C. HANEL.

VENDING APPARATUS.

APPLICATION FILED APR. 18, 1911.

1,034,791.

Patented Aug. 6, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

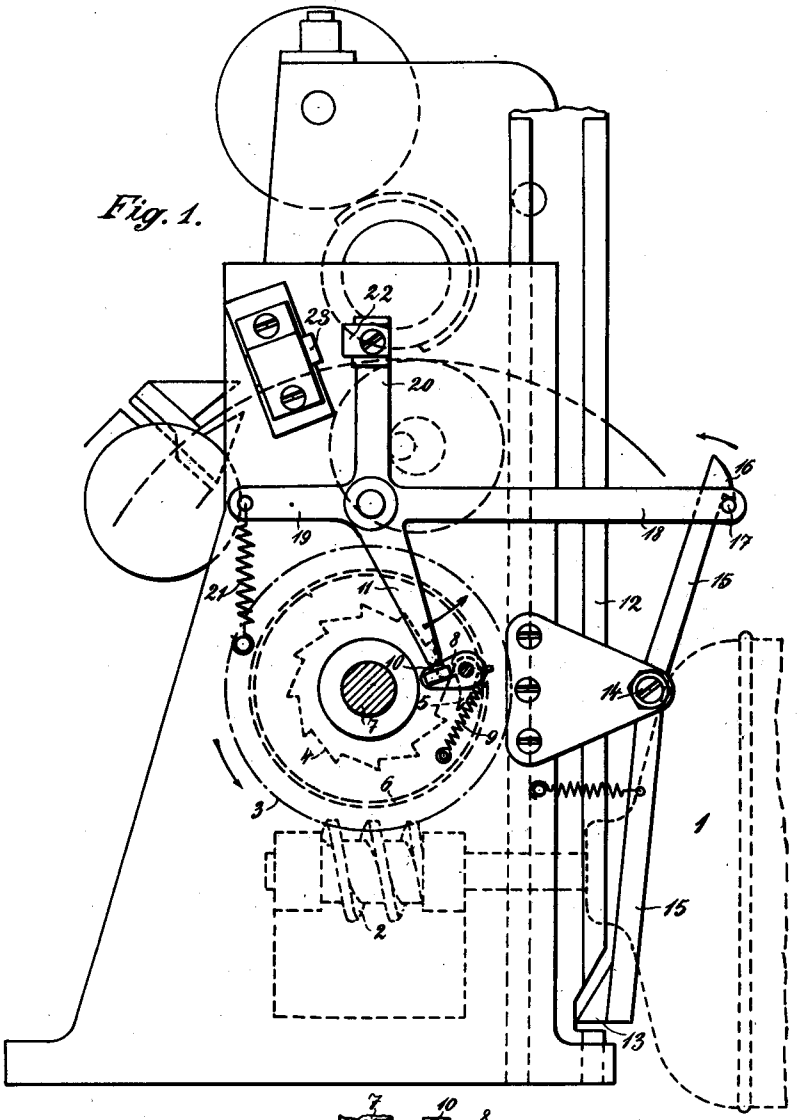
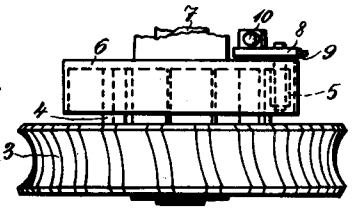


Fig. 2.



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Bent, Mo. Stahl

L. B. Middleton

Inventor.

Curt Hänel.

By Munn & Orlick

Atty

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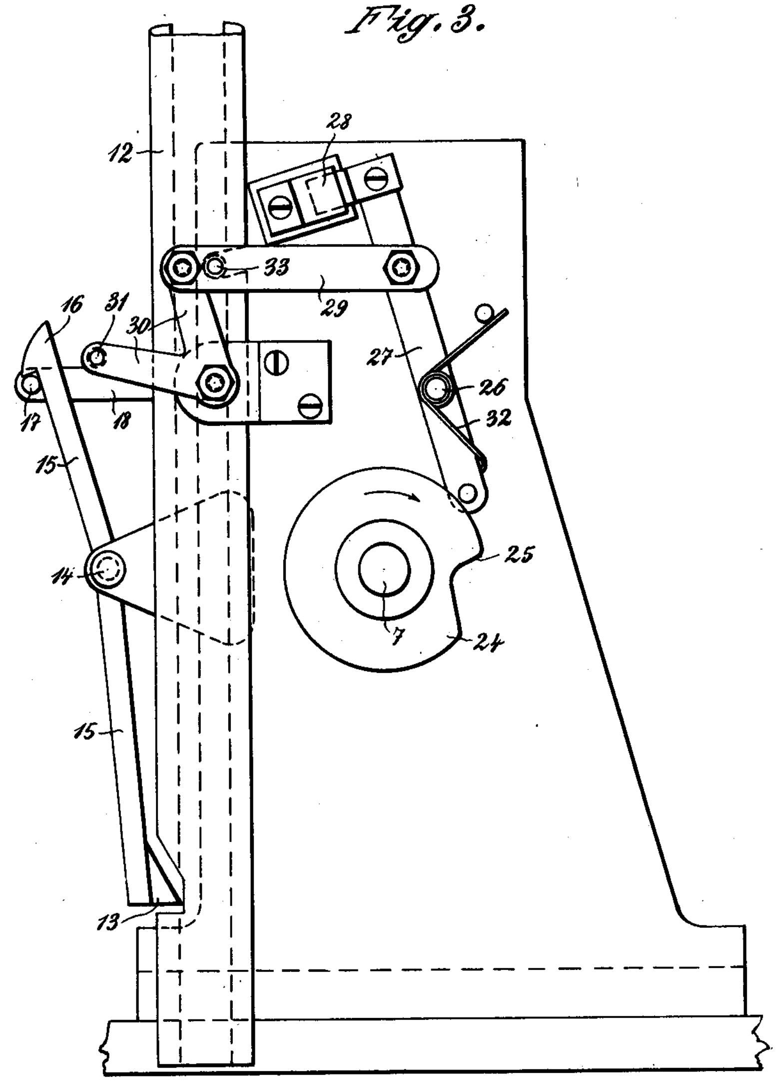
3 SHEETS—SHEET 2.

Fig. 3.



Attest.
Benj. M. Stahl
S. B. Middleton

Inventor.
Curt Hänel.
By Wm. R. Doolittle
Atty's.

C. HANEL.

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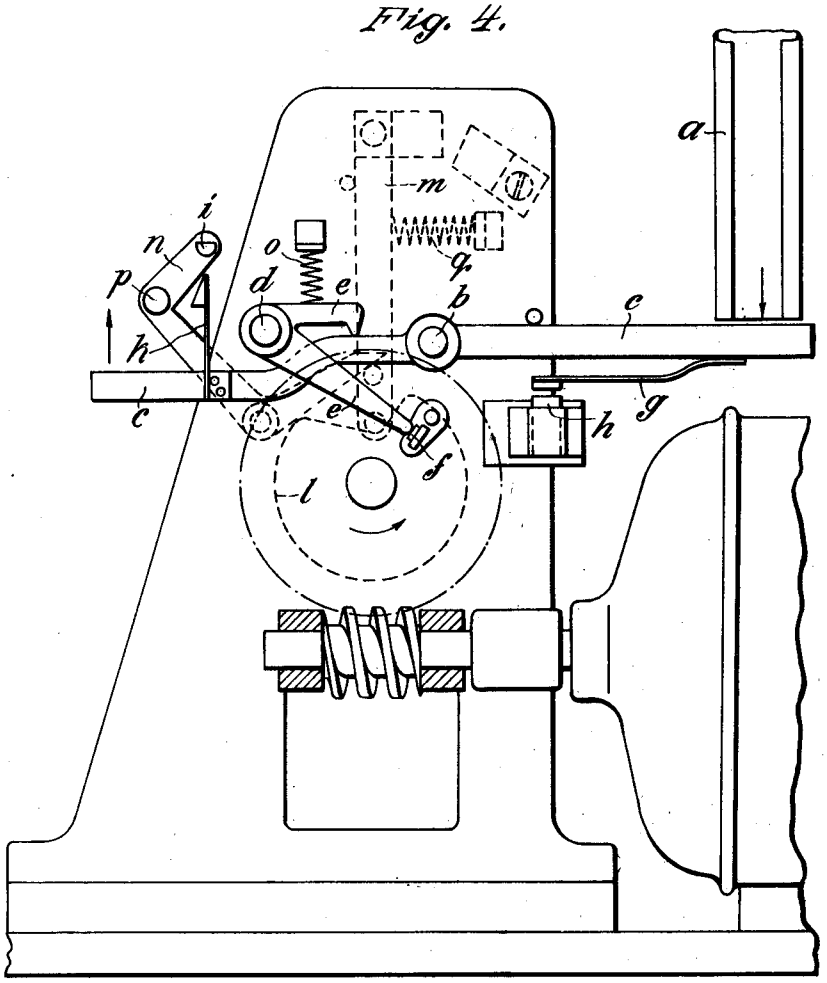
3 SHEETS—SHEET 3.

Fig. 4.



Attest.

Bent M. Stahl

L. B. Middleton

Inventor.

Curt Hänel.

By Munn & Co.

Attys

UNITED STATES PATENT OFFICE.

CURT HÄNEL, OF SÜDENDE, NEAR BERLIN, GERMANY.

VENDING APPARATUS.

1,034,791. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed April 18, 1911. Serial No. 621,908.

To all whom it may concern:

Be it known that I, CURT HÄNEL, a subject of the German Emperor, residing at Bahnstrasse 15, Südende, near Berlin, Germany, have invented certain new and useful Improvements Relating to Vending Apparatus, of which the following is a specification.

Vending apparatus for example coin freed apparatus are known which are periodically operated by an electric motor and in which an auxiliary circuit is connected in series with the main circuit so that the relatively small weight of the coin has only to operate a readily re-acting auxiliary switch and then operates the main switch positively and certainly in a mechanical manner.

The object of the present invention differs from these apparatus owing to the fact that the coin not only operates the switch lever of the auxiliary circuit but also displaces directly and mechanically the operating lever of a time clutch. The operating lever of the time clutch engages directly the locking pawl of the latter or a stop rigidly connected therewith so that intermediate members such as driving slots and the like are dispensed with and the force required is reduced.

Another feature of the invention resides in the special connection of the main circuit switch with the auxiliary circuit switch and the operating lever of the time clutch so that immediately the main circuit has been rendered operative mechanically the operating lever of the time clutch is simultaneously returned to the clutch-disengaging position and the auxiliary switch is opened.

It is specially advantageous to provide that the switch lever of the auxiliary circuit and the operating lever of the time clutch should be united to form a single part. By this arrangement which is suitable both for coin freed apparatus and for vending apparatus operated by key pressure all intermediate mechanisms and parts can be dispensed with and the necessary adjusting or setting force reduced to such an extent that in coin freed apparatus the relatively small energy of the falling coin becomes certainly adequate to effect in a purely mechanical manner the simultaneous switching-in of the auxiliary circuit and of the time clutch.

Two embodiments of the invention are illustrated by way of example in the accompanying drawing as applied to railway and the like ticket printing and vending apparatus.

Figure 1 is a side elevation. Fig. 2 is a plan view of a portion of the gear. Fig. 3 is a rear elevation. Fig. 4 shows a second constructional form in elevation.

The motor 1 acts on the worm 2 and this through the worm wheel 3 and the ratchet wheel 4 rigidly connected therewith acts by means of the pawl 5 on the clutch 6, the pawl 5 being mounted on the clutch plate 6. While the worm wheel 3 with the ratchet wheel 4 is loosely mounted upon the shaft the clutch 6 is rigidly connected with the main shaft 7 of the apparatus. The pawl 5 presents an external crank arm 8 which under the influence of the spring 9 tends to engage the pawl 5. The arm 8 carries a stop 10 which when the clutch 6 rotates in the direction indicated by the arrow moves toward the lever 11. When the stop 10 encounters the lever 11 the clutch is thrown out and only becomes reëngaged when the lever 11 moves away from the stop 10 toward the right hand in the direction indicated by the arrow. By this arrangement the result is attained that the main shaft 7 of the apparatus effects exactly one revolution at each operation which in the present case is necessary for delivering a ticket.

The operation of the lever 11 and the throwing-in and out of the motor is effected in the following manner: The coin inserted falls through the tube 12 on to the projection 13 from the lever 15 rotatably mounted on the pivot 14. When the coin encounters the projection the nose 16 of the lever 15 moves in the direction indicated by the arrow and releases the pin 17 of the lever 18. The lever 18 is either rigidly connected or integral with the levers 20 and 11 which are consequently rotated under the influence of the extension spring 21 when the pin 17 has been released until the contact 22 has contacted with the contact piece 23. Owing to contact between the two contact pieces an electrical auxiliary circuit is closed which renders the motor operative. As the lever 11 has simultaneously been separated from the stop 10 the clutch pawl 5 becomes operative and as already described the motor rotates the main shaft 7 of the apparatus.

Fig. 3 shows the back of the wall illustrated in Fig. 2. The operative main shaft 7 drives the cam plate 24 which is rigidly

connected with it. The latter is adjusted in such a manner that by means of the nose 25 immediately the auxiliary contact 22, 23 has been made it presses the main switch 27 rotatably mounted on the pivot 26 against the contact 28 and thereby closes the main circuit. The closing movement of the main switch simultaneously serves for opening the auxiliary circuit owing to the fact that the lever 18 is again depressed by the pin 31 by means of the lever transmission 29, 30. The main switch is opened after a rotation of the shaft 7 owing to the fact that the lever 27 springs back into the notch in the cam plate 24 under the influence of the spring 32; simultaneously by the striking of the projection 10 on the lever 11 the motor is unclutched and the pawl 5 thus disengaged and the shaft 7 of the apparatus instantly stopped. The opening movement of the main switch again carries the pin 31 upward so that the apparatus is free to operate again.

The pin 33 on the connecting member 20 extends into a slot in the tube 12 and there retains at an adequate height any coins that have been inserted somewhat prematurely until the apparatus is ready for a fresh operation.

In its employment as an automatic vending apparatus this apparatus can be further simplified by omitting the lever arm 19 and connecting the counter spring 21 directly with one of the levers 11, 18 or 20. If on the other hand the apparatus is to be utilized as a hand operated vending apparatus it is advisable to provide for the actuation of the device by the lever 19 which is then advantageously formed as a key lever the lever 18 being omitted in this case.

Fig. 4 shows another constructional form of the electric operating mechanism by way of example. In Fig. 4 the coin falls through the tube *a* onto the lever *c* rotatable on the pivot *b* and which by means of the bent lever *e* rotatable on the pivot *d* releases the stop so that the clutch is thrown-in. Simultaneously in conjunction with the contact *h* the contact spring *g* closes the auxiliary circuit. In this position the lever *c* is stopped by the spring K catching the pin *i*. The movement of the motor is transmitted by means of worm wheel gear and a clutch to the main shaft of the apparatus which drives the cam plate *l*. Shortly after the auxiliary contact is closed this cam plate *l* throws the main switch *m* in and this by rotating the lever *n* releases the spring K. Thereupon the lever *c* is returned by the compression spring *o* to its initial position and locked by a pin *p* on the lever *n* so long as the main switch remains closed, that is to say as long as the apparatus is operative. The main switch opens under the influence of the compression spring *q* as soon as the notch in the plate *l* has returned to its initial position after a rotation of the main shaft; simultaneously the lever *c* declutches the motor at the point *f*.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a switch mechanism, in combination, an electro-motor, an auxiliary switch for closing the motor circuit to start said motor, a main circuit switch connected in parallel with the auxiliary switch, means mechanically operated from the motor for closing the main circuit switch when said motor is already started, a driven mechanism and a mechanically operated clutch between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolutions.

2. In a switch mechanism, in combination, an electro-motor, an auxiliary circuit switch for closing the motor circuit to start the motor, a main circuit switch connected in parallel with the auxiliary switch, means mechanically operated from the motor for closing the main circuit switch when said motor is already started, a driven mechanism, a mechanically operated clutch between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolutions, and a locking device the release of which closes mechanically the auxiliary circuit as well as the clutch.

3. In a switch mechanism, in combination, an electro-motor, an auxiliary circuit switch for closing the motor circuit to start the motor, a main circuit switch, means mechanically operated from the motor for closing the main circuit switch when said motor is already started, a driven mechanism, means to open mechanically the auxiliary circuit switch when the main circuit switch is closed and a mechanically operated clutch between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolutions.

4. In a switch mechanism, in combination, an electro-motor, an auxiliary circuit switch for closing the motor circuit to start the motor, a main circuit switch, means mechanically operated from the motor for closing the main circuit switch when said motor is already started, a driven mechanism, means to open mechanically the auxiliary circuit switch when said main circuit switch is closed, a mechanically operated coupling between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolu-

tions, and means to close mechanically the auxiliary circuit switch and the coupling.

5. In a switch mechanism, in combination, an electro-motor, an auxiliary circuit switch for closing the motor circuit to start the motor, a main circuit switch, means mechanically operated from the motor closing the main circuit switch when said motor is already started, a driven mechanism a mechanically operated coupling comprising a driven pawl between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolutions, and an operating lever directly engaging a stop connected with said pawl of said coupling.

6. In a switch mechanism, in combination, an electro-motor, an auxiliary circuit switch for closing the motor circuit to start the motor, a main circuit switch, means mechanically operated from the motor for closing the main circuit switch when said motor is already started, a driven mechanism, a mechanically operated coupling between the motor and the driven mechanism, and means for unclutching the motor from the driven mechanism after the completion of the desired number of revolutions, and an operative lever for the coupling, integrally connected with the switch lever of the auxiliary circuit switch.

In testimony whereof I affix my signature in presence of two witnesses.

CURT HÄNEL.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.