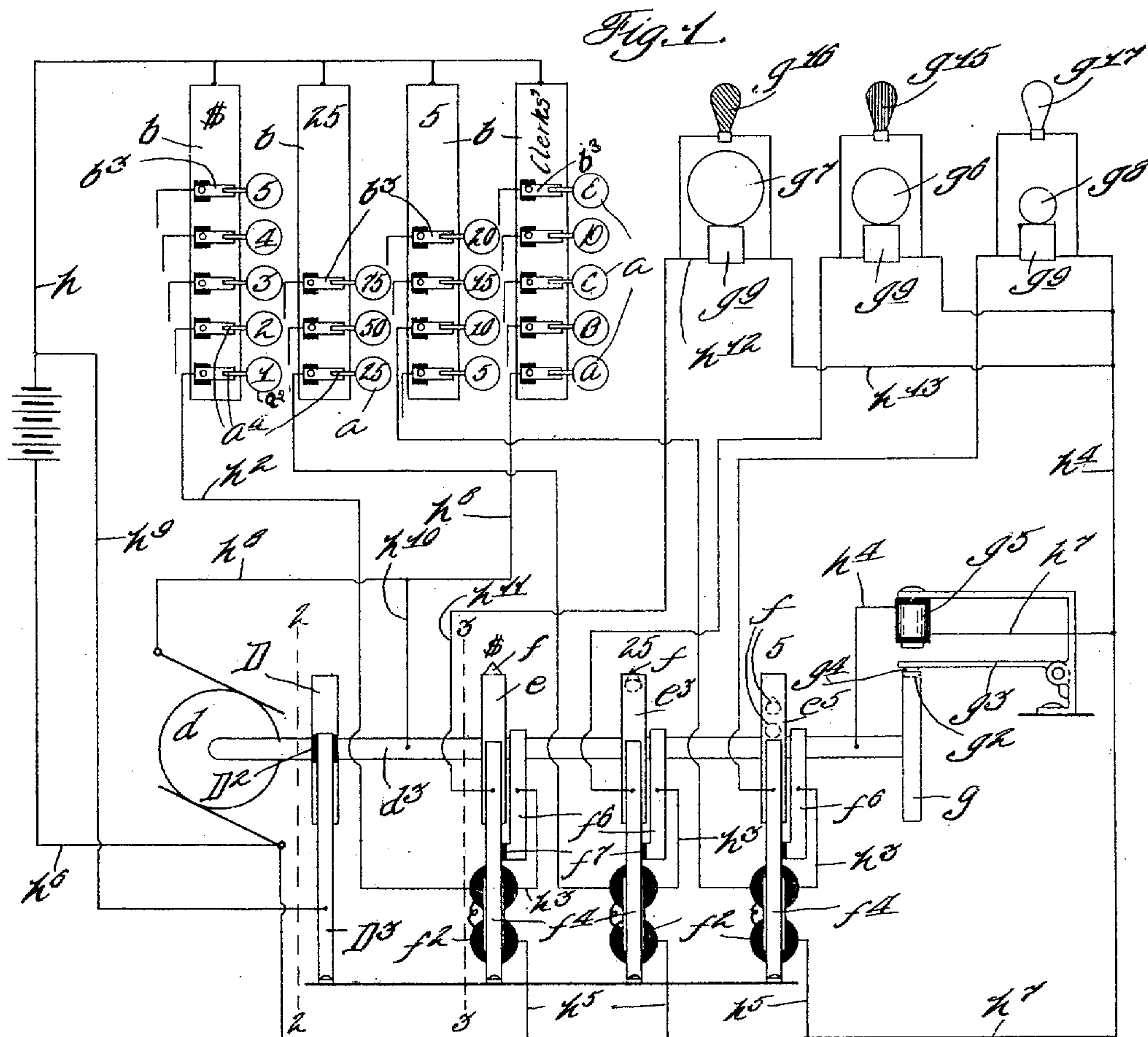


T. J. SULLIVAN.
ELECTRICAL ANNOUNCING ATTACHMENT FOR CASH REGISTERS.
APPLICATION FILED DEC. 30, 1907.

979,353.

Patented Dec. 20, 1910.



Witnesses
C. A. Harbey Jr.
P. H. Zurcher.

Inventor
Thomas J. Sullivan
By *H. H. Muppy*
R. C. & Sons.
Attorney

UNITED STATES PATENT OFFICE.

THOMAS J. SULLIVAN, OF NEW YORK, N. Y.

ELECTRICAL ANNOUNCING ATTACHMENT FOR CASH-REGISTERS.

979,353.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed December 30, 1907. Serial No. 408,553.

To all whom it may concern:

Be it known that I, THOMAS J. SULLIVAN, a citizen of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrical Announcing Attachments for Cash-Registers, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to accounting machines such as cash registers and particularly to attachments for machines of this class which will audibly announce by means of bells or similar devices the amount represented by a depressed key, or the amount shown in the face of the cash register at each operation thereof, and the invention described and claimed herein is an improvement on that described and claimed in an application for Letters Patent of the United States, filed by me Nov. 7, 1907, Serial No. 401,048; and the object of this invention is to improve the construction described and claimed in the said application to insure a more positive and accurate operation thereof, and also to provide means for indicating by sight signals as well as by sound, the amounts registered at each operation of the machine; and with this and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;

Figure 1 is a diagrammatic view of the improvements. Fig. 2 a section on the line 2—2 of Fig. 1. Fig. 3 a section on the line 3—3 of Fig. 1.

In the accompanying drawing and following specification only such parts are shown and described as are necessary to illustrate and describe the invention described and claimed herein as distinguished from that described and claimed in the prior application hereinbefore referred to, and in the following specification the various parts of construction shown have been given, in as far as possible, the same reference characters as are given to corresponding parts in

the said prior application, and in the accompanying drawing I have shown in Fig. 1 one key only in each bank as connected up. The banks of keys are arranged to control circuits through separate magnets, only one of which for each bank is shown, and which are adapted to move their armatures into contact with certain disks carrying contact points whereby a proper number of impulses of current may be sent to the bells and lamps. The contact pieces b^3 , of which there is one for each key are mounted on but separately insulated from metal strips b , one for each bank of keys, each secured within the front wall of the casing of the machine adjacent to the shanks of the keys. The contact pieces b^3 are, as shown, arranged transversely of the metal strips b and their free ends are in the direction of the shanks of the keys. The keys each carry a contact pin a^4 , adapted to operate in connection with the proper contact piece b^3 . It will be seen that when any key is depressed, its pin a^4 engages the corresponding contact piece b^3 and depresses it into contact with the underlying metal strip b for that bank, thereby closing a circuit, as hereafter described.

It will be understood that the mechanism shown and described herein will be properly housed in a suitable casing, not shown. I provide, in the form of construction shown, an electric motor d , having a shaft d^3 .

Mounted on the shaft d^3 and secured thereto are a plurality of contact, or circuit making and breaking disks e , which equal in number the cash keys of the cash register machine, and in practice a series of these contact disks is employed in connection with each bank of keys.

In the accompanying drawing, as before stated, I have shown but one contact disk e for each bank, but in practice there would be a contact disk e for each key of each bank. The contact disks e as shown, are provided with contact knobs or pins f , and mounted adjacent to each of the contact disks e , and in the same vertical plane therewith are electro-magnets f^2 and operating in connection therewith are vertically ranging spring armatures f^4 , provided at their upper free ends with noses f^5 adapted to make connection with the knobs or pins f , and carried by the armatures f^4 are supplemental armatures f^6 , insulated at f^7 from the armatures f^4 , the said supplemental armatures being adapted

to make connection with the shaft d^3 when the magnets f^2 are energized as will hereinafter appear. The contact disk e , corresponds with the dollar contact piece the disk e^3 with the twenty-five cent contact piece and the contact e^5 with the five cent contact piece. It will be seen that the contact pins or knobs f on the separate disks are arranged at different radial points, this being necessary in the operation of the machine as hereinafter described.

The shaft d^3 is provided at the end opposite the motor with a locking disk g having in its face a notch or recess g^2 , and pivoted above the disk g is an armature arm g^3 having a nose g^4 adapted to enter said notch or recess, and supported over the end of the armature arm g^3 is an electro-magnet g^5 .

Suitably supported over the mechanism hereinbefore described are a plurality of bells g^6 g^7 and g^8 provided with boxes g^9 in which the vibratory mechanism is placed. The bell g^6 is a twenty-five cent bell, the bell g^7 a dollar bell and the bell g^8 a five cent bell. I also employ a plurality of incandescent lights g^{15} g^{16} and g^{17} . The light g^{15} is red, and is a twenty-five cent light, the light g^{16} is green and is a dollar light and the light g^{17} is preferably white, and is a five cent light. The dollar bell is given a low pitch, the twenty-five cent bell a medium pitch, while the five cent bell is given a high pitch.

Mounted on the shaft d^3 is a circuit making and breaking disk D , having a recess D' in its periphery, and carried therein is a block D^2 of insulating material, and mounted in the same vertical plane with the disk D and bearing on the face thereof is a brush D^3 . This disk and brush, together with the supplemental armature f^6 and the lights g^{15} g^{16} and g^{17} form the new features of this application and the operation thereof will be particularly described hereinafter.

With the construction of the prior application, if an operator should be too hasty in recording the amount of a sale, the motor circuit might not be closed for a sufficient period of time, and the motor not given sufficient movement to cause the shaft d^3 to make a complete revolution, which is necessary to the perfect operation of the machine, and the energization of the magnets f^2 was not maintained for a sufficient period of time, in other words the armatures f^4 were not held in the path of the pins or knobs f for a time necessary to audibly announce a long combination of sounds. I have overcome these objections by employing the make and break disk D , and the supplemental armature f^6 . The operation of my improved apparatus will be readily understood from the accompanying drawing and the following statement thereof. When the parts are in their normal or inoperative condition, the

bearing part or nose of the brush D^3 contacts with the block D^2 of insulating material, the armatures f^4 are out of the path of the pins or knobs f and the supplemental armature f^6 are out of contact with the shaft d^3 .

When it is desired to indicate and announce one dollar audibly, the one dollar key, a^2 , is depressed, this throws the contact pin of said key into connection with its corresponding strip b^3 , and the latter is depressed onto the strip or plate b , the circuit is thus closed from one pole of the battery through the wire h , strip or plate b of the dollar bank of keys, strip b^3 of the one dollar key, wire h^2 , dollar magnet f^2 , wire h^5 , wire h^6 back to the other pole of the battery, this closed circuit energizes the dollar magnet f^2 throwing the armature f^4 into the path of the pin or knob f of the dollar disk and at the same time throws the supplemental armature f^6 into connection with the shaft d^3 . The initial key A is now forced in and a circuit is completed from one pole of the battery through the wire h , strip or plate b of the initial bank of keys, strip b^3 corresponding to the initial key A , wire h^8 , wire h^{10} , shaft d^3 , wire h^4 , clutch magnet g^5 , wire h^7 , wire h^6 back to the other pole of the battery, at the same time a circuit is closed from one pole of the battery through wire h , strip or plate b of the initial bank of keys, strip b^3 corresponding to the initial key A , wire h^8 , motor d , wire h^6 back to the other pole of the battery, these closed circuits energize the clutch magnet g^5 and the motor d raising the armature arm g^3 and starting the motor. As the shaft revolves the brush D^3 rides off of the block D^2 of insulating material and contacts with the periphery of the disk D , and this operation closes a circuit from one pole of the battery through the wire h^9 , brush D^3 , disk D , shaft d^3 , wire h^{10} , wire h^8 , motor d , wire h^6 back to the other pole of the battery, this circuit is maintained thus until the block D^2 of insulating material again comes around under the nose of the brush when the circuit will be broken and the motor stopped. As the brush rides off of the block D^2 another circuit is closed from one pole of the battery through the wire h^9 , brush D^3 , disk D , shaft d^3 , supplemental armature f^6 , wire h^3 , dollar magnet f^2 , wire h^5 , wire h^6 back to the other pole of the battery. As the pin or knob f of the dollar disk is carried around it contacts with the nose f^5 of the dollar armature f^4 , and thus a circuit is completed from one pole of the battery, through the wire h^9 , brush D^3 , disk D , shaft d^3 , dollar disk e , armature f^4 , wire h'' , dollar bell g^7 , green or dollar light g^{16} , wire h^{13} , wire h^{14} , wire h^7 , wire h^6 , back to the other pole of the battery this insures the ringing

of the dollar bell once and one flash of the green or dollar light g^{16} because there is only one contact pin or knob on the dollar disk e .

From the previous description, the operation of the twenty five cent and the five cent lights and bells will be obvious. If, for example, the fifty cent and the ten cent key are operated, the corresponding contact pieces b^3 will be depressed into contact with the strips b and the corresponding magnets f^2 will be energized. On the depression of any one of the bank of initial keys, the motor is given its rotation and the proper number of contact points f will contact with the armature f^4 , which have been attracted to their magnets, so that, in the case mentioned, two impulses will pass over each of the wires to the twenty five cent and the five cent lights and bells, thereby properly announcing the purchase amount, which in this particular case is sixty cents.

From the foregoing description it will be seen that the motor circuit is made through the disk D and brush D^3 upon the beginning of rotation of the motor shaft d^3 and continuing until the insulated block D^2 carried by the disk contacts with the brush D^3 at the end of rotation of the shaft d^3 . During the rotation of the shaft d^3 by the motor circuit just described additional circuits will be made through the magnets f^2 , which were previously energized to draw the armatures f^4 in the path of the contact pins f of the corresponding operated amount keys, which are as follows; wire h^9 , brush D^3 , contact disk D, shaft d^3 , supplemental armatures f^6 , wires h^3 , magnets f^2 , and wires h^5 , h^7 and h^6 back to the battery. From this it will be seen that as soon as the motor circuit is made through the disk D and brush D^3 the operated amount and clerk's keys may be released, the magnets f^2 being of sufficient strength when energized to enable the contact pins f to spring the upper ends of the attracted armatures f^4 without breaking the contacts between the supplemental armatures f^6 and the shaft d^3 . When the insulated block D^2 of the disk D contacts with the brush D^3 at the end of rotation of the shaft d^3 the motor and additional circuits will be broken permitting the return of the armatures f^4 and f^6 to normal inoperative positions, whereby the release of the keys will not effect the announcement of the amounts.

As previously described, upon the depressing of one of the clerk's keys, a circuit will be made from the battery, through wire h , plate b , strip b^3 , wires h^8 , h^{10} , shaft d^3 , wire h^4 , magnet g^5 , and wires h^7 , h^6 , back to the battery to raise the armature g^3 to unlock the motor shaft d^3 in addition to the motor circuit made by the clerk's keys. After the clerk's key is released and during the rotation of the shaft d^3 the unlocking circuit

just described will be maintained through the wire h^9 , brush D^3 , contact disk D, shaft d^3 , wire h^4 , magnet g^5 and to the battery through wires h^7 and h^6 . As the disk D nearly reaches home position this circuit will be broken by the insulated block contacting with brush D^3 thereby permitting the nose g^4 of the locking armature g^5 to enter the notch g^2 of the disk g and lock the latter when it reaches home position.

While the form of mechanism shown herewith and described is admirably adapted to fulfil the objects primarily stated it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described as it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What I claim is:

1. A signaling attachment for cash registers comprising keys, contacts actuated by said keys, signal devices controlled by said key contacts, a motor and circuit therefor with means for closing its circuit, and means for maintaining the motor circuit closed for a predetermined period independently of its closing means.

2. A signaling attachment for cash registers having in combination a plurality of keys and contacts controlled thereby, signals operated in accordance with said contacts, a motor and a normally operating circuit therefor, means for closing said motor circuit, and means for maintaining said motor circuit closed for a predetermined period, said maintaining means comprising a contact device controlled by said motor and a brush cooperating with said contact device.

3. An attachment for cash register machines, comprising signals, a motor, a shaft connected therewith, disks connected with said shaft and provided with electrodes, magnets placed adjacent to said disks and provided with armatures adapted to operate in connection with the electrodes on said disks to actuate said signals, a group of keys, and circuits including said magnets and closed by said keys, and means for maintaining the magnet circuits in a closed condition for a predetermined period.

4. An attachment for cash register machines, comprising signals, a motor, a shaft connected therewith, disks connected with said shaft and provided with electrodes, magnets placed adjacent to said disks and provided with armatures adapted to operate in connection with the electrodes on said disks to actuate said signals, a group of keys, and circuits including said magnets and closed by said keys, and means for maintaining the magnet circuits in a closed condition for a predetermined period, said means comprising supplemental armatures carried by the armatures of the magnets.

5. A signaling attachment for cash registers comprising signals, with circuits therefor, contact means for closing said circuits, a motor for driving said contact means, a circuit for said motor, means for closing said motor circuit, and devices operated by said motor for maintaining the circuit closed independently of its closing means.
6. A signaling attachment for cash registers having in combination a plurality of keys, magnets separately controlled by said keys, distinguished signals, movable contact devices independent of the signals controlled by said magnets and serving to actuate said signals, a motor having connections for driving said movable contact devices, a circuit for said motor and devices for automatically retaining said circuit closed during a predetermined extent of operation of said motor.
7. A signaling attachment for cash registers, comprising a plurality of signals having distinguished characteristics, magnets having armatures for controlling said signals, contact devices movable to engage said magnet armatures, a motor driving said contact devices, a special key controlling said motor, a plurality of keys having connections for energizing said magnets, and devices for automatically compelling a complete operation of said motor irrespective of the position of said special key.
8. An attachment for cash registers, comprising a plurality of distinguished signals, a plurality of keys having connections for determining which signals shall be displayed, a motor and devices driven thereby for causing the display of signals as determined by the keys, a special key for causing the motor to move, and means automatically acting to compel a complete operation of the motor irrespective of the position of said special key.
9. In an attachment for accounting machines, the combination with a device for announcing various amounts, of a series of depressible keys determining the amounts to be announced by said device, an electric motor and a circuit therefor, controlling the operation of the announcing device, a special key for closing the circuit, and means independent of the key for keeping the circuit closed until the amount determined by the operated key has been announced.
10. In an attachment for accounting machines, the combination with a device for announcing various amounts, of a series of depressible keys determining the amounts to be announced by said device, an electric motor and a circuit therefor controlling the operation of the announcing device, a special key for closing the circuit, and means independent of the key and operated by the motor for keeping the circuit closed until the amount determined by the operated key has been announced.
11. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing various amounts, of banks of depressible keys, one bank for each announcing device, an electric motor and a circuit therefor controlling the operation of the announcing devices, a special key for closing the circuit, and means independent of the keys for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.
12. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing various amounts, of banks of depressible keys, one bank for each announcing device, an electric motor and a circuit therefor controlling the operation of the announcing devices, a special key for closing the circuit, and means independent of the key and operated by the motor for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.
13. In an attachment for accounting machines, the combination with a device for signaling various amounts, of a bank of depressible keys determining the amounts to be signaled by said device, an electric motor controlling the operation of the signaling device, a locking device for said motor, a circuit for actuating the locking device and motor, a special key for closing the circuit, and means independent of the key for keeping the circuit closed until the device has been operated to signal the amount determined by the depressed keys.
14. In an attachment for accounting machines, the combination with a device for signaling various amounts, of a bank of depressible keys determining the amounts to be signaled by said device, an electric motor controlling the operation of the signaling device, a locking device for said motor, a source of electric energy and a circuit leading therefrom for actuating the locking device and motor, a special key for closing the circuit, and means independent of the key and operated by the motor for keeping the circuit closed until the device has been operated to signal the amount determined by the depressed keys.
15. In an attachment for accounting machines, the combination with a plurality of successively operated devices for signaling various amounts, of banks of depressible keys, one bank for each signaling device, for determining the amounts to be signaled, an electric motor controlling the operation of the signaling devices, a locking device for said motor, a source of electric energy and a circuit leading therefrom for operating the locking device and motor, a special key for

closing the circuit, and means independent of the key and operated by the motor for keeping the circuit closed until the devices have been successively operated to signal the amount determined by the depressed keys.

16. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing by different pitch units of different value, of banks of depressible keys, one bank for each announcing device, for determining the amounts to be announced, an electric motor and circuit controlling the successive operation of the announcing devices, a special key for closing the circuit, and means independent of the key for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.

17. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing by different pitch units of different value, of banks of depressible keys, one bank for each announcing device, for determining the amounts to be announced, an electric motor and a circuit controlling the successive operation of the announcing devices, a special key for closing the circuit, and means independent of the key and operated by the motor for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.

18. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing by different pitch units of different value, of banks of depressible keys, one bank for each announcing device, for determining the amounts to be announced, an electric motor controlling the successive operation of the announcing devices, a locking device for the motor, a source of electric energy and a circuit leading therefrom for operating the

locking device and motor, a special key for closing the circuit, and means independent of the key for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.

19. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing by different pitch units of different value, of banks of depressible keys, one bank for each announcing device, for determining the amounts to be announced, an electric motor controlling the successive operation of the announcing devices, a locking device for the motor, a source of electric energy and a circuit leading therefrom for operating the locking device and motor, a special key for closing the circuit, and means for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.

20. In an attachment for accounting machines, the combination with a plurality of successively operated devices for announcing by different pitch units of different value, of banks of depressible keys, one bank for each announcing device, for determining the amounts to be announced, an electric motor and a circuit controlling the successive operation of the announcing devices, a special key for closing the circuit, and means for keeping the circuit closed until the devices have been successively operated to announce the amount determined by the depressed keys.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 28th day of December 1907.

THOMAS J. SULLIVAN.

Witnesses:

C. E. MULREANY,
M. E. DOODY.