July 17, 1934. C. P. VAN SCHAACK 1,966,695

PERCENTAGE TALLY

Filed March 27, 1933 2 Sheets-Sheet 1

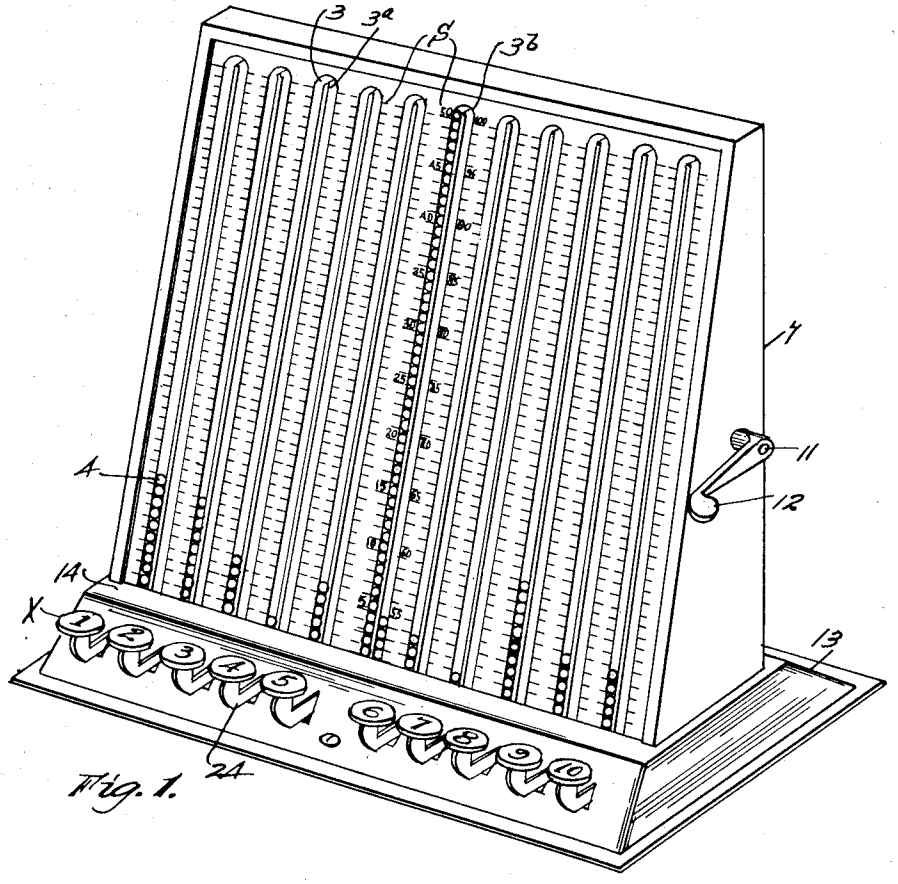
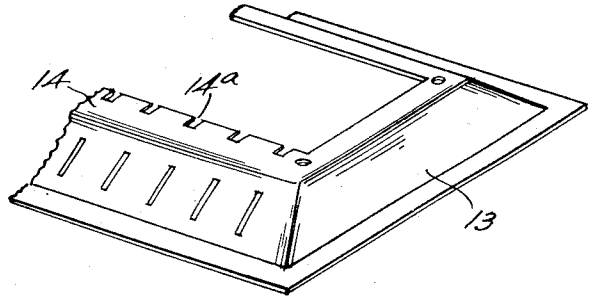


Fig. 1.

Fig. 9.



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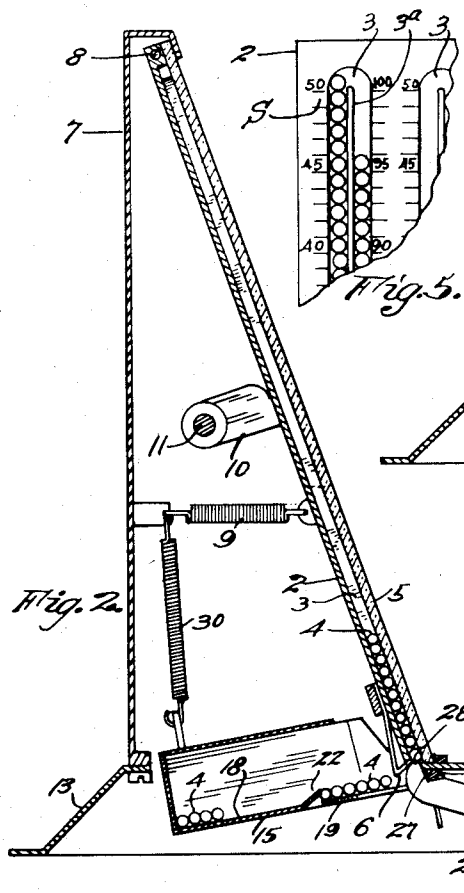


Fig. 2.

Fig. 5.

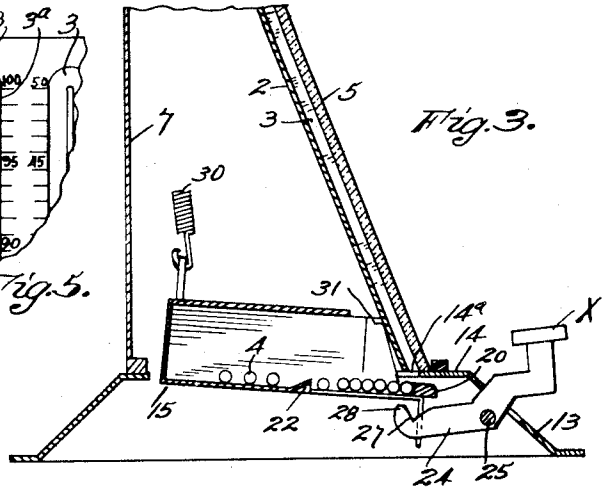


Fig. 3.

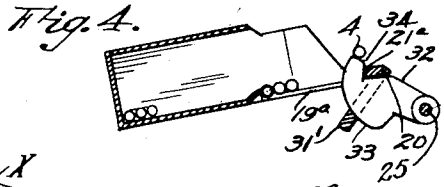


Fig. 4.

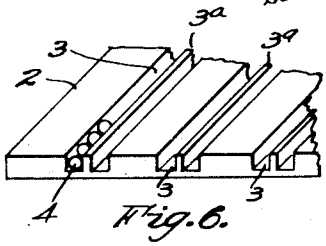


Fig. 6.

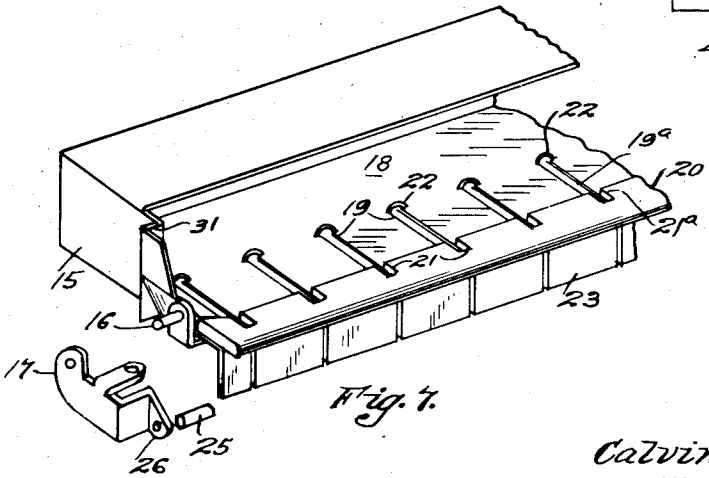


Fig. 7.



Fig. 8.

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UNITED STATES PATENT OFFICE

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PERCENTAGE TALLY

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Application March 27, 1933, Serial No. 663,023

13 Claims. (Cl. 235—123)

This invention relates to count registering and percentage indicating and has for a general object to provide percentage tally apparatus of gear-less construction.

Another object is to provide a counter and percentage indicator of few and substantial parts, of utmost simplicity, of marked ease of operation, requiring no more skill than mere finger pressure on a key for its actuation, and being reliable and speedy in effecting a percentage register and stroke tally and providing automatic locking action of the parts when the maximum count is completed.

More specifically, an object is to provide a device wherein a total count scale and a percentage scale are used in combination with a supply of free, like shape and size objects, preferably true spheres of hard metal, to effect a total registration of a number of items counted and a registration of each variety of such items in the count, and to provide to lock the device when a given total count is made.

The invention consists of certain advancements in this art as set forth in the ensuing disclosure and having, with the above, additional objects and advantages, as hereinafter developed, and whose construction, combination and details of means, and the manner of operation will be made manifest in the description of the herewith illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the scope, principle and spirit of the invention as it is more directly claimed hereinafter.

Figure 1 is a perspective of the tally.

Figure 2 is a vertical, transverse section of the tally, showing a key lever in operating position pressing a ball to counting position as to its scale.

Figure 3 is a similar section (of the lower part) showing the mechanism in normal, idle position.

Figure 4 is a detail of the total-count finger in operating position.

Figure 5 is a face view of a top portion of the scale panel, and

Figure 6 is a front perspective of a part of the foot portion of the panel.

Figure 7 is a perspective of a portion of the ball pan of the device.

Figure 8 is a perspective of a ball gate of a panel ball chamber.

Figure 9 is a perspective of a portion of the top, notched flange of the base.

In its illustrated embodiment the device, which is called a "tally", incorporates an upright panel 2 in whose frontal face is provided a suitable number of circuitous chambers 3 which are coordinate to respective keys X, numbered 1 to 10, inclusive, the chambers being duplicate. As shown in Fig. 6, the limbs of each chamber 3 open freely to the bottom edge of the panel so that a ball 4, of a size to slidingly fit in a chamber in a row, can be pushed up in one limb at will, or all easily dumped from the chamber.

The face of the panel 2 in which chambers 3 are formed as open grooves is covered by a window pane 5 providing clear display of the balls 4 as they pile up in the chambers. It may be mentioned that the panel 2 is set upright to conserve basal area of the device and each chamber is of circuitous form to provide desired count capacity without undue height of the tally. As here shown each chamber 3 is in the form of an inverted U, but any desired outline may be adopted. The chambers are coplanar.

The limbs of each U-chamber 3 are spaced by a web 3^a and the foot mouth of one limb is provided with a spring gate 6 past which a ball 4 may be pushed by a means set forth below.

The panel 2 and its window 5 are arranged in a suitable casing 7 having at its top, pintles 8 on which the panel is suspended to be swung back from the window 5 by tension of a spring 9 when the panel is freed from pressure of a cam 10 fixed on a rock-shaft 11 mounted on the shell or casing 7 and having a manually operative handle 12 outside thereof.

The bottom of the shell 7 and the window 5 rest on a hollow base 13 opening to the casing shell and having a flange 14 notched at 14^a to register with the gated limbs of each U-chamber; the outlet of the other limb being over and closed by the flange 14 so that balls may accumulate in the chamber.

Arranged in the opening between the base and the shell is an elongated, covered pan 15 with end pivots 16 at its forward portion and close to the plane of the base 14 and having bearings 17 fixed to the base. The pan has a flat bottom 18 the forward part of which has a series of parallel slots or grooves 19 of a width to form tracks leading balls therefrom to a universal bar 20 fixed on top of the lip of the pan and having ball receiving notches 21 at the near ends of the guide slots 19.

The rear ends of the slots 19 have stops 22 so that the free balls in the slots will be retained if and when the pan 15 is tilted on its pivots, as is provided for. The lip of the pan has a curtain flange 23 slotted, in continuation of slots

19, to receive and guide the levers 24 of the respective keys X, which are all freely pivoted on a universal rod 25 hung in bearings 26; the levers 24 operating in slots therefor in the front of the base 13.

Each lever 24 is top notched at 27 so that when its key is depressed the nib 28 of the lever will move in an arc upward toward and enter the relative flange notch 14^a and also the gate limb of the respective chamber 3; pressing a ball 4 past the relative gate 6. At the same instant the acting lever engages the universal bar 20 and causes the pan to be tipped back and downward from position of Fig. 3 to that of Fig. 2; a ball from the slot 19 (relative to the actuated lever) having first been caught between the lever and the adjacent gate 6 so that the trapped ball will be forced past the gate to the proper chamber 3. When the ball is past the gate it shows in the chamber and is retained until all are released by swinging back the panel 2 by the handle 12.

All of the balls 4, but those in the slots 19, are free to roll to the back wall of the pan 15 and spread along the back angle as the pan tips backward and down; the supply of balls being sufficient in number to accomplish all the normal functions of the tally. Those balls in the slots 19 will roll to the position in Fig. 2, and be ready for a short flight to the universal bar notches 21 when the pan is freed from finger pressure on the motivated lever X of the bank of levers. As the pan is released it will instantly be rocked to forward position (Fig. 3) by a spring 30 hitched to it and pressing shoulders 31 of the pan 15 against the near, rear face of the panel 2.

Hence when the panel 2 is drawn back by its spring 9 (as the cam 10 releases the panel) all of the balls in the panel chambers 3 will fall to the pan and this will tilt back to distribute the balls over the bottom 18,—ready for a fresh start of count.

Each of the levers 24 will operate the pan and push one ball per stroke to the relative key chamber 3 in the panel to register the count of each key action. Each counting chamber 3 in this adaptation will hold one hundred balls and each chamber has an indicating scale S from 1 to 100 in graduations equal to the size of the ball used so that a column of any number of balls per chamber will at once be indicated. Each limb of each chamber 3 holds fifty balls and when the gated limb is full it will discharge over into the other limb of the inverted U as additional balls are advanced by the relative key lever. The scale of the gated limb of each chamber reads from 1 to fifty, and the relative limb scale reads from 51 to 100; both reading up from the bottom.

Means are provided to stop the count at 100 (in this case). This includes a drive plate 31' fixed to the universal bar 20 and engaging a jack lever 32 which is loosely mounted on the rod 25 and which has a cam face 33 of such curve that when the plate moves over toward the rod 25, due to downward inclination rearward of the pan 15, the nib 34 of the jack lever 32 will move up and carry a ball 4 from a nearby slot 19^a and notch 21^a in the bar 20 and press it into a total-counting chamber 3^b which is like the chambers 3 and holds 100 balls.

It will be seen that the jack lever 32 acts with each back tilt of the pan 15 regardless of which key X is pressed and therefore balls will pile up in the total chamber equal in number to all that are pressed into the chambers 3; it being understood that 100 is the maximum in this adaptation. Hence, when one hundred balls have been collected in divers chambers 3 by key action the device must be automatically locked against further strokes. This is had by reason of the fact that the nib of lever 32 is of such greater height than the nibs the levers 24 that when the total chamber 3^b is full (100 balls) then it becomes impossible to press a ball into any of item counting chambers 3. It will be understood that the total runway 3^b is so designed that it cannot hold more than 100 balls and therefore on the 101st stroke of any key X a motivated ball moves up toward but not fully past the relative gate (6) and when pressure of finger is removed from the active key then the gate springs in and forces back (out) the 101st ball. The 101st ball acts as a choke against passing of more than 100 balls to the total runway 3^b, and therefore stops passage of more balls to the counting receivers.

From the above description of the mechanical operation the following statement of use will be clear: In many arts it is desirable to know the percentage of a number of various items being counted in a total number of them. By the present tally device as the operator counts the items of the quantity he presses the various keys according to an arbitrary guide number given the kinds of items in the lot: say blue items are "1"; red are "2" and so on for ten different items or kinds. When each unit is counted its key is depressed and as the total of 100 is reached the device is automatically locked against others passing to the chambers 3.

Therefore, the operator at once knows he has completed the count and may observe in front of him on the scales S a correct display of the number of each item kind that has been counted: or what percentage of the total. This done he turns the handle 12 and dumps all of the balls 4 back into the pan for another count.

What is claimed is:

1. A percentage tally device for showing percentage of varieties counted in a total number of counts of all varieties in a given quantity; comprising a system of calibrated collecting receivers, a plane support having a supply of freely moving, like bodies passable to any of said receivers, and a plurality of differentiated keys for selecting the bodies one by one and transferring the selected body from said support to one of said receivers as determined by the key selected.

2. A percentage tally device comprising a supply of free, like objects, a plurality of like receivers in which the objects may be inserted one by one, a rockable, plane support for random movements of the objects, means to indicate the number of said objects inserted in said receivers individually, and selective means to pass the objects from said support into said receivers.

3. A percentage tally device comprising rocking, plane pan having a supply of free, like objects, a plurality of like receivers in which the objects may be inserted one by one, identic means for each receiver to indicate the number of said objects inserted in said receivers individually, selective means to pass the objects from the pan into said receivers, and means to rock the pan with selector action.

4. A percentage tally including a bank of differentiated keys, a supply of free, like objects, a plurality of identically indexed receivers for the objects and to which the objects may be passed one by one by selective operation of the keys and a supporting base from which said receivers stand

conspicuously in a common plane for display of selected objects.

5. A percentage tally having, in combination, a group of differentiated actuators, a plurality of like number indicating receivers standing in a common plane, a supply of free, like objects selective one by one by individual action of said actuators and passed thereby to the receiver of the coordinate actuator and a plane tray supporting said objects for random movement and having guides leading to the receivers and yieldably tilted so that the objects move toward the receivers and being tilted oppositely by each action of the actuators.

6. A percentage and total tally having, in combination, a pan tiltable on a horizontal axis, said pan having a plurality of object seats along its forward portion and having guides to said seats, a supply of free, like objects movable at random on the pan and to the guides and the seats, a plurality of receivers coordinate to said seats, gates leading to said receivers, differentiated key means for passing the objects one by one to receivers relative to said key means, the latter actuating the pan at each key stroke, and means to so tilt the pan as to cause movement of the objects onto said guides for movement to the said seats.

7. In a percentage tally, a supply of free objects, upright, identically number-calibrated receivers, means to move said objects one by one into said receivers by selection of receivers and a pan on which said objects are rollable to said receivers in common and which is operable by said selecting means to change the angle away from the receivers.

8. In a percentage tally, a supply of free objects, upright identic-number-calibrated receivers, a plane support for said objects and differentiated means to move the objects one by one from said support into said receivers; the latter having a plurality of visible, upright limbs each for holding a quota of the objects.

9. In a tally device, upright visible receivers each for holding a number of like-size objects in a vertical dimension less than that required for such number of said objects placed in an upright row surface to surface; said means including a receiver in which the objects lie in a continuous row surface to surface, a plane support from which said objects may pass to any receiver and identic number indicia for each receiver showing the number of such objects in each.

10. In a tally, a standing panel having a plurality of clearly visible, upright chambers, a supply of free objects to slide in a single file in each chamber, means to pass the objects to the chambers, a holder for the free objects and from which the objects are passable to all of the chambers.

11. A percentage tally having, in combination, a movable holder, a supply of free, like objects moving at random on said holder, a plurality of like counting receivers, and a bank of actuators, coordinate to the receivers, for selecting said objects from said holder and passing them one-by-one to the receivers of the acting actuators.

12. A percentage tally having, in combination, a movable holder, a supply of free, like objects moving at random on said holder, a plurality of like counting receivers to any of which the objects are passable from said holder, a bank of actuators coordinate to the receivers for selecting objects and passing them one-by-one to the receivers of the acting actuators, a total counting device, and means combined with the holder for passing one object to the said device for each object passed to the other receivers.

13. A percentage tally having, in combination, a pivotally mounted pan tilting on a horizontal axis, said pan having a notched portion along its front edge and being provided with guides to said notches, a supply of free, like objects movable on the guides and to the notches, a plurality of receivers coordinate to said notches, gates leading to said receivers, and differentiated key means for passing one-by-one of said objects to receivers coordinate to said key means; the latter actuating said pan at each key stroke.

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