Oct. 23, 1951 A. VAN VEEN 2,572,784

HAND-OPERATED COUNTER OR TALLY

Filed March 2, 1949 2 SHEETS—SHEET 1

FIG. 1

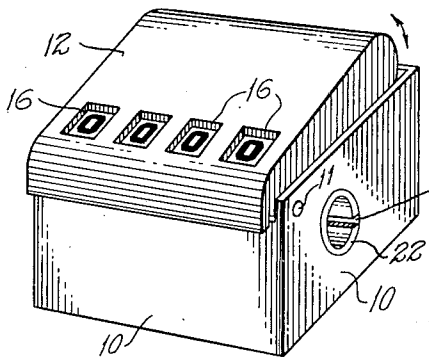


FIG. 2

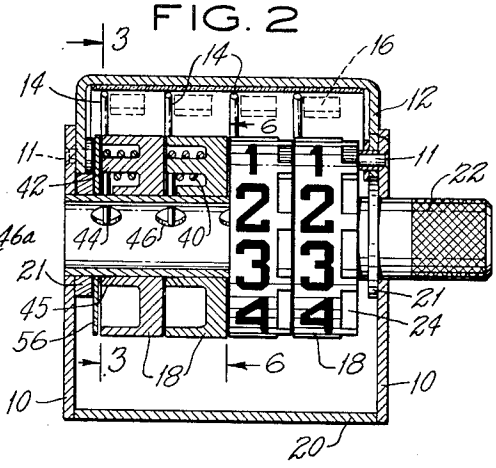


FIG. 3

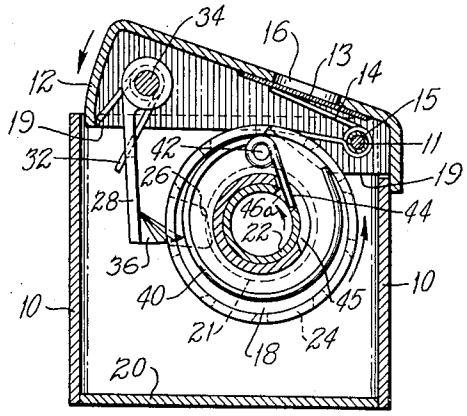


FIG. 4

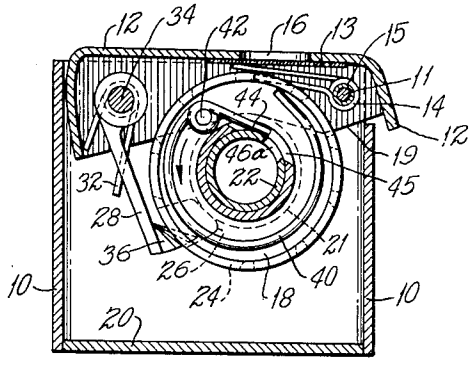


FIG. 5

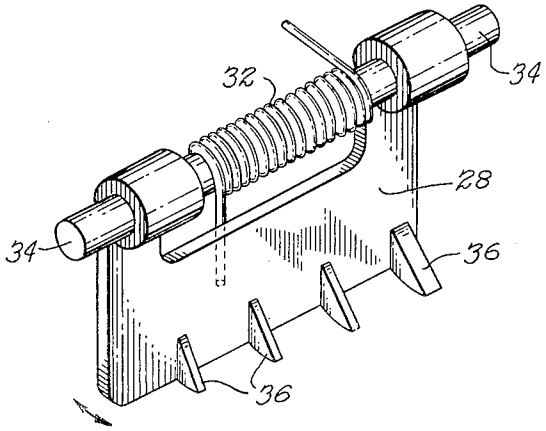
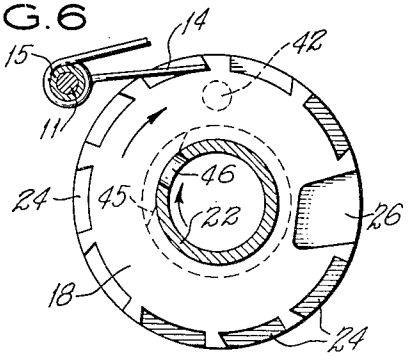


FIG. 6



INVENTOR
ANTON VANVEEN
BY Joseph F. Scholfield
ATTORNEY

Oct. 23, 1951 A. VAN VEEN 2,572,784

HAND-OPERATED COUNTER OR TALLY

Filed March 2, 1949 2 SHEETS—SHEET 2

FIG. 7

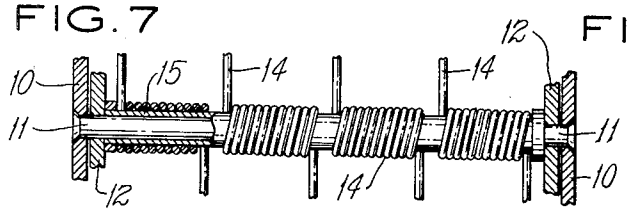


FIG. 8

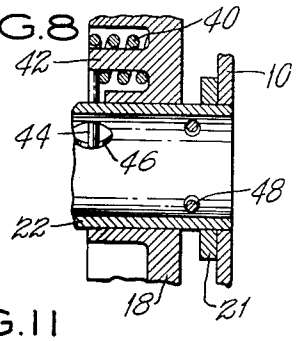


FIG. 9

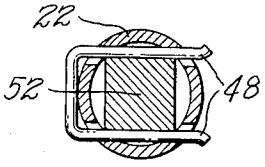


FIG. 10

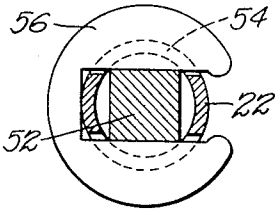


FIG. 11

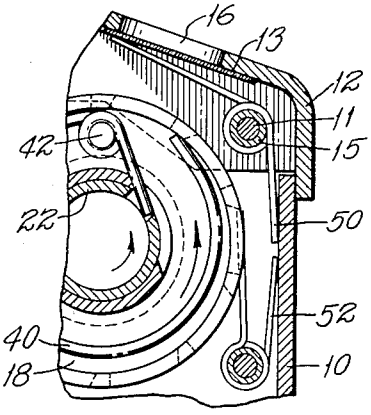


FIG. 13

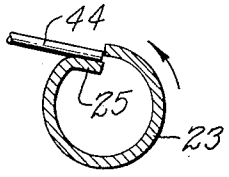


FIG. 14

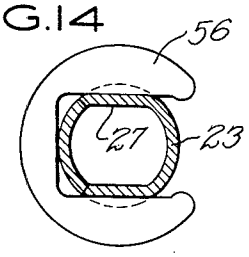


FIG. 16

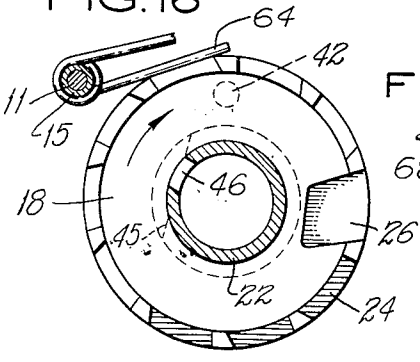


FIG. 17

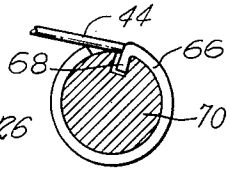


FIG. 12

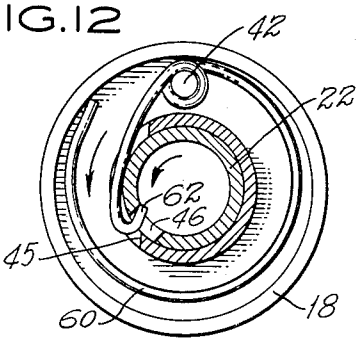


FIG. 15

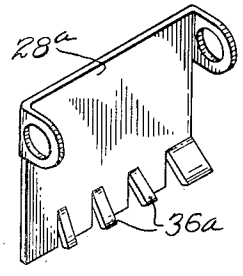


FIG. 18

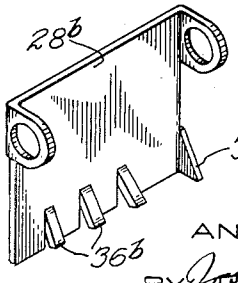
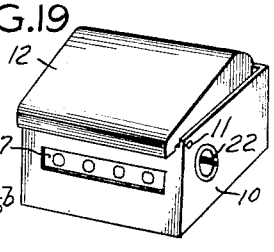


FIG. 19



INVENTOR
ANTON VAN VEEN
BY Joseph H. Schofield
ATTORNEY

Patented Oct. 23, 1951

2,572,784

UNITED STATES PATENT OFFICE

2,572,784

HAND-OPERATED COUNTER OR TALLY

Anton Van Veen, Canton Center, Conn.

Application March 2, 1949, Serial No. 79,288

17 Claims. (Cl. 235—117)

1

This invention relates to a tally or counter and particularly to a small handy and usually manually operated counter having a plurality of digit wheels positioned closely adjacent each other on the same axis.

An object of the present invention is to provide a simple inexpensive and easily manufactured counter, one of the frame members or casing of which, such as the cover, is hinged and forms the actuating member for the step by step operation of the individual digit wheels.

Another object of importance of the invention is to provide a simple digit wheel re-setting device for a manual or other form of counting or tallying device in the form of a central, preferably hollow, shaft on which the digit wheels are rotatably mounted and enabling the digit wheels to be promptly advanced to their zero indicating positions.

Another object of the invention is to provide a construction enabling the parts of the tally or counter to be readily assembled and retained in their assembled positions.

Other features that are important are the provision of retaining members for the digit wheels on opposite ends of the shaft to facilitate the assembly of the counter, and also to provide an improved form of operating lever for the digit wheels which may be made of a stamping from sheet metal.

And finally, it is an object of the invention to provide resilient means pressing against the periphery of the digit wheels to prevent accidental rotative movement of the wheels, to position and retain the wheels in their proper rotative position at each actuation of the counter to properly align the numerals, and to prevent retrograde movement of the wheels.

With the above and other objects in view the invention may include the features of construction, assembly and operation set forth in the following specification and illustrated in the accompanying drawings.

In the accompanying drawings annexed hereto and forming a part of this specification, I have shown the invention embodied in a simple hand tally having four closely adjacent digit wheels mounted on a common axis but it will be understood that the invention can be otherwise embodied and that the drawings are not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

In the drawings:

Fig. 1 is an isometric view of a preferred form

2

of tally made in accordance with the present invention;

Fig. 2 is a vertical sectional view of the tally substantially as shown in Fig. 1, some of the parts being cut away to more clearly show their construction;

Fig. 3 is a transverse vertical sectional view taken on the plane of the line 3—3, in Fig. 2;

Fig. 4 is a view similar to Fig. 3 with the parts shown in another operative position;

Fig. 5 is an isometric view of the actuating lever for operating the digit wheels;

Fig. 6 is a side view of one of the digit wheels, the view being taken from the opposite side of the wheel shown in Figs. 3 and 4, and on line 6—6 of Fig. 2;

Fig. 7 is a detail view of the springs disposed between the hinged cover and the individual digit wheel peripheries and showing the construction by which the cover is hinged to the casing;

Fig. 8 is a detail view of an assembling and retaining means for the parts mounted on the digit wheel supporting and resetting shaft;

Fig. 9 is a cross-sectional view of the retaining means for the assembled parts on the re-set shaft shown in Fig. 8;

Fig. 10 is a similar view of an alternate form of retaining means for parts on the re-set shaft;

Fig. 11 is a transverse sectional view showing an alternate spring means for the casing cover and digit wheels;

Fig. 12 is a transverse view of one of the digit wheels showing a modified form of spring reset pawl;

Fig. 13 is a transverse sectional view of a modified form of hollow mounting and re-set shaft for the digit wheels;

Fig. 14 is a transverse sectional view of a hollow re-set shaft having a modified form of retaining means for the retaining flange;

Fig. 15 is a perspective view showing a modified form of operating lever for the digit wheels;

Fig. 16 is a cross-sectional view of an alternate method of mounting and operating the digit wheel retaining spring;

Fig. 17 is a detail cross-sectional view showing another construction of re-set and wheel supporting shaft;

Fig. 18 is a view similar to Fig. 15 showing a modified form of operating lever; and

Fig. 19 is a view similar to Fig. 1 on a smaller scale and showing a slight modification.

In the above mentioned drawings there has been shown but one complete embodiment of the invention and several alternate forms of some

of the parts which are now deemed preferable, but it is to be understood that changes and modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

Briefly, and in its preferred aspect, the invention may include the following principal parts: First, a casing of box-like or rectangular form preferably made up of sheet material such as metal or other rigid material cast or otherwise formed into the desired shape; second, a side member, preferably the top of the box or casing, pivotally supported adjacent one edge such as the rear vertical surface of the casing so that this top or cover member may be actuated manually or mechanically during the operation of the counter; third, a series of digit wheels mounted in side by side relation on the same axis and rotatably mounted on a common axis parallel to the pivotal axis of the actuating cover; fourth, a cast or stamped arm or lever pivotally mounted adjacent the free end of the pivotally mounted member and having projections of progressively varying length adapted to engage notches formed in peripheral portions of the digit wheels; fifth, a spring or springs having their ends resiliently engaging the under surface of the cover member and a part of the casing so that the cover will normally be held in its upper position; sixth, springs having one of their ends bearing against the peripheral surfaces of the digit wheels and their opposite ends bearing against the inner surface of the casing or cover; seventh, individual springs housed within each digit wheel one end of each of which forms a resilient resetting pawl; and eighth, a reset shaft rotatably mounting the digit wheels and having a slot or openings formed therein to form an abutment against which the end of each housed spring forming the reset pawl may engage when the counter is being reset to its zero indicating position.

Referring more in detail to the figures of the drawings and first to Figs. 1 to 7, there is shown a box-like casing 10 preferably made of sheet or moulded material. Pivotally mounted on a transverse shaft 11 extending through the casing 10 in a direction parallel to the bottom surface and adjacent the rear wall or surface of the casing is a cover member 12. Springs 14, presently to be more fully described, normally hold the cover 12 toward its open position. Apertures 16 are provided in a portion of the cover member 12 through which one numeral on each of the surfaces of the digit wheels 18 may be observed. An alternative viewing opening may if desired be cut as shown at 17 in Fig. 19 in one of the side walls of the casing 10 through which a numeral of each digit wheel 18 may be seen. The casing 10 as shown in the figures of the drawing includes four side or wall portions to which a bottom plate 20 may be integral, soldered or otherwise permanently secured.

To assemble the cover 12 and springs 14 a small tube 15 extends within and from side to side of the cover and is positioned at its opposite ends adjacent openings formed within the turned down side walls of the cover 12. The springs 14 are mounted on this tube 15 and the cover 12, with the tube 15 and springs 14 in place, is then mounted in position on the casing 10 by the small shaft 11 passing through the tube 15 and having its ends entering openings formed in the opposite side walls of the casing 10.

The pivotal movement of the cover 12 is limited in its upward direction by the turned down rear portion of the cover, in the upper limiting position of the cover 12; this turned down portion engages against the rear wall of the casing 10. Downward movement of the cover 12 may be limited by the turned down side surfaces of the cover 12 as shown at 19 in Figs. 3 and 4 engaging in the lowermost position of the cover against spacers or washers 21 on the wheel supporting shaft 22.

Within the casing 10 and preferably mounted on an axis parallel to the axis about which the cover member 12 tilts is the shaft 22, hollow as shown, and providing a mounting or bearing on which the digit wheels 18 may rotate. This shaft 22 also serves as a means, presently to be described, to reset the digit wheels 18 to their zero positions. The digit wheels 18 of which there may be any desired number are identical and have numerals from 0 to 9 printed or otherwise formed equally spaced on their peripheries. Each wheel 18 also has ten equally spaced notches 24 in its periphery, one of which in each wheel as shown at 26 is much deeper than the other nine. The position of the deep notch 26 will be such relative to the numerals on the wheel that the actuating lever 28 (presently to be more fully described) will enter the deeper notch when the "nine" is visible through its viewing apertures 16 in the cover 12 or aperture 17 in the casing.

Pivotally mounted adjacent the free end of the cover 12 is the actuating arm or lever 28 for the digit wheels 18. A spring 32 surrounding the shaft 34 on which the lever 28 is mounted in the cover 12 has one of its ends bearing against the under side of the cover 12 and the other end pressing against the lever 28 to force it toward the peripheries of the wheels 18. The arm or lever 28 at its lower or free end has projections 36 of successively increasing length adapted to enter the peripheral notches 24 and 26 in the wheels. It will be seen from the above that downward movement of the cover 12 will cause at least one projection 36 of the arm 28 to enter a notch 24 and advance that particular wheel 18 one digit. When a projection 36 enters the deep notch 26 of a wheel 18 the adjacent wheel is actuated simultaneously with the wheel into the deep notch of which the projection has entered. As the operation of digit wheels of counters by projections on a lever entering peripheral notches of different depth in the wheels is old and well-known to successively actuate the wheels, further description of the operation is thought to be unnecessary. Each downward movement of the cover 12 indicates a successively higher numeral on the wheels 18 as viewed through the aperture 17 or individual apertures 16. To support the arm or lever 28 within the cover 12 the ends of shaft 34 enter openings formed in the turned down side portions of the cover. The lever 28 is thus free to swing toward and from the wheels.

The lever 28 shown in Fig. 5 is of cast or machined construction, the projections 36 of which are preferably milled or otherwise cut from the cast or forged blank. In Fig. 15 is shown an alternate form of lever 28*a* made by stamping and bending a piece cut from steel metal. The openings for shaft 34 are formed in bent projections in the opposite sides of the metal piece and the projections 36*a* are formed by slitting the edge farthest away from the openings for shaft 34 and bending the slitted portions to successively greater angles. Fig. 18 shows a slight modification of the lever 28*b* in which one of the digit projections 36*b* is bent at a right angle to the side edge of the lever. In both forms of lever or arm 28 and 28*a*

in Figs. 5 and 15 the projection 36 at the "units" end of the series of digit wheels, which is subject to the greatest wear, may be made heavier or wider than the others as shown.

To place a frictional drag on the digit wheels 18 use is made in the embodiment of the invention shown in Figs. 1 to 7 of the small light springs 14. These springs 14 and their alternate forms shown in Figs. 11 and 16 have helical portions surrounding tubes such as 15 on shafts such as 11 for supporting the cover 12. One end of each spring 14 bears against the under surface of the cover 12 and the opposite end of each spring bears individually against the periphery of a digit wheel 18 so that each digit wheel is resiliently engaged by one of the springs. Figs. 3 and 4 show springs 14 in their two extreme positions. The ends of the springs 14 bearing against the wheels 18 are sufficiently long to rest between one edge of a notch 24 with an intermediate portion of the spring riding over the wheel surface between the projections. There is thus a light pressure always exerted against each wheel 18 by one of the cover lifting springs 14. This pressure prevents inadvertent movement of the wheels 18 and limits movement of the wheels to that imparted to them by movement of the operating arm 28 so that with each actuation of the cover 12 the wheels will be moved to successive digit disclosing positions. The springs 14 also prevent retrograde movement of the wheels 18 for the reason that the spring ends bear against an edge of the projections on wheels 18. This is best shown in Fig. 6 which shows the spring end abutting against one of the projections so that the wheel 18 cannot move backward. Forward movement of the wheel in the direction indicated by the arrow will slightly and resiliently raise the lower arm of the spring and, when the movement of the wheel is completed, the spring 14 will again drop into an adjacent groove. This assures each wheel 18 being moved accurately to its successive indexed position to properly align the numerals on each wheel. In addition to applying light frictional pressure against the wheels 18 during movement of the wheels and preventing retrograde movement of the wheels by the ends of the springs abutting against a side surface of a projection between the notches 24, the wheels are always aligned properly relative to their viewing apertures.

Housed in each wheel 18 within an annular recess on one side is a spring 40, an intermediate helical portion of which fits around a pin 42 preferably formed as an integral portion of the wheel. The longer and arcuate end of each spring 40 fits within and adjacent the rim portion of the wheel and applies pressure to urge the opposite shorter end which forms the resilient resetting pawl toward the central portion of the wheel. A portion of one side of the hub portion of each wheel 18 is cut away as shown at 45, so that the spring ends 44 forming the resetting pawls ride directly on the supporting hollow shaft 22 for the wheels 18 and exert a light pressure against the shaft. Inward movement of the spring ends 44 is limited by this cut away portion 45 of the wheel hub so that the end can move radially inward to abut against a side of the slot or openings in the shaft 22 but, due to the form of the cut away portion, cannot enter the tubular opening through the shaft which would interfere with the assembling of the device and with resetting the wheels 18 to zero position. An alternate form of resilient resetting pawl presently to be described is shown in Fig. 12.

The central supporting shaft 22 is rotatably mounted within opposite side walls of the casing 10 and is employed, in addition to rotatably supporting the wheels 18 on a single axis, to reset the digit wheels 18 to their zero positions by manual rotation thereof. For this purpose the shaft 22 may be provided at spaced positions with openings 46, as seen in Fig. 2 or with an elongated slot 46a, as shown in Figs. 1, 3 and 4. These openings 46, if the shaft 22 is not slotted, are so positioned that each is in alignment with one of the springs 40 within the wheels 18 so that an end 44 of each of the springs 40 may enter an opening 46 or enter the elongated slot when the shaft 22 is rotated to bring the slot or openings below the spring ends 44. During the counting operation the springs 40 ride over the openings or slot 46 with rotation of the wheels 18 in the direction shown so that there is no interference with the step by step operation of the wheels 18. By rotation of the supporting shaft 22 manually by its extended end or by means inserted within its central opening in the direction indicated by the arrow the individual spring ends 44 abut against an end surface of an opening or the slot 46 and continued rotation of the shaft 22 then rotates the wheels 18. Alternate forms of hollow resetting shafts presently to be described are shown in Figs. 13, 14 and 17.

Continued rotation of the shaft 22 will pick up and rotate the different wheels 18 until all are being rotated with the shaft. As the openings or slot 46 in the shaft 22 are longitudinally disposed and the numerals on the digit wheels are in identical relation to the pins 42 and the spring ends 44, the rotation of the shaft 22 may be stopped with all wheels 18 having their zeros directly below the apertures 16 in the cover 12 or below the elongated viewing opening 17.

Fig. 13 shows an alternate form of wheel supporting shaft 23 in which the shaft is slitted in the portion over which the wheels 18 operate and one edge of the slit 25 is bent slightly inwardly to form an elongated abutment against which the spring end 44 engages during the resetting of the wheels 18. Also the inwardly bent portion 25 of this hollow shaft 23 forms a ledge against which the spring end 44 may rest. With the shaft 23 slitted as shown the spring end 44 is prevented from moving radially inward to interfere with the assembly of the parts, or with the inserting of a resetting tool within the shaft.

Fig. 17 shows another modified form of hollow reset shaft in that the tube 66 is slitted longitudinally and one edge 68 bent inwardly at right angles to form an abutment against which the end of spring pawl engages during the resetting operation. To effect the resetting of the wheels 18 a tool 70 of circular cross-section may be inserted within the tube 66. Extending longitudinally of the tool 70 is an elongated slot within which the bent edge 68 of tube 66 may enter.

To retain the shaft 22 in assembled position one means may comprise a wire staple 48 as shown in Fig. 9, positioned transversely through the shaft 22, there being apertures formed therein for that purpose. These apertures are located so that the staple will be disposed between one of the digit wheels 18 and a spacer collar 21 located adjacent the inner surface of the casing 10.

By means of the staple a non-circular section of the opening within the hollow shaft is formed into which a square or other form of tool 52 may be inserted to rotate the shaft for resetting the

wheels 18 to their zero positions. If desired, however, the end of shaft 22 may be extended as shown in Fig. 2 so that the shaft may be rotated manually by grasping its knurled end.

As an alternate manner of retaining the parts assembled on the shaft 22 and for retaining the shaft in position within the casing 10 transverse opposed slots 54 may be milled in the shaft 22 and a slotted washer 56 snapped in position on the shaft. This washer will be positioned in the same longitudinal position on the shaft 22 as the staple 48 so that the washer will lie between one of the wheels 18 and a spacer 21.

A third method of retaining the parts on the resetting shaft 22 is to indent opposite portions as shown in section in Fig. 14, these dented portions 27 being located longitudinally similarly to the slots 54. Preferably the indented portions 27 are used in the form of resetting shaft shown at 23 in Fig. 13 as the slitting of the shaft and its indenting may be done in a single operation. This is advantageous for the reason that the angular relationship between the slitted and indented parts will always be the same. With any group of counters used in an aligned series, a resetting tool such as a bar 52 may therefore extend from end to end of the series within each of their hollow shafts.

In Fig. 11 is shown a modified form of spring construction for actuating the cover 12 in one direction and resiliently pressing against the periphery of the digit wheels 18. One or more springs 59 are provided having their central helical portion wrapped about a transverse shaft similar to shaft 11 and tube 15 within the cover. One end of spring or springs 59 bears against the inner surface of the rear wall of the casing 10. The other end bears against the inner surface of the cover 12. For resiliently bearing against the peripheries of the digit wheels 18 are provided separate and independent springs 52 having their intermediate helical portions wrapped about a transverse shaft within the casing 10 and parallel to the axis of the wheels 18. One end of each of these springs 52 bears against the periphery of a digit wheel 18, the opposite ends bearing against the rear wall of the casing 10.

Fig. 16 shows another form of spring generally similar to spring 14, one end of which engages the under surface of the cover 12 and its mid-portion surrounds the shaft 11 and tube 15. The opposite end of this spring 64, as shown in this figure, rides over the projections formed on the notched digit wheels 18. With the spring end 64 in contact with adjacent projections the digit wheel will be retained against accident rotation and in its proper rotative position relative to the viewing apertures for its digits.

In Fig. 12 is shown a modified form of reset spring pawl housed within each digit wheel 18. These springs 60 have intermediate portions fitting over the lugs 42 and have long arcuate portions bearing at their ends against the inner surface of the periphery of the wheels 18 similarly to the springs 40. The pawl end 62 of the springs 60, however, is different and extends about the hub portion of the wheel 18 in the opposite direction than pawl spring 44. At its end the pawl 62 has a hook portion which engages over the end of the slot or one of the apertures in the reset shaft 22. During normal operation the hook end 62, with step by step rotative movement of the wheel 18, rides over the aperture or slot in the reset shaft 22 but, with rotation of the reset shaft, the hook end 62 drops into the slot or aperture and rotates the wheel 18 to its zero position.

I claim:

1. A counter having a plurality of digit wheels rotatably mounted co-axially within a casing, a cover pivotally mounted relative to the casing, resilient means normally holding the cover in one limited position, and a lever pivotally attached to the cover and actuated by movement of the cover to individually rotate said digit wheels, said cover having apertures through which digits on said wheels may be viewed.

2. A counter having a plurality of digit wheels rotatably mounted co-axially within a casing, a cover pivotally mounted relative to the casing, resilient means normally holding the cover in one limited position, a lever pivotally attached to the cover and actuated by movement of the cover to individually rotate said digit wheels, said cover having apertures through which digits on said wheels may be viewed, and means to limit the pivotal movements of said cover.

3. A counter having a plurality of digit wheels rotatably mounted co-axially within a casing, a cover pivotally mounted relative to the casing, a lever pivotally attached to the cover and actuated by movement of the cover to rotate said digit wheels, resilient means normally holding the cover in one limited position, said cover having apertures through which digits on said wheels may be viewed, and down turned flanges on said cover limiting pivotal movements of said cover.

4. A counter having a plurality of digit wheels rotatably mounted co-axially within a casing, a cover pivotally mounted relative to the casing on an axis parallel to the axis of said wheels, means actuated by movement of the cover to rotate said digit wheels, down turned flanges on said cover limiting downward movement of said cover, and a flange at the rear of said cover limiting upward movement of the cover.

5. A counter having a plurality of digit wheels rotatably mounted within a casing, a cover pivotally mounted on a transverse shaft within said casing, an arm pivotally mounted on said cover having projections adjacent its free end adapted to engage and step by step advance said wheels when said cover is actuated, springs surrounding said shaft, one of the ends of each of said springs bearing against the inside surface of said cover, and the opposite ends thereof bearing individually against the periphery of the several wheels.

6. A counter having a plurality of digit wheels rotatably mounted within a casing, a cover pivotally mounted on a transverse shaft within said casing, an arm pivotally mounted on said cover having projections adjacent its free end adapted to engage and step by step advance said wheels when said cover is actuated, a sleeve surrounding said transverse shaft, springs surrounding said sleeve, one of the ends of each of said springs bearing against the inside surface of said cover, and the opposite ends thereof bearing individually against the periphery of the several wheels.

7. A counter having a plurality of digit wheels rotatably mounted within a casing, a cover pivotally mounted within said casing, down turned flanges on opposite sides of said cover, an arm pivotally mounted on said cover having projections adjacent its free end adapted to engage and step by step advance said wheels when said cover is actuated, a sleeve extending between said flanges and having its ends secured therein, springs surrounding said sleeve, one of the ends

of each of said springs bearing against the inside surface of said cover, and the opposite ends thereof bearing individually against the periphery of the several wheels, and a shaft extending through said sleeve having its ends secured to said casing.

8. A counter having a plurality of digit wheels rotatably mounted within a casing, a cover pivotally mounted within said casing, an arm pivotally mounted on said cover having projections adjacent its free end adapted to engage and step by step advance said wheels when said cover is actuated, a sleeve secured within said cover, springs surrounding said sleeve, one of the ends of each of said springs bearing against the inside surface of said cover, and the opposite ends thereof bearing individually against the periphery of the several wheels, and a shaft having its ends secured to said casing extending freely within said sleeve.

9. A counter having a plurality of digit wheels rotatably mounted within a casing on a common axis, a cover pivotally mounted on said casing, means to advance said digit wheels by operation of said cover, springs interposed between said cover and wheels one end of each spring engaging against said cover, whereby said cover is resiliently retained in one position by said springs, and the opposite ends of said springs individually engage the periphery of said wheels.

10. A counter having a plurality of digit wheels rotatably mounted within a casing on a common axis, a cover pivotally mounted on said casing, said digit wheels having spaced notches in their peripheries, means to advance said digit wheels by operation of said cover, springs interposed between said cover and wheels, one end of each of said springs engaging against said cover and the opposite ends of individual springs lying in the notch of one of said wheels whereby said cover is resiliently retained in one position by said springs, and said springs individually engage the periphery of said wheels.

11. A counter having a plurality of digit wheels rotatably mounted within a casing on a common axis, a cover pivotally mounted on said casing, said digit wheels having spaced notches in their peripheries, means to advance said digit wheels by operation of said cover, helical springs interposed between said cover and wheels, one end of each spring engaging against said cover and the opposite end of each spring lying within a notch in said wheels whereby said cover is resiliently retained in one position by said springs, and said springs individually, frictionally and resiliently engage against the periphery of said wheels.

12. A counter having a casing, a plurality of digit wheels having spaced notches in their peripheries rotatably mounted within said casing on a common axis, a cover pivotally mounted on said casing, a transverse shaft within said casing forming said pivotal support, a sleeve surrounding said shaft, means to advance said digit wheels by operation of said cover, helical springs surrounding said sleeve and interposed between and having their opposite ends respectively engaging said cover and wheels, whereby said cover is resiliently retained in one position by said springs, and said springs individually engage the notched periphery of said wheels.

13. A counter having a casing, a plurality of digit wheels rotatably mounted within said casing, a cover pivotally mounted on said casing, a lever pivotally mounted on said cover and movable to actuate said digit wheels by pivotal movement of said cover, a spring normally retaining said cover in one position, and springs mounted within said casing said springs normally pressing individually against the periphery of a digit wheel at one end and against an inner wall of said casing at their opposite ends.

14. A counter having a plurality of digit wheels mounted within a casing on a common axis, a cover pivotally connected to said casing, means attached to said cover to advance said digit wheels individually step by step, individual springs resiliently engaging said wheels, said cover being engaged by said springs and serving to actuate said wheels when moved in a direction to increase the pressure of said springs, whereby when said cover is actuated the pressure of said springs against said wheels is increased.

15. A counter having a plurality of digit wheels mounted within a casing on a common axis, a pivotally mounted cover for said casing, a lever pivotally connected to said cover and movable with said cover to individually advance said digit wheels step by step, and spring means frictionally limiting the forward step by step movement and positively preventing retrograde movement of said wheels.

16. A counter having a plurality of digit wheels mounted within a casing on a common axis, a pivotally mounted cover for said casing, a lever pivotally connected to said cover and movable with said cover to individually advance said digit wheels step by step, and resilient means individually engaging the peripheries of said wheels and frictionally limiting the forward step by step movement thereof and positively preventing retrograde movement of said wheels.

17. A counter having a casing, a plurality of digit wheels rotatably mounted co-axially therein, a pivotally mounted lever engaging said wheels whereby actuation of said lever will rotate said wheels step by step, said lever comprising a flat member having projections along its free edge individually engaging said wheels, said projections being bent to successively greater angles and projections formed at the pivotal end of said lever bent at right angles to said lever and forming a pivotal mounting for said lever.

ANTON VAN VEEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
42,274	Clapp	Apr. 12, 1864
80,372	Taylor	July 28, 1868
206,480	Phipps	July 30, 1878
430,334	Buehrig	June 17, 1890
456,196	Locher	July 21, 1891
526,885	Wolfe	Oct. 2, 1894
628,229	O'Connor	July 4, 1899
869,150	Warren	Oct. 22, 1907
888,944	Vardeman	May 26, 1908
928,019	Bartow	July 13, 1909
1,071,664	Girson	Aug. 26, 1913
1,841,951	Hopper	Jan. 19, 1932
1,956,152	Kempf	Apr. 24, 1934
2,173,773	Aamot et al.	Sept. 19, 1939
2,238,920	Studley	Apr. 22, 1941
2,259,159	Gilbert	Oct. 14, 1941

FOREIGN PATENTS

Number	Country	Date
35,233	Germany	Apr. 16, 1886