

Nov. 22, 1966

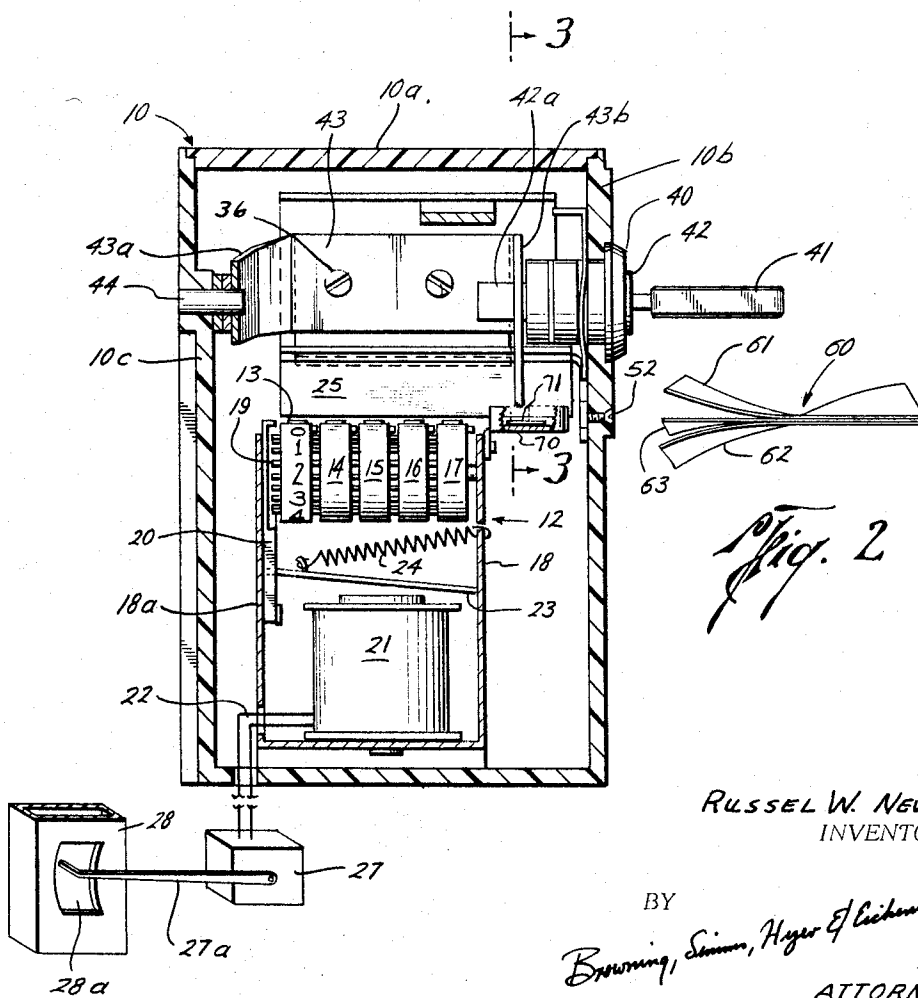
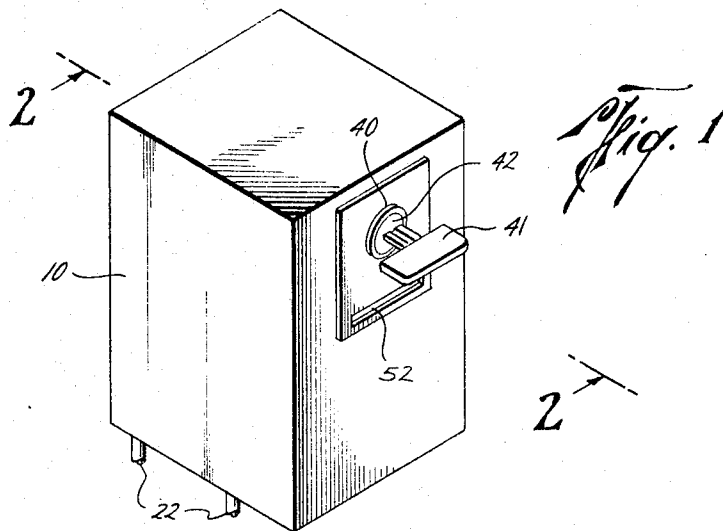
R. W. NEW

3,286,805

COUNTER AND PRINT OUT APPARATUS

Filed Feb. 2, 1965

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

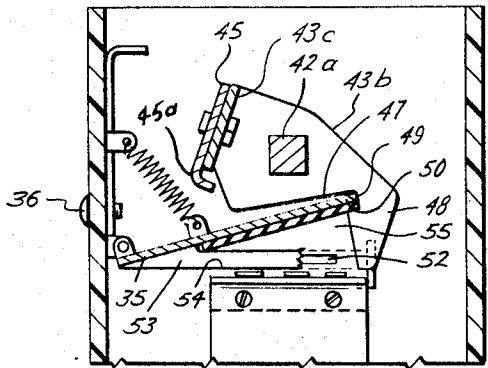


Fig. 3A

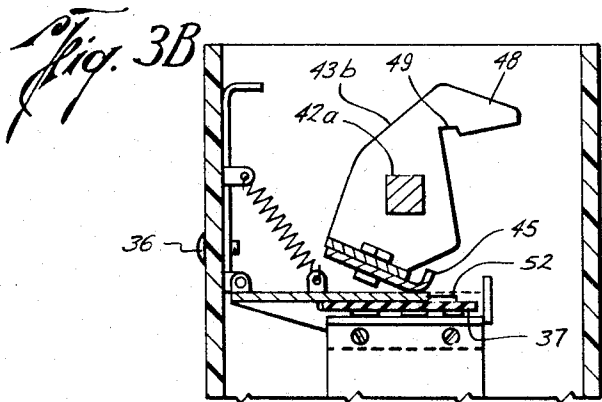


Fig. 3B

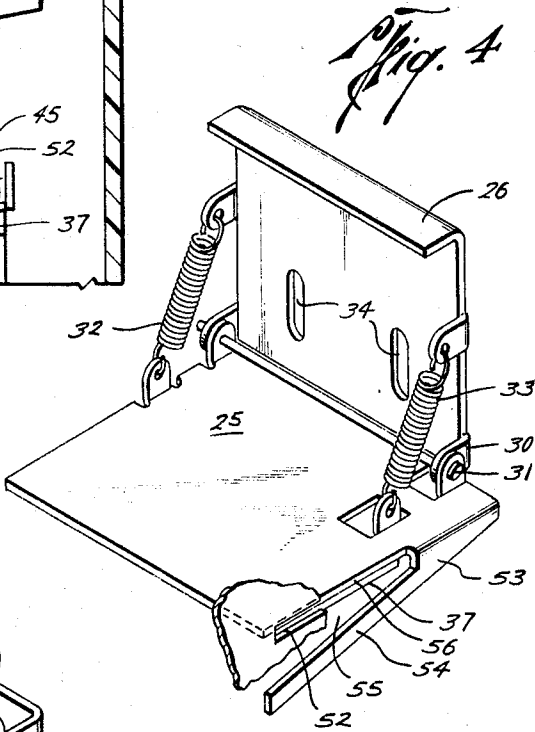


Fig. 4

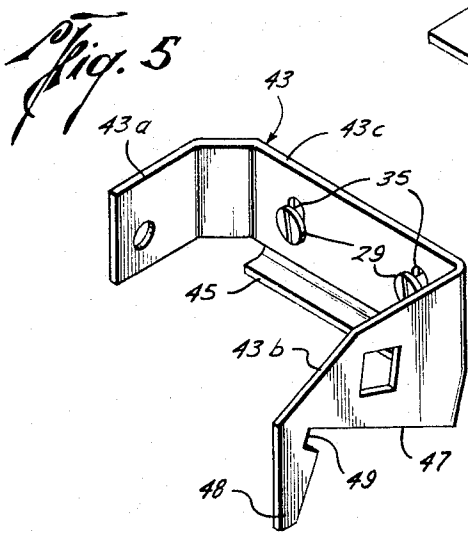


Fig. 5

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COUNTER AND PRINT OUT APPARATUS
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This invention relates to apparatus for use with a coin-operated machine to accumulate a total that is equal to or proportional to the number of coins deposited in the machine and for printing this total on a recording slip.

Many different products and services are now available from coin-operated machines. For the most part these machines operate unattended, being serviced only periodically. Also periodically, the coins that have been deposited in the machines are collected. Where the machines vend an easily counted product, such as candy bars and cigarettes, the owner or operator can determine how many coins should be collected by his inventory. With other machines, however, particularly those vending services, unless the owner of the machines either collects the coins himself or knows how many times the machine has operated, he cannot be sure that he receives all of the coins that have been deposited. Of course, the owner can put a counter on the machine and have the person collecting the coins record the number of operations indicated and turn this in with the money collected. This arrangement, however, still requires the owner to personally check the counters from time to time to see if the totals being turned in are accurate.

It is an object of this invention to provide apparatus that will accumulate a total that is equal to or proportional to the number of coins deposited in a coin-operated machine, that will print this total on a recording slip which can be turned in with the money collected to give an accurate record of how much money should be turned in by the collector, and that is so constructed that the total accumulated by the apparatus cannot be altered or the apparatus rendered inoperative for all or part of the time between collections.

It is another object of this invention to provide apparatus for accumulating a total representative of the number of coins deposited in a coin-operated machine and for printing this total on a recording slip that can be operated only by the person having the proper key.

It is another object of this invention to provide such apparatus which is actuated to print the total accumulated through a key-operated lock mechanism that also holds the printing mechanism of the apparatus inoperative until the proper key is turned in the lock mechanism.

It is another object of this invention to provide such counting and key-operated total printing apparatus which is protected from any interference with the proper operation of the counter by a housing having a slot which opens to allow the insertion or removal of a recording slip only after the printing mechanism has been unlocked and moved part way through the printing operation by the proper key.

These and other objects, advantages and features of the invention will be apparent to those skilled in the art from a consideration of this specification and attached drawings.

In accordance with this invention, a counter is connected to a coin-operated machine to be actuated by the deposit of one or more of the coins necessary to operate the machine and accumulate a total equal to or proportional to the number of coins deposited. The counter is placed in a housing along with a printing mechanism that will cause the total accumulated by the counter to be printed on a recording slip. The housing has a slot through which a recording slip can be inserted and re-

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moved. In the preferred embodiment of the invention, the printing mechanism is operated through a lock so the total accumulated by the counter can be printed on a recording slip only by persons having the proper key.

Also, in the preferred embodiment, the key cannot be removed from the lock when turned part way therein, and the slot is opened for the insertion of a recording slip only after the key has been turned part way in the lock and is closed at all other times. This prevents any interference with the proper operation of the counter or the printing mechanism. Also in the preferred embodiment, after the slot has been opened by the key to allow the insertion of a recording slip, it closes again before the actual printing of the total thereon occurs. With this arrangement, where a movable platen comprises part of the printing mechanism, as in the preferred embodiment, a member cannot be inserted through the slot to hold the platen in position to interfere with the operation of the counter since the slot is closed when the platen is adjacent to it.

The invention will now be described in detail in connection with the preferred embodiment thereof shown in the attached drawings in which:

FIGURE 1 is a perspective view of the apparatus of this invention showing the housing, the slot through which the recording slips are inserted, and the key receiving portion of the lock through which the printing mechanism is operated with the key inserted therein;

FIGURE 2 is a cross sectional view taken along line 2-2 of FIGURE 1;

FIGURES 3A and 3B are sectional views taken along lines 3-3 of FIGURE 2 showing the positions of the members of the printing mechanism, first when the key is removed from the lock and second when the mechanism is printing the total on a recording slip;

FIGURE 4 is a perspective view of the platen of the printing mechanism and the means employed to mount it in the housing and;

FIGURE 5 is a perspective view of the U-shaped arm that is rotated by the turning of a key in the lock to operate the platen.

In the embodiment shown, the apparatus is enclosed in a housing 10 of molded plastic material. The housing has a removable top 10a to provide an opening through which the apparatus can be inserted for mounting in the housing. After the apparatus is assembled in the housing the top is re-attached to the rest of the housing in any convenient manner, as by a suitable adhesive. The housing also is provided with slot 52 through which a recording slip can be inserted to have printed thereon the total accumulated by the counter of the apparatus in a manner to be described below.

In accordance with this invention, the apparatus includes means to accumulate a total that is equal to or proportional to the number of coins deposited in a coin-operated machine. Counter 12, in the embodiment shown, is one that is commercially available. One manufacturer of this type counter is the Veeder-Root Manufacturing Company. The counter includes a series of wheels 13-17, which are rotatably mounted on bracket 18. The wheels are connected together so that one rotation of units wheel 13 will move tens wheel 14 one-tenth of a rotation; one rotation of tens wheel 14 will move hundredths wheel 15 one-tenth of a rotation, etc., in the well known manner.

The counter in the embodiment shown is operated electrically. Wheel 13 is provided with a plurality of pins 19, one of which is engaged by pawl 20 each time it reciprocates along side 18a of bracket 18 to advance wheel 13 one-tenth of a turn. The pawl is reciprocated by armature 23, which is resiliently biased in one direction

by coil spring 24 and in the other direction by electromagnet 21.

The electromagnet may be connected to a coin-operated machine to be energized when the machine is energized or by the deposit of each coin. If one coin operates the machine the total will be the same in either event. In the embodiment shown, electromagnet 21 is connected by lines 22 to switch 27 which is actuated by each coin deposited in the machine. The switch has an actuating arm 27a which extends through opening 28a in coin chute 28 into the path of the coin falling therethrough. As each coin actuates the switch, the electromagnet operates the counter one time.

Further in accordance with this invention, means are provided to print the total accumulated by the counter on a recording slip, said means including printing means on the counter for impressing the total on a recording slip and means for forcing such slip against the printing means.

In the embodiment shown, wheels 13 through 17 of the counter are printing wheels having raised numbers in the form of type. By pressing a recording slip against the numbers across the top of the wheels, the total, which has been accumulated by the counter, will be printed thereon.

The recording slip can be any material upon which the type on the printing wheels will leave a legible impression. Recording slip 60, shown in FIGURE 2 consists of two slips of paper, 61 and 62, between which is a layer 63 of carbon paper. Forcing the slip against the type on the printing wheels will cause the carbon paper to mark one of the slips of paper with the total accumulated by the counter, as represented by the numbers on the printing wheels.

In the embodiment shown, a recording slip such as slip 60, is inserted through opening 52 in the housing and pressed against the printing wheels by platen 25. The platen is mounted in housing 10 by bracket 26 so the platen can pivot between a first position away from the printing wheels and a second position in engagement with the numbered type of the printing wheels of the counter. Pin 31 extends through mounting ears 30 on both the bracket and the platen to pivotally connect the two together. Coil springs 32 and 33 are connected between bracket 26 and the platen to resiliently urge the platen toward its first position away from the printing wheels. The bracket is attached to the housing by screws 36 extending through openings 34. The openings are elongated to allow the position of the platen to be adjusted relative to the printing wheels so it is approximately parallel with the top surface of one lateral row of numbers on the printing wheels when it is in engagement with the wheels. To protect the type against undue wear, pad 37, of a resilient material, such as rubber, is attached to the bottom surface of the platen to absorb some of the force between the platen and the type.

Means are provided to move the platen against the printing wheels and key releasable lock means are provided to hold the platen out of engagement with the printing wheels. In the preferred and illustrated embodiment, the platen is moved against the printing wheels by operation of the lock means. As shown in FIG. 2, lock 40 is mounted in the front wall 10b of the housing to receive key 41. The lock is of the rotatable plug type, having a plug 42 that is rotated by key 41. It can be rotated, of course, by only a key having the proper configuration. Any of the many types of rotatable plug type locks readily available on the market can be employed for this purpose.

Mounted in housing 10 for rotation by plug 42 is U-shaped crank or arm 43. Leg 43a of the arm is rotatably supported by pin 44 mounted in wall 10c of the housing while leg 43b is mounted on end 42a of the plug, which extends outwardly from the lock into the housing. As best seen in FIGURES 3A and 3B, plug end 42a is of rectangular cross section, as is the opening through leg

43b, so any rotation of the plug will be imparted to the arm. Attached to bite 43c of the arm is shoe 45. The shoe is provided with a curved surface 45a which engages platen 25 as the arm is rotated and forces it against the printing wheels of the counter in the manner shown in FIGURE 3B. Preferably, the arm is in its first position (FIG. 3A) before the key has been turned in the lock and is in its second position (FIG. 3B) when the key has been fully turned in the lock.

The shoe is attached to the arm by bolts 29 (FIG. 5), which extend through elongated slots 35 in the arm. This allows the shoe to be moved relative to the arm to change the distance from surface 45a to the axis of rotation of the arm, which is the longitudinal axis of plug end 42a, to adjust the force exerted on the printing wheels through the shoe by the platen.

Stop means are also provided to limit the distance platen 25 can move away from the printing wheels. In the embodiment shown, when the arm is in its first position, edge 47 of arm 43b is positioned to engage the platen as it is moved away from the printing wheels by the springs.

Key-operated lock means also are provided to hold the printing mechanism inoperative until released by the proper key. In this embodiment, the same lock means are employed for this purpose as is used to operate the printing mechanism. Thus, arm 43b is provided with latch extension 48, which has notch 49 arranged to receive outside edge 50 of the platen when the platen is against edge 47 of the arm. With the platen extending into the notch, extension 48 will hold it against downward movement as long as the arm is in its first position, as shown in FIGURE 3A. When the arm is rotated by the turning of key 41 in the lock, however, extension 48 will move out of engagement with the platen allowing it to be moved into engagement with the printing wheels.

It is desirable that the platen be held against downward movement until the key has been turned at least part way in the lock, otherwise it may be possible to insert a tool of some kind through slot 52 in the housing and pull the platen against the printing wheels of the counter and hold them against movement. If this could be done for only a portion of the time between collections, the person collecting the coins would have to account for only a part of those he collected.

For this same reason, means are provided to close slot 52 during the portion of the printing operation that the platen is adjacent the slot. In the embodiment shown, edge 56 of the platen is located adjacent the inner wall of the housing containing the slot; and the platen, slot, and printing wheels are positioned so this edge of the platen will close the slot when it moves into engagement with the wheels.

Also for the same reason, means are provided to close slot 52, when the platen is in its upper position and the key has been removed from the lock, to prevent an instrument from being inserted therethrough to engage the wheels of the counter and hold them against movement. In the embodiment shown, platen 25 is provided with a downwardly extending flange 53 located adjacent the inner surface of wall 10b of the housing. The flange supports finger 54, which is located to close slot 52 from the inside when the platen is in its uppermost or first position. In the embodiment shown, finger 54 extends downwardly at an angle from the platen to provide gap 55 between the top of the finger and the bottom of pad 37 attached to the platen. It is through this gap that the recording slip is inserted. Thus, in operation, as key 41 is turned in lock 40, moving the platen from its first toward its second position, finger 54 will move away from the slot and gap 55 will move into position opposite it. This allows a recording slip to be inserted through the slot and gap 55 into position between the platen and the printing wheels of the counter. Then as the platen is moved against the printing wheels by the further turning of key 41, the slot will again

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be closed by edge 56 of the platen itself. After the total accumulated by the counter has been imprinted on the recording slip, rotation of the key in the other direction will again move gap 55 opposite the slot allowing the removal of the recording slip.

Preferably, lock 40 is of the type that will not allow key 41 to be removed until the arm and platen have been returned to their first position, as shown in FIGURE 3A.

It is desirable to have each of the above described devices mark each recording slip inserted therein in some distinctive manner so the total printed thereon can be credited to the proper machine. This allows a record to be kept of the number of uses of each machine for use in a preventative maintenance program.

In the embodiment shown, plate 70 is mounted on bracket 18, as shown in FIGURE 2, to support type 71 lever with the type on the printing wheels to mark the recording slip at the same time the total indicated on the printing wheels is being printed thereon. Platen 25 is, of course, made long enough to force the slip against type 71. Type 71 can be any desired configuration that will identify the machine to which the device is attached.

From the foregoing, it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the apparatus and structure.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

The invention having been described, what is claimed is:

1. Apparatus for accumulating a total that is equal to or proportional to the number of coins deposited in a coin-operated machine and for printing the total on a recording slip, comprising, a housing, means mounted in the housing for accumulating such a total including numbered printing elements for printing the total accumulated, a platen, means mounting the platen in the housing for movement into and out of engagement with the printing elements, and lock means operable by a key for moving the platen into and out of engagement with the printing elements, said lock means having an opening therein for removably receiving a separate key and being of a construction such that the key can be removed only after the lock means has been positioned such that the platen is out of engagement with said printing elements, said housing having a slot through which a recording slip may be inserted between the platen and the printing elements to record thereon the total impressed on the platen by the printing elements when the platen is in engagement with the printing elements.

2. Apparatus for printing on a recording slip a total number equal to or proportional to the coins deposited in a coin-operated device, comprising, an enclosed housing, a counter to accumulate such total and having mounted in the housing a plurality of printing wheels to print the total, a platen, means mounting the platen in the housing for pivotal movement from a first position in engagement with the printing wheels to a second position spaced from the wheels, and lock means mounted in the wall of the housing having a key rotatable plug extending into the interior of the housing, said plug having an opening therein for removably receiving a separate key, an arm mounted on the plug for rotation thereby to engage the platen and move it to its first position responsive to rotation of the plug from its original to a second position, said housing having a slot through which a recording slip

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can be inserted between the printing wheels and the platen to have printed thereon the total accumulated by the counter, as indicated by the position of the wheels, by the rotation of a key in the lock, said lock means having a construction such that a key inserted in said plug can be removed only when the plug has been rotated back from its second position to its original position.

3. Apparatus for printing on a recording slip a total number equal to or proportional to the coins deposited in a coin-operated device, comprising, an enclosed housing, a counter to accumulate such total and having mounted in the housing a plurality of printing elements to print the total, a platen, means mounting the platen in the housing for movement from a first position in engagement with the printing elements to a second position spaced from the printing elements, lock means mounted in the wall of the housing having a key rotatable plug extending into the interior of the housing, said key rotatable plug having an opening therein for removably receiving a separate key, an arm mounted on the plug for rotation therewith to engage the platen and move it from its second to its first position, said housing having a slot through which a recording slip can be inserted between the printing elements and the platen to have printed thereon the total accumulated by the counter, as indicated by the position of the printing elements, by the rotation of a key in the lock means, and means operatively associated with the lock means for closing slot at all times except when the platen is at a predetermined position between its first and second positions to allow the insertion of a recording slip between the platen and the printing elements when the platen is in said predetermined position but closing the slot when the platen is in its first and its second positions.

4. The apparatus as defined in claim 3, in which said slot closing means includes a flange carried by the platen for closing off the slot, said flange having an opening located to be positioned opposite the slot to allow the insertion of a recording slip between the platen and the printing elements when the platen is in said predetermined position.

5. Apparatus for printing on a recording slip a total equal to or proportional to the number of coins deposited in a coin-operated device, comprising, an enclosed housing, a rotary counter mounted in the housing for accumulating such total and provided with printing wheels having raised digits thereon for printing the total so accumulated, means for actuating the counter with the deposit of one or more coins in a coin-operated machine, a printing platen, means pivotally mounting the printing platen in the housing for movement into and out of engagement with the raised digits on the printing wheels, resilient means urging the platen away from the printing wheels, a lock mounted on the housing and extending through a wall thereof, said lock having a key rotatable plug with an opening therein for removably receiving a separate key, an arm attached to the plug for rotation thereby for moving the platen from a first position out of contact with the printing wheels to a second position in engagement with the printing wheels when a key rotates said plug from a first to a second position, said lock having a construction such that the key can be removed only when the rotatable plug is on its first position, stop means to limit the distance the platen can be moved away from the printing wheel by the resilient means, and detent means, releasable by the rotation of the arm, for holding the platen against movement toward the printing wheels when the platen is against the stop means, said housing having a slot therein through which a recording slip can be inserted between the platen and the printing wheels to record the total indicated by the counter when it is forced into engagement with the wheels by the platen by the rotation of a key in the lock, and means for closing said slot when the platen is in its first position.

6. Apparatus for printing on a recording slip a total equal to or proportional to the number of coins deposited in a coin-operated machine, comprising, a housing, an

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electrically operated rotary counter mounted in the housing having printing wheels equipped with numbered type for printing the total accumulated by the counter, a coin-operated machine including an electric switch actuated by the deposit of one or more coins, means connecting the counter to the switch to actuate the counter when the switch is closed by the deposit of said coin or coins, a platen, means mounting the platen in the housing for movement into and out of engagement with the type on the wheels, a lock having a key rotatable plug, means mounting the lock for insertion of the key therein from the exterior of the housing, an arm pivotally mounted in the housing and attached to the plug for rotation therewith to engage the platen and move it against the type on the counter wheels when a key is turned in the lock, resilient means urging the platen away from the counter wheels, stop means for limiting the distance the resilient means can move the platen away from the printing wheels, detent means for holding the platen against the stop means, said detent means being moved out of holding engagement with the platen concomitantly with the turning of a key in the lock for rotating the arm to move the platen toward the printing wheels, said housing being provided with a slot located to allow a recording slip to be inserted between the platen and the printing wheels to have

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impressed thereon by the type on the wheels the total number of times the counter has been actuated by the deposit of said coin or coins, and means for closing the slot after the recording slip has been inserted there-through and before the platen is moved against the printing wheels to prevent the insertion of a member through the slot to hold the platen against the printing wheels and interfere with the operation of the counter.

7. The apparatus of claim 6 in which the arm rotated by the lock plug is provided with a shoe having a surface for engaging the platen, and means are provided for mounting the shoe on the arm that permit the adjustment of the distance from the surface of the shoe that engages the platen to the axis of rotation of the arm to allow the force exerted on the platen by the shoe to be adjusted.

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