

April 4, 1939.

B. E. SEEMEL

2,153,160

PREDETERMINING MECHANISM FOR COIN COUNTING MACHINES

Filed March 29, 1935

2 Sheets-Sheet 1

Fig. 1

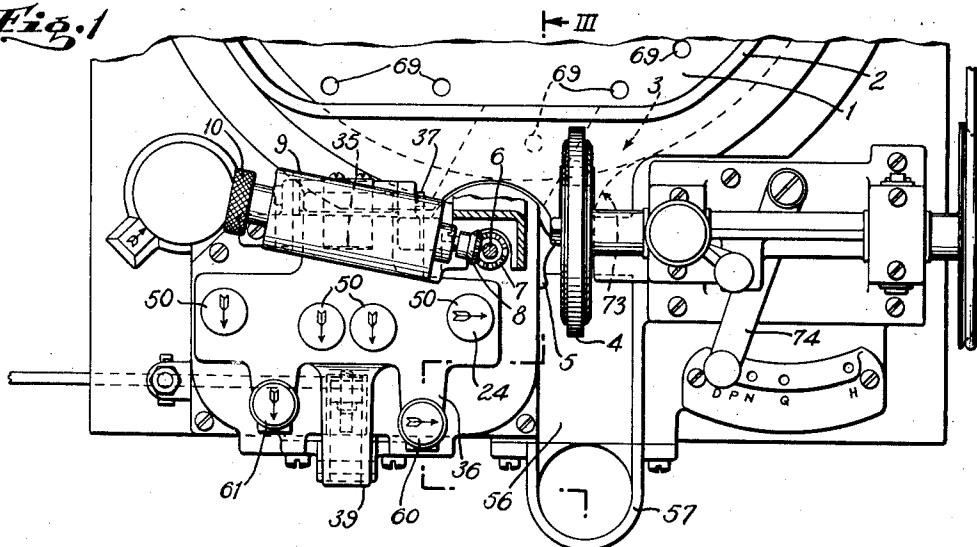


Fig. 2

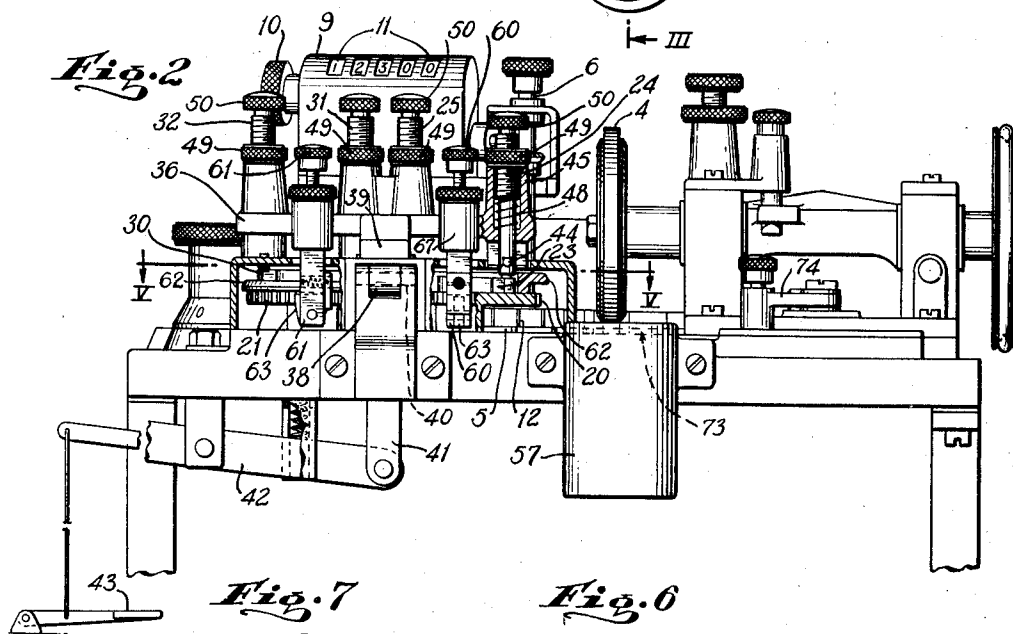


Fig. 7

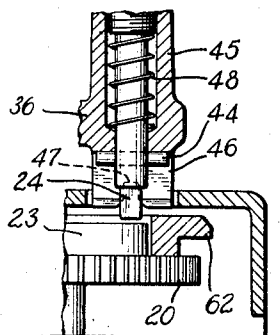
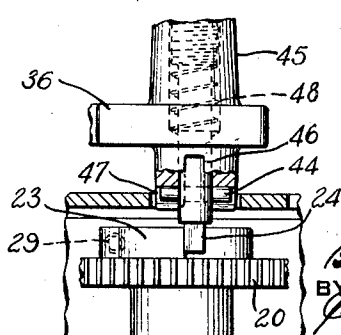


Fig. 6



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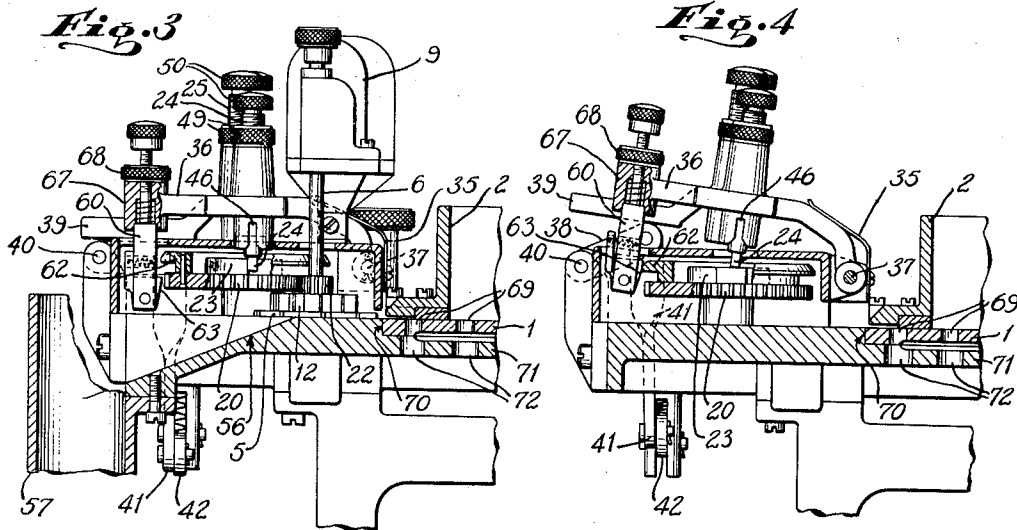
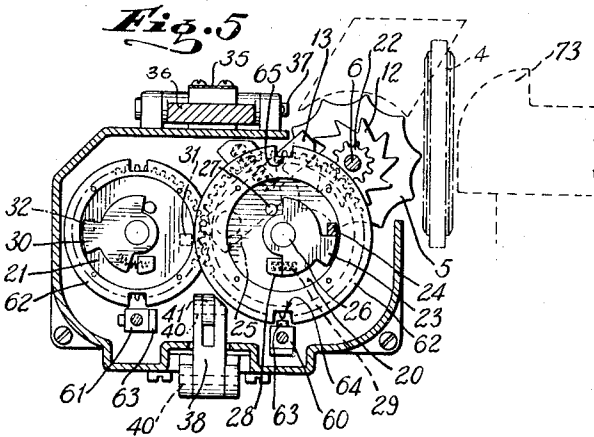
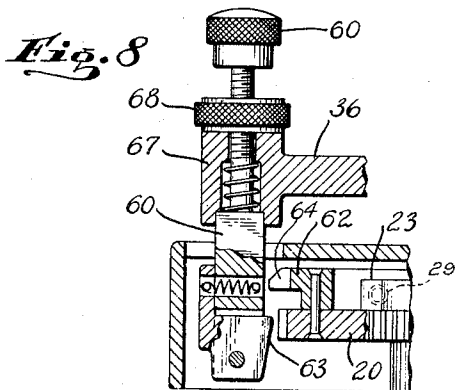
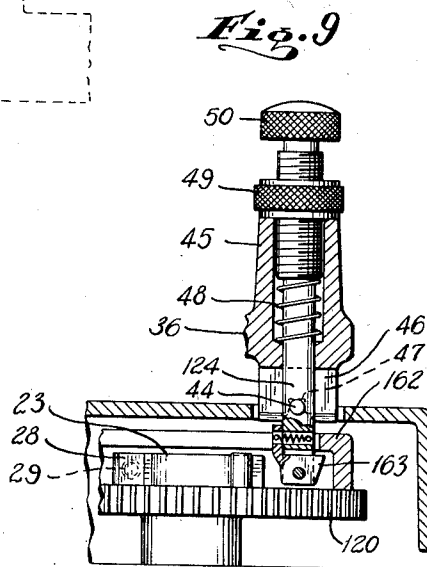
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PREDETERMINING MECHANISM FOR COIN COUNTING MACHINES

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2 Sheets-Sheet 2



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PREDETERMINING MECHANISM FOR COIN
COUNTING MACHINES

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Automatic Coinwrapping Machine Corpora-
tion, New York, N. Y., a corporation of New
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Application March 29, 1935, Serial No. 13,590

9 Claims. (Cl. 133—8)

My invention relates to machines for counting
coins, tokens and other pieces and articles of the
same general nature, and herein (and in the
claims as well as in the following description)
the term "coin" is used as including tokens and
analogous pieces as well as monetary coins.
More especially it relates to machines for count-
ing out "coins" in lots of a definite number each
(e. g., dimes in lots of fifty, etc.), and it is pec-
uliarly adapted to semi-automatic machines
where the counting of each lot is begun by some
act of the machine operator.

Broadly it prevents in an improved manner
miscounting of individual lots. More particu-
larly it comprehends an improved arrangement
for positively indicating in a distinctive and pec-
uliar manner the completion of the count or
passing of the number of coins desired for each
lot. The manner in which the indication is given
is immaterial, broadly speaking, so long as it is
positive in operation, i. e. normally beyond the
control of the operator, and is distinctive and
peculiar to itself, i. e. is an indication of an order
different from such an indication as is given, for
example, by the totalizing register usually used
on counting machines and which at all times
shows visually the total number of coins passed
through the machine from the beginning of a
series of counting operations; thus it is immat-
erial whether the indication be given by erect-
ing a distinctive signal at the end of each count-
ing cycle, by the thrusting out of coin-receiving
containers at the ends of the counting cycles, by
stopping or discontinuing the coin flow as each
counting cycle is completed, or in some other
manner. As will be appreciated, the indications
of the ends of the cycles or counts given by a
totalizing register are not distinctive or pec-
uliar since they consist merely of certain of the
numbers of the whole series that the register is
capable of showing; for the present purposes
such a signal or indication is too inconspicuous
and too nearly like the signals or indications
that precede and succeed it, especially for rapid
work. By positively indicating the end of each
counting cycle or operation in a distinctive and
peculiar manner however, the operator is given
timely and unmistakable notice whenever the
machine is operating, or is being operated, im-
properly. When the indication is given by dis-
continuing the flow of coins through or from
the machine, it is immaterial, generally, whether
the flow be stopped by placing a gate in the coin
path or otherwise; especially when the coins are
fed through the counting mechanism by friction,

the flow may be stopped by rendering the count-
ing mechanism inoperative to pass coins. Pref-
erably however I lock the machine against pre-
mature closing or completion of the successive
counting cycles or operations. According to the
present invention I put the release of the lock
under the control of some member driven with
the flow of coins through the machine and
making some certain movement at and only at
the end of each cycle or operation. This con-
trol member may be (and conveniently is) a
member associated with the counting mechanism
either as a necessary part thereof or as an addi-
tion thereto for locking purposes. The locking
of the machine can be done in various ways; for
example, by preventing the removal of coin-re-
ceiving containers until the respective container
has received the number of coins intended for it,
or by preventing the re-setting of the machine
for starting counting any second lot of coins un-
til the counting of the preceding lot has been
completed, etc. etc. Thus the release of the lock
serves to indicate the completion of the suc-
cessive counts, and the locking feature may quite
assure proper counting in all respects. In semi-
automatic machines where the re-setting of the
machine for starting counting successive lots is
at the will of the operator, improper re-setting
(resulting in miscounting) is more likely to oc-
cur near the end of a cycle rather than earlier;
accordingly the lock should be effective near the
end of each cycle but (at least in these semi-au-
tomatic machines) the lock may be omitted from
the beginning or even from the middle portion
of each cycle.

The contrast between the lock of my invention
and the mechanisms heretofore used for the
purpose of stopping the flow of coins at the end
of each cycle will be apparent. So far as I am
aware all such prior stopping mechanisms (at
least in the semi-automatic machines) have been
so constructed that the operator can remove the
stop from action before a count has been com-
pleted and re-set the machine for beginning a
new cycle or count before the end of the preced-
ing count is reached, with the result (for ex-
ample) that through inadvertence or carelessness
the operator may cause a certain lot of coins to
contain less than the desired number and add
the missing coins to the next lot. In contrast
with this the lock of my invention prohibits the
completing of the counting of any lot until the
full number of coins desired for that lot have
been counted.

The accompanying drawings illustrate the

form of my invention preferred at present. In these drawings, Fig. 1 is a plan view of a portion of a machine embodying my invention. Fig. 2 is an elevation thereof, partly in section. Fig. 3 is a vertical section substantially on the line III—III of Fig. 1. Fig. 4 is also a sectional elevation, at a position slightly removed from that of Fig. 3, and showing the parts in a different position. Fig. 5 is a sectional plan view showing the star wheel and counters. Figs. 6 and 7 are sectional views showing a stop pin in two different positions and its relation to a counter. Fig. 8 is a sectional view near one of the lock pins. Fig. 9 is a corresponding sectional view, but showing a modification.

In the machine illustrated the coins are delivered to the rotatable disc 1, which is more or less surrounded by a vertical wall 2; the disc is rotated rapidly so that by centrifugal force the coins pass from it through the passage 3 underneath the wall 2 at one side and thence underneath the driven wheel 4 which assists to pass them through or over the counting mechanism. Machines of this type are well known and the foregoing description will serve present purposes; only part of the disc 1 and wall 2 are illustrated, as will be understood.

In passing underneath the driven wheel 4 (which usually is surfaced with rubber or the like to give the wheel a good frictional grip on each coin) each coin is passed across a notched or star wheel 5, so that this wheel is turned one step or notch with the passage of each coin. A shaft 6 to which the star wheel is attached and cooperating bevel gears 7 and 8 cause this star wheel to actuate the totalizing register or counter 9; a thumb nut 10 permits this totalizing counter to be re-set to zero at will, and accordingly the numerals appearing at the windows 11 of the counter show at all times the number of coins passed through the machine since the counter was last set back to zero. A ratchet wheel 12, fixed either directly to the star wheel 5 or to its shaft 6 and having say the same number of teeth as the star wheel 5, together with a spring pressed pawl 13, act to hold the star wheel 5 at rest except during the passage of a coin, and to stop the turning of the star wheel 5 at the proper place for the reception of a succeeding coin. Substantially this construction is already known and the foregoing description will suffice for the present purposes. In the present machine, generally speaking, the counter 9 is used to show the total number of coins passed through the machine in a series of counting operations.

The present machine is so constructed that it counts out the coins in lots of definite numbers of coins per lot, lots of either large or small numbers being counted as the will of the operator may dictate, say lots of twenty, twenty-five, forty or fifty coins each; also it is semi-automatic in its action in that the machine requires the action of the operator to restart it for counting each succeeding lot of coins. Counting elements or counters in the form of discs 20 and 21 serve to stop the star wheel 5 against further rotation temporarily at the completion of each counting cycle; that is as each lot is completed they stop the coin flow until the machine is reset by the operator for further counting; counters of other form than discs may be used, as will be understood, but the disc form is preferred. Also, rather than use one counting element or counter for each lot of coins, I prefer to so arrange the apparatus that each counter serves for counting two

or more lots of different numbers of coins. Thus for the counting of four different lots (e. g. lots of twenty, twenty-five, forty or fifty coins per lot) I employ preferably two counters 20 and 21. These may be driven by the star wheel 5 in various ways. In the present instance the counter 20 is provided with gear teeth on its periphery, these teeth gearing with the smaller gear 22 fixed to the star wheel shaft 6, and the counter 21 has gear teeth meshing with the gear teeth of the counter 20, the number of gear teeth respectively being such that the counter 20 makes one complete rotation in the passage of fifty coins over the star wheel 5 and the counter 21 making one complete rotation in the passage of forty coins. A stop, or stop latch so-called, 23 carried by the upper face of the counter 20, and two stop pins 24 and 25 carried by the frame of the machine and either or both of which can be thrust down into the path of the stop or stop latch 23, serve to stop the rotation of the counter 20 and thus stop the flow of coins. If say only the stop pin 24 is thrust down into the path of the stop 23, then (the stop pin being lifted out of the path momentarily to permit the mechanism to start) the counter 20 can make one complete rotation before being stopped by the stop pin, and thereby a lot of fifty coins counted out. The stop pin 25 being located diametrically opposite the stop pin 24, the insertion of both these pins in the path of the stop or stop latch 23, causes the counter 20 to stop at the end of each half rotation, and accordingly the flow of coins is interrupted at the ends of the counting of lots of twenty-five. In order to permit the bare momentary lifting of these stop pins to start the counting of a succeeding lot of coins, the stop 23 is pivoted about the centering shaft 25 of the counter, its movement on the face of the counter is limited by two stops 27 and 28 carried by the face of the counter, and a spring 29 is employed to thrust the stop latch 23 against the stop 27. Thus the rotation of the counter having been stopped by the latch 23 striking the stop pin 24 and the pressure of the counter stop 23 against the latch 23, the counting of the next lot of coins can be started by momentarily lifting the stop pin 24, because this lifting permits the counter spring 29 to immediately thrust the stop latch 23 underneath the stop pin 24 so that when the latter is dropped down again it cannot get in front of the stop latch 23 again until the counter 20 has made a complete rotation. The stop pin 24 may be pressed downwardly by a spring or by gravity, so as to drop into the path of the stop latch 23 as the turning of the counter 20 carries this stop latch 23 from underneath the end of the stop pin 24. The functioning with respect to the stop pin 25 is the same as described with respect to the stop pin 24. Obviously other constructions of the stop latch 23, serving the same purpose, can be substituted.

In the same manner, the counter 21 is provided with a similarly mounted stop latch 30 and two stop pins 31 and 32 placed diametrically opposite each other, and accordingly when, say, stop pin 32 alone is placed in the path of the stop latch 30 (the stop pins of counter 20 being raised out of operation) the flow of coins is stopped at the completion of the passage of forty coins while the presence of both stop pins 31 and 32 in the path of the stop latch 30 causes the flow of coins to be interrupted at the ends of the passage of lots of twenty coins per lot.

Preferably all the stop pins, e. g. 24, 25, 31 and

32, are carried by a single structure capable of raising whichever stop pin may be employed at the moment, for coin-counting restarting purposes. In the present instance this stop pin carrier comprises a plate-like member 36 hinged at 37 and held downwardly by gravity and a spring 35. It is raised (turned on its hinge 37) by the operator each time the counting of a new lot of coins is to be started. Usually this raising is put under the control of a pedal under the control of the operator's foot. For this purpose, a short lever 38 is provided, beneath a tongue 39 projecting from the carrier plate 36, the lever being hinged to the machine frame at 40 and having its movable end linked by 41 to a lever 42 connected to a pedal 43 within convenient reach of the operator's foot; by depressing the pedal 43 it will be observed that the stop pin carrier plate 36 will be raised or turned on its hinge so as to lift any stop pin 24, 25, 31 or 32 that may at the moment be in the path of one of the stop latches 23 or 30. It will be obvious that the stop pins can be mounted in the stop pin carrier in various ways. The preferred form of mounting is illustrated in detail with respect to the stop pin 24; the other stop pins are similarly mounted. In brief, the stop pin 24 is provided, near its lower end, with a cross pin 44, and the pin 24 is slidably mounted in a tubular portion 45 of the stop pin carrier, the tubular portion having two narrow cuts 46 and 47 extending upwardly from its lower end and at right angles to each other; a spring 48 holds the stop pin 24 upwardly to the extent permitted by the cross pin 44 lying in one of the slots, and a lock nut 49 threaded on the stop pin and engaging the upper end of the tubular portion 45, serves to prevent the pin being depressed inadvertently. One of the cuts 46 extends upwardly so far that when the cross pin 44 lies in this cut, the pin spring 45 holds the pin elevated well above the path of the counter stop or stop latch 23. The second cut 47 extends upwardly such a short distance however that when the cross pin 44 lies therein the stop pin 24 reaches down into the path of the stop latch 23 as shown in the drawings. Therefore by releasing the lock nut 49, the stop pin 24 can be thrust down far enough to free its cross pin 44 of both slots, then the pin can be turned one way or the other so as to place the cross pin in either slot, and then the thumb nut 49 screwed down against the tubular portion 45 to lock the stop pin in its corresponding raised or lowered position. The other stop pins 25, 31 and 32 being similarly mounted, it will be evident that they are individually adjustable into and out of the paths of the stop latches 23 and 30. Suitable heads 50 on the respective stop pins are to permit their manipulation. For enabling a single counter, such for example as the counter disc 20, to be used for counting lots of two or more numbers of coins, I have found that the use of a plurality of stop pins, such as 24 and 25 for example, in operation with, say, a single stop or stop latch on the counter, is preferable to other arrangements heretofore proposed.

The present machine has a slideway 56 down which the coins pass as they leave the driven wheel 4 and star wheel 5. This way may terminate at a conduit or member 57 leading to or adapted to receive containers into which the coins are counted. By way of example, the member 57 is illustrated as a tubular member into which paper tubes can be thrust to receive

the counted coins, each tube receiving one complete lot.

Assuming for example that the stop pin 24 is located with its cross pin 44 in the second slot 47 and that all the other stop pins are positioned with their cross pins 44 in the respective higher slots 46 (so that only the stop pin 24 is positioned to stop the counting mechanism and hence the flow of coins) it is obvious that the machine will count the coins in lots of fifty, stopping the coin flow at the completion of the counting of each lot, providing the machine is operated as intended. As is well known however, a careless operator may depress his foot pedal 43 and thus raise the stop pin 24 from the path of the stop latch 23, say just prior to the completion of the counting of fifty coins; say when only forty-eight coins of a given lot have been counted out and passed to a container in the container member 57. Taking his foot from the pedal 43 a moment later, the stop pin 24 may fall on top of the stop latch 23, quite as though the machine had counted a full lot of fifty coins, and the counting continued quite as if everything were operating as intended. The result of this is that the container receiving the next lot of coins may receive its own lot of fifty and two additional coins that should have been delivered into the previous container that received only forty-eight coins. The foregoing is an example of miscounting that my invention prevents. Briefly the machine illustrated prevents such miscounting through the agency of mechanism which prevents raising of the stop pin carrier 36, and thus removal of the operating stop pin from the path of the respective stop latch 23 or 30, until the counting of each and every lot is completed. To this end the stop pin carrier 36 is provided with two lock pins 60 and 61 for cooperation with the coin counters 20 and 21 respectively in such a manner that the stop pin carrier 36 cannot be raised to reset the machine for starting the counting of a succeeding lot of coins until the respective counter has come to the position it must occupy when the counting of a preceding lot of coins is completed. In the present instance, the cooperation between the lock pin 61 and the counter 21 is like that between the lock pin 60 and the counter 20, and in the present instance the counter 20 is provided with an overhanging rim 62 (which may be attached to or integral with the counter 20), and the stop pin 60 is provided with a swinging latch 63 spring pressed inwardly as indicated, so that when the stop pin carrier 36 is lowered (to place one of the stop pins in operating or counting position) the lock pin latch 63 passes this rim 62 and takes its place beneath the rim. At the point of the rim 62 which is adjacent the stop pin 60 at the completion of the count of a lot of say fifty coins, the rim is provided with a gate 64 through which the lock pin latch 63 can pass; also, since the same counter 20 is used to count another number of coins, say lots of twenty-five, the rim 62 is provided with a corresponding additional gate 65 through which the stop pin latch 63 can pass upwardly. As a result, it will be evident that the stop pin carrier 36 can be raised to remove an active or operating stop pin 24 or 25 from in front of the stop latch 23, to reset the machine for counting a lot of coins, only after the counting of the preceding lot has been completed; i. e. when one of the gates 64 or 65 comes to a place above the lock pin latch 63. As before stated, the same inter-

locking relation is employed between the counter 21 and the lock pin 61. Inasmuch as two lock pins 60 and 61 are employed, each is mounted for movement into and out of operating position so that either can be brought into operating position as the need for either of the counters requires, and the other can be removed from operating position so as not to interfere with the desired locking operation. To this end both lock pins are so mounted that either may be turned say ninety degrees so as to place its latch 63 quite outside the path of the cooperating counter rim 62 (See Fig. 5). To this end, in the present instance, the lower portion of each lock pin (portion pointed to by the reference characters 60 and 61) is made polygonal in cross section and the tubular support 67 for the lock pin on the stop pin carrier 36 is similarly recessed at its lower end; the lock pin may be spring pressed downwardly as indicated; normally each lock pin is held elevated with the polygonal portion extending into the recess, by means of a lock nut 68. By turning this lock nut 68 however, the polygonal part can be dropped out of the recess, then the lock pin can be turned the necessary amount to carry its latch beneath or out from under the counter rim 62, and then pulled back upwards into the recess again by means of the lock nut 68.

The presence of the appropriate gate, e. g. 64 or 65, at the respective lock pin latch 63, i. e. the ability of the operator to raise the stop pin carrier 36, is a positive indication or signal to the operator that a desired lot of coins has been counted out, and counted out complete. Also it will be observed that the joint use of stop pins and the lock practically requires at least momentary stopping or discontinuance of the coin flow at the completion of each lot, and this too acts as a signal to the operator of the exact completion of each desired count.

It will be observed of course that the locking may be accomplished by other mechanisms. As a single example of an alternative construction, Fig. 9 illustrates one using the stop pins themselves to lock the stop pin carrier 36 against inadvertent raising. In this instance the counter 120 (corresponding say to the counter 20 of the preceding figures) is provided with an inturned rim 162, and the stop pin 124 (corresponding say to the stop pin 24 of the preceding figures) is provided with a latch 163 (similar say to the latch 63 on the lock pin 60). The inturned rim 162 being provided with a gate corresponding say to gate 64 before described, but located at that point of the rim 162 which stands opposite the stop pin 124 at the end of each complete counting cycle, it is evident that the arrangement briefly illustrated in this Fig. 9 will operate in substantially the same manner as described with respect to the foregoing figures.

I prefer to provide centrifugal discs like 1 with a number of holes 69 pierced completely through it to permit the escape of dirt. Preferably these holes are all placed within the periphery of the disc so that its outer edge 70 is continuous and uninterrupted. These holes 69 may be provided in sufficient numbers, and usually are more or less distributed throughout the disc, and each is too small, diametrically, to receive the smallest coin that the machine is intended to count. To permit the complete escape of the dirt falling through these holes 69, the support 71 on which the centrifugal disc rests, may in effect be provided with holes to

let the dirt fall through, e. g. such as indicated at 72.

As is customary in machines of the type illustrated, a sliding guide plate 73 may be provided, this being slidable to the right and to the left in Fig. 1 to widen and narrow the coin pass 3 immediately at the star wheel 5. This may be positioned by a hand lever 74. In such and other respects the machine may contain various features found on machines of the type of that illustrated.

It will be understood that my invention is not limited to the construction and operation described above and illustrated in the drawings, except as appears hereinafter in the claims.

I claim:

1. In a coin counting machine having coin counting mechanism, means to direct the coins over the counting mechanism to count the same, and means actuatable to control the counting of the coins into successive lots of a predetermined number of coins per lot, the combination of a member driven with said counting mechanism and having movements coincident with the movement of said counting mechanism including a final movement when the last coin of the lot is counted, and means indicating in a distinctive and peculiar manner the completion of such a counting operation, the last mentioned means being controlled by the final movement of said driven member.

2. In a coin counting machine having coin counting mechanism, means to direct the coins over the counting mechanism to count the same, and means actuatable by the operator to start the counting of the coins into successive lots of a predetermined number of coins per lot, the combination of a member driven with said counting mechanism and having movements coincident with the movement of said counting mechanism including a final movement when the last coin of a lot is counted, and a device out of the control of said actuatable means toward the end of the counting of respective lots and controlled by said final movement of said driven member to positively discontinue the flow of coins through the machine at the completion of the counting of each successive lot of a predetermined number of coins.

3. In a coin counting machine having coin counting mechanism, means to direct the coins over the counting mechanism to count the same, and means to discontinue the flow of coins at the ends of successive counts of a predetermined number of coins, the combination of a member driven with said counting mechanism and having movements coincident with the movement of said counting mechanism including a final movement when the last coin of a lot is counted, and means controlled by said member to prevent the completion of such a counting operation until the predetermined number of coins has been counted in it, said final movement of said member releasing said means from the control of said member.

4. The subject matter of claim 3, characterized by the fact that the last mentioned means is means to prevent the resetting of said flow-discontinuing means in position to permit the starting of the next count.

5. In a machine for counting coins cyclically in lots of a predetermined number of coins per lot, the combination with coin counting mechanism driven by the coins, means to direct the coins over the counting mechanism to count the

same, means to stop the flow of coins when the last coin of each lot is counted, and means to start the counting of successive lots, of means to lock the machine against the starting of a second counting cycle until the full count of a predetermined number of coins in the first cycle has been made, said means including a member driven with said counting mechanism and controlling the release of the lock.

6. In a coin counting machine, the combination with coin counting mechanism including a member advanced with the passage of coins over the counting mechanism, means to direct coins over the counting mechanism, and a stop positionable in the path of said member to stop the advance of the member on the passage of a predetermined number of coins over the counting mechanism, of means to prevent the removal of said stop from said path, to permit the continuance of counting, until said predetermined number of coins has passed the counting mechanism.

7. The subject matter of claim 6, characterized by the fact that the last mentioned means includes a member driven with said counting mechanism and provided with a gate, positioned at a point corresponding to that of the stop upon passage of the predetermined number of coins, to permit the removal of said stop from said path.

8. In a coin counting machine, a counting element advanced with the passage of the coins and provided with a stop, a stop movable into and out of the path of said stop of the counting element

to discontinue the advance of the counting element on the passage of a predetermined number of coins, a member included in said counting element and advancing therewith, and a member associated with the movable stop to engage with the first mentioned member to lock said movable stop against movement out of the path of the stop of the counting element, the first mentioned member passing out of locking relation to the second mentioned member on the completion of the passage of said predetermined number of coins.

9. In a coin counting machine, a counting element advancing with the passage of coins and provided with a stop, a plurality of stops selectively positionable in the path of said stop of the counting element to discontinue the advance of the counting element at different of its positions, said stop of the counting element being movable thereon to pass out of stopping relation to said plurality of stops as the latter are removed from said path, and a stop holder on which said plurality of movable stops is mounted and which is movable to move said stops out of the path of the stop of the counting element, said stop holder being in position to be locked by said counting element when the stop holder is in position to hold its stops in said path and said counting element passing out of locking relation to said stop holder on its arrival at the positions whereat its advance is discontinued by one of said movable stops.

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