Sept. 8, 1964 H. B. VROOM 3,147,918

COUNTER MECHANISM

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FIG. 1

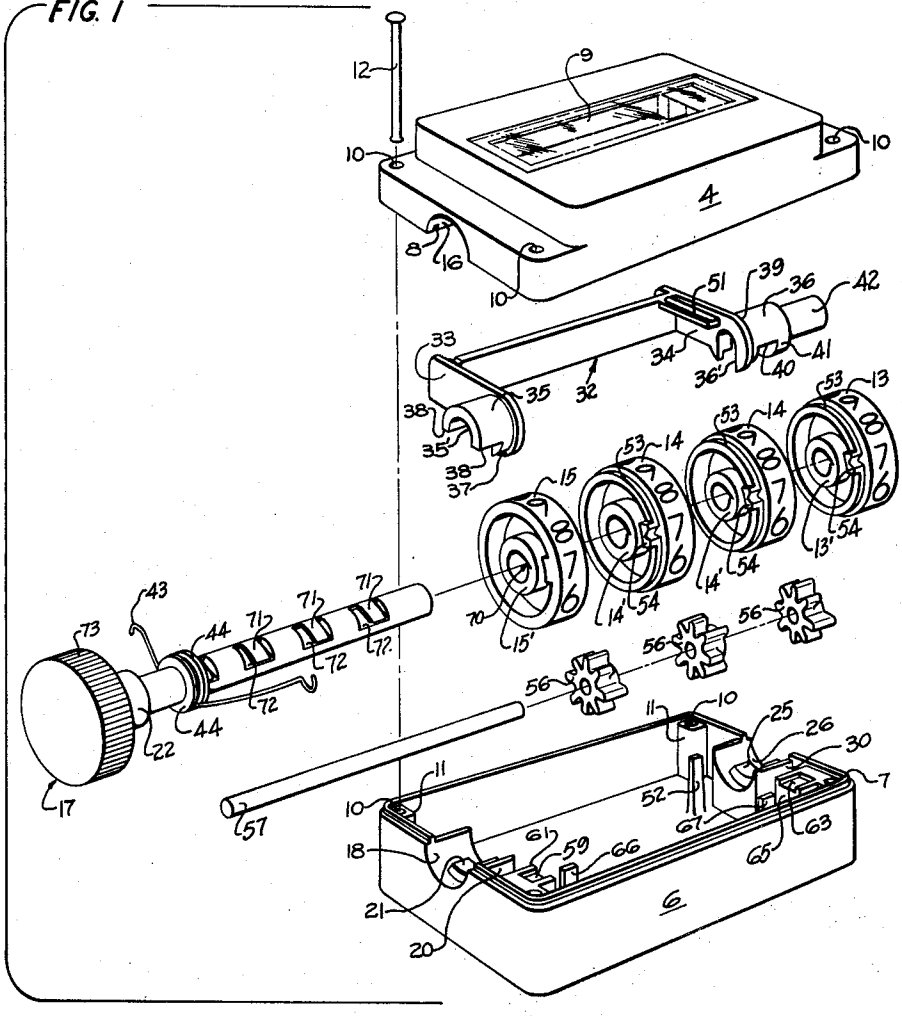
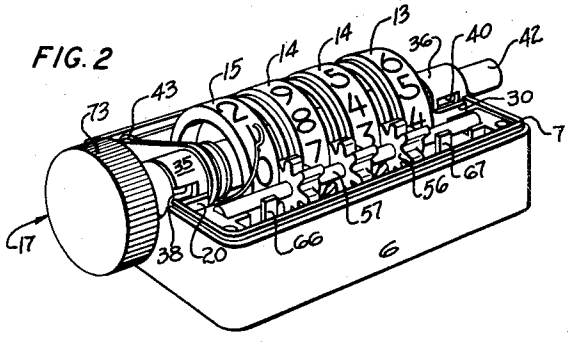


FIG. 2



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COUNTER MECHANISM

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FIG. 3

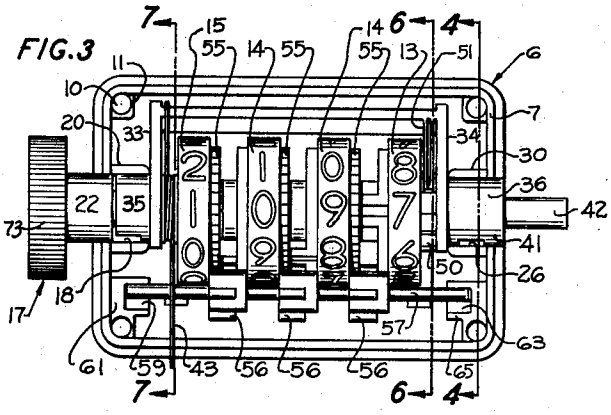


FIG. 4

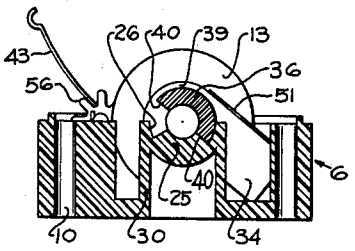


FIG. 5

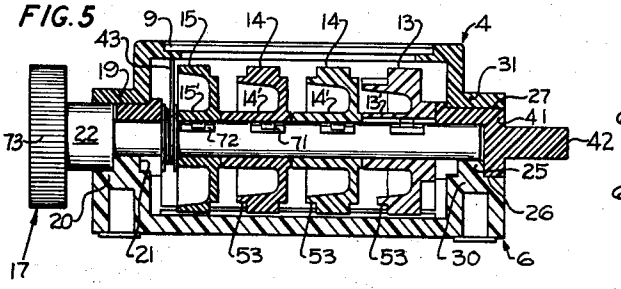


FIG. 6

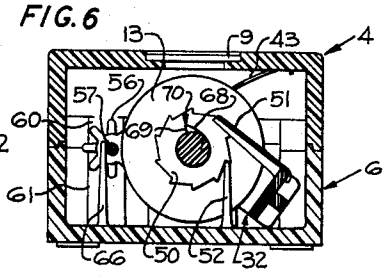


FIG. 8

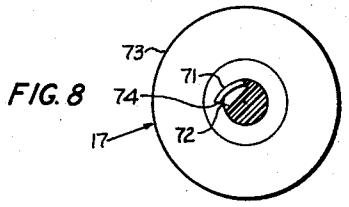


FIG. 7

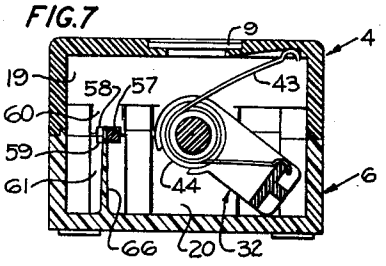
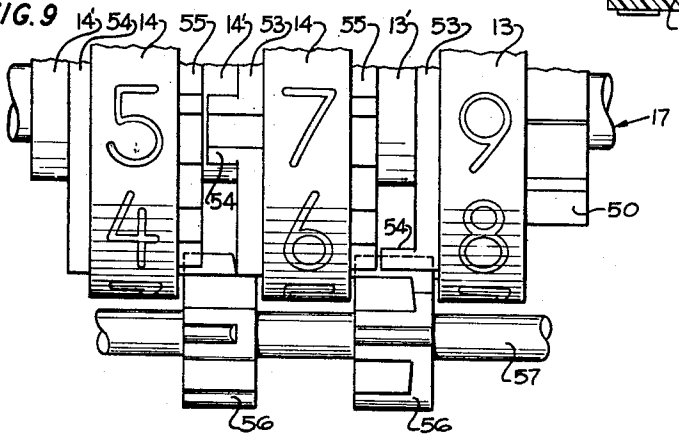


FIG. 9



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3,147,918

COUNTER MECHANISM

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Filed Feb. 26, 1962, Ser. No. 175,429
18 Claims. (Cl. 235—117)

The present invention relates to counters and, more particularly, to resettable counters of improved design and construction susceptible of inexpensive mass production.

An object of the present invention is to provide a low-cost counter which is efficient and accurate in operation, attractive in appearance and easy to read, and which has many of the refinements of more expensive counters, such as a drive arrangement for step-by-step advancement of the counter wheels and provision for quick and convenient resetting.

A more specific object of the invention is to provide a resettable counter of the type referred to having a minimum of parts and configured so that all or a majority of the parts may be fabricated from plastics using molding or other inexpensive forming techniques permitting rapid low-cost production and whereby the counter may be rapidly and economically assembled by a simple nesting of the parts with a minimum of skill and effort.

A further object of the invention is to provide such a counter in which the resetting function is carried out by a simplified arrangement of parts and wherein the casing, in addition to its function of housing the counter, also provides certain of the operating parts for the counter mechanism.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construtcion, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is an exploded view in perspective of an embodiment of the counter of the present invention;

FIG. 2 is a perspective view of the assembled counter with its top casing section removed;

FIG. 3 is a plan view of the counter with its top casing section removed;

FIG. 4 is a cross-sectional view taken along the lines 4—4 of FIG. 3;

FIG. 5 is a vertical cross-sectional view of the counter taken along the longitudinal center line thereof;

FIG. 6 is a cross-sectional view taken along line 6—6 of FIG. 3 with the top casing section of the counter in place.

FIG. 7 is a cross-sectional view similar to FIG. 6 but taken along line 7—7 of FIG. 3;

FIG. 8 is an end view partially in cross section of the reset shaft; and

FIG. 9 is an enlarged fragmentary plan view of the first three number wheels of lower order and a portion of the transfer mechanism.

Referring to the embodiment of the invention shown in the drawings, the counter mechanism is housed in a casing formed of top and bottom generally box-like shell sections designated 4 and 6, respectively, and which are adapted to be fitted together by means of the complementary tongue and groove arrangement 7 and 8 provided along the wall edges of each of the casing sections to thereby form a complete enclosure. A mounting hole 10 is provided in each of the four corner posts 11 located at and reinforcing each of the casing corners, for receiving rivets 12 or the like to thereby permanently attach the casing sections together.

The counting mechanism housed in the casing includes a number wheel 13 of lowest order, a plurality of successively higher order number wheels 14 and a number wheel 15 of highest order, each being provided on its peripheral surface with numerals zero to nine in consecutive order. The number wheels are mounted through their hub portions 13', 14' and 15' in side-by-side relationship on a wheel-supporting and reset shaft 17 extending longitudinally in the casing and are viewed through a window 9 provided in the top casing section 4. The reset shaft 17 extends into the casing through the opening between a pair of semi-circular bearing portions 16 and 18 provided in enlarged portions or bosses 19 and 20 of the end walls of the top and bottom casing sections, respectively, and which form a continuous circular aperture of suitable size to receive the enlarged hub portion 22 of the reset shaft as best shown in FIG. 5. The shaft 17 is supported adjacent the hub 22 on a projecting arcuate segment 21 formed on the lower bearing 18 and at its other end on a similar arcuate raised segment 25 projecting centrally from the semi-circular bearing surface 26 formed in an enlarged portion or boss 30 of the end wall of the lower casing shell 6. A semi-circular bearing surface 27 provided in the enlarged portion or boss 31 of the end wall of the upper casing shell 4 is in registry with bearing surface 26 and forms therewith a journal opening for a purpose to be described.

Bracketing the number wheels 13–15 is a generally U-shaped frame or yoke 32 mounted for oscillating movement about the shaft 17. The frame 32 is formed with a pair of arms 33 and 34 which are provided at their ends with hubs 35 and 36 which are slotted as indicated at 35' and 36' so that the hubs may be assembled on the shaft 17 by transverse movement into seated position on the shaft 17. The hub 35 has a locating flange 37 which abuts against the inner surface of the bosses 19 and 20 of the end walls of the casing and is provided with a pair of radial shoulder 38 which are adapted to engage alternately with the ends of the arcuate segment 21, thereby limiting oscillating movement of the frame 32. The hub 36 is similarly formed with a locating flange 39 for abutting against the inner surfaces of the bosses 30, 31 and is formed with radial shoulders 40 for engagement against the ends of the segment 25 to also serve as a limit stop for oscillating movement of the frame 32. In addition, the hub 36 is formed with a circular disc-like end portion 41 which is seated in the outer or extreme right-hand portion of the bearings 26, 27 as viewed in the drawings. Extending from the circular end portion 41 and integrally formed thereon is a projecting stub shaft 42 which projects outwardly from the casing, and by means of which the counter may be driven. When the two casing shells 4 and 6 are assembled together, the hubs of the frame 32 and the reset shaft 17 are locked in assembled position, the frame 32 being journaled for limited oscillating movement and the shaft 17 being journaled for rotational movement. A spring 43 extending about the shaft 17 between the two spaced-apart flanges 44 on the shaft 17 and having its ends engaged, respectively, on the frame 32 and against the top of the upper casing shell 4 biases the frame 32 to the lower or retracted position as shown in FIGS. 6 and 7.

As best shown in FIGS. 6 and 9, the number wheel 13 of lowest order is provided with a ratchet wheel 50 integrally formed on the outer side thereof, which ratchet wheel cooperates with a tongue 51 integrally formed on the frame 32 and also with a finger 52 integrally formed and extending upwardly from the base of the bottom casing shell 6. The tongue 51 is of sufficient length to engage with the teeth of the ratchet wheel 50 and thus

advance the number wheel 13 one count each time that the frame 32 is oscillated in a counterclockwise direction as viewed in FIGS. 6 and 7; and at the same time is of sufficiently thin cross section so that it will ratchet over the teeth of the ratchet wheel 50 upon the return stroke. The projecting finger 52 acts as a no-back pawl and effectively prevents reverse turning of the number wheel 13 but will flex over the teeth of the ratchet wheel to permit number wheel 13 to be advanced.

The count is transferred from the number wheel 13 of lowest order to the remaining number wheels by a transfer mechanism of generally conventional form in that each of the number wheels of lower order is provided with an integrally formed locking ring 53 and two-tooth driving gear 54; and each number wheel of higher order is provided with a driven gear 55 integrally formed thereon. The gears 54 and 55 and locking rings 53 cooperate with multilated transfer pinions 56 which are mounted on a shaft 57 hereinafter referred to as the transfer pinion shaft, the transfer pinions 56 being formed with alternate wide and narrow teeth in the usual manner. As is well known in the art, the transfer mechanism as described will automatically advance each succeeding wheel one count for each complete rotation of the immediately preceding number wheel; and except during a transfer operation, will lock the number wheels of higher order against rotation.

The transfer pinion shaft 57 is mounted in end bearings in the form of elongated slots. One such bearing is provided by the recesses 58 and 59 formed in the bosses 60 and 61 of the casing shells 4 and 6, respectively, and the other bearing being formed by the elongated recess 63 provided in the end of the boss 65 at the opposite side of the lower casing shell 6, and a similar elongated slot (not shown) in the upper casing shell 4. The elongated slots are of sufficient length so that when the transfer pinion shaft 57 is moved to the inner extremity thereof (to the right as viewed to FIGS. 6 and 7) the transfer pinions 56 will be firmly engaged with the transfer portions of the number wheels 13–15 previously described; but when the shaft 57 is moved to the outer extremity of the slots (to the left as viewed in FIGS. 6 and 7), the transfer pinions will release the number wheels for independent turning movement. Projecting spring-like fingers 66 and 67 extending upwardly from the bottom of the lower casing shell 6 engage against the transfer pinion shaft 57 as best shown in FIGS. 6 and 7 and thus bias and normally hold the transfer pinions 56 in wheel-engaging position for performing the transfer and locking functions previously described.

In order to provide for resetting of the counter, each of the number wheels 13–15 is provided on the interior of its hub with a notch 70 providing a gradually sloping or inclined surface 68 terminating in a radially extending shoulder 69 as best shown in FIG. 6 of the drawings. The radial shoulders 69 all face in the same circumferential direction which is opposite to the direction of rotation of the number wheels when they are rotated in an advancing direction. In addition, the reset shaft 17 is formed with circumferentially aligned but axially spaced recesses 72 over which extend integrally formed flexible tongues 71, extending in a generally circumferential direction from one edge of the recesses 72. The free ends of the integral tongues 71 normally extend outwardly beyond the periphery of the shaft 17 as best shown in FIG. 8 but have a spring-like quality and are flexible so that they may be depressed inwardly by the hubs of the wheels. The tongues 71 extend circumferentially from one end of the recesses 72 in the direction of rotation of the number wheels when the number wheels are rotated in an adding direction, and each of the tongues 71 registers with the hub of one of the number wheels for cooperation as pick-up pawls with the notch 70 therein. As will be apparent from the foregoing description, the number wheels may be readily advanced by the number-wheel advancing mechanism heretofore described in which case the hubs of the number wheels are merely slid freely over the flexible tongues 71. When it is desired to reset the number wheels, the reset shaft 17 is merely turned one revolution in a counting direction which may be accomplished manually by turning the external operating knob 73 formed integrally thereon. When the reset shaft 17 is rotated in this fashion, the ends of the tongues 71 will come into engagement with the shoulders 69 and thus, will pick up each of the number wheels and return them to original position, thus zeroizing the counter. As best shown in FIG. 8 of the drawings, the ends of the tongues 71 are slightly chamfered as indicated at 74 so that any pressure applied during a resetting operation will tend to bias the tongues 71 outwardly and thus increase the seating engagement with the shoulders 69. During the resetting operation, when the number wheels are picked up by the turning of the reset shaft 17 and advanced to the zero postion in an adding direction, the integrally formed gears 54 and 55 and locking rings 53 thereon will also be rotated; but this is permitted by automatic release of the transfer mechanism, the transfer pinions 56 being cammed outwardly to releasing position by the gears 55, this being permitted by the outward transverse movement of the shaft 57 against the bias of the flexible fingers 66, 67. Except when the pinions 56 are cammed outwardly during a resetting operation, the fingers 66, 67 will, of course, hold the transfer pinion shaft 57 and transfer pinions 56 in engaging position so as to condition the counter for a counting operation.

In the preferred embodiment, the return spring 43 is formed of metal and it also is preferred to fabricate the transfer pinions 56 and transfer pinion shaft 57 of metal. All other parts are preferably fabricated of plastic in a simple molding operation. The number wheels 13–15 as previously described, are molded as a unitary structure which includes the integrally formed gears and locking rings thereon. In addition to the number wheels 13–15, there are only four other major unitary subassemblies to be molded, these being the reset shaft 17, the frame 32 and the two casing shells 4 and 6. All subassemblies are complete as fabricated and the parts are merely nested together to form the completed counter, the casing shells 4 and 6 functioning as both the frame and housing for the counter. The operation of the counter externally is conventional, since the counting impulse may be applied to the extending stub shaft 42 in the usual manner, and resetting is carried out merely by rotating the external knob 73. The counter, by reason of its unique design, may be produced at low cost, is compact in size and yet easy to read, and will function efficiently and effectively in a variety of uses.

While the invention has been described in connection with a specific embodiment thereof, it will be appreciated that variations and modifications are possible within the skill of the art, and all such variations and modifications are intended to be included within the scope of the invention.

I claim:

1. A counter comprising a composite casing formed of two shells secured together in edge-abutting relationship, said casing having journals in the opposite end walls thereof, an assembly supported in said journals comprising a reset shaft, a plurality of number wheels of successive order rotatably mounted on the shaft, and a frame mounted on the shaft for oscillating movement, said shaft and number wheels having pick-up means for permitting the number wheels to be zeroized by rotation of the shaft, said frame having means for driving the number wheel of lowest order upon oscillation of the frame, one end of the reset shaft extending outwardly through one of said journals to provide means for rotating the reset shaft, the frame having a shaft extending outwardly through the other of said journals to provide means for oscillating the frame, and transfer means including transfer pinions disposed intermediate the number wheels and a supporting shaft for the pinions extending generally parallel to the

reset means and mounted for movement toward and away from the reset shaft, and means biasing the supporting shaft toward the reset shaft.

2. A counter comprising a casing having journals at opposite ends thereof, an assembly suported in said journals comprising a reset shaft, a plurality of number wheels of successive order rotatably mounted on the shaft, and a generally U-shaped frame bracketing the number wheels and having spaced-apart hubs rotatably mounted on the reset shaft, said reset shaft extending outwardly through one of said journals to provide means for rotating the reset shaft, and the frame having a projection extending outwardly through the other of said journals to provide means for oscillating the frame, means for advancing the number wheel of lowest order upon oscillation of the frame comprising a ratchet wheel on the number wheel of lowest order and a drive finger on the frame engaging the ratchet wheel, pick-up means on the reset shaft and number wheels to cause the number wheels to be reset to zero when the reset shaft is rotated, and transfer means comprising a driven gear fixed to each of the number wheels of higher order, a gear segment and a locking ring fixed to each of the number wheels of lower order, a transfer pinion shaft extending generally parallel to the reset shaft, and transfer pinions on the transfer pinion shaft intermediate the wheels of lower and higher order, means mounting the pinion shaft for limited movement toward and away from the reset shaft, and means biasing the pinion shaft toward the reset shaft, said last-named means being resilient to permit the shaft and pinions to be cammed into number wheel-releasing position during a resetting operation.

3. A counter as set forth in claim 2 wherein the pick-up means comprises integral flexible tongues extending circumferentially on the reset shafts and means on each of the number wheels for engagement by the tongues comprising a hub having a transverse notch forming a radial shoulder therein.

4. In a counter, a casing having journals at opposite ends thereof, a generally U-shaped frame having spaced-apart arms provided with hubs mounted in said journals for oscillating movement, one of said hubs having fixed thereto a projecting portion extending outwardly through one of the journals to provide an actuating member for the frame, a reset shaft seated in and engaging said hubs and having one end projecting outwardly through the other of said journals to provide means for rotating the reset shaft, a plurality of side-by-side number wheels of successive order rotatably supported on the reset shaft between the hubs of the frame, pick-up means on the shaft for engaging and rotating the number wheels when the reset shaft is rotated, and means on the frame and number wheel of lowest order for advancing the number wheel of lowest order when the frame is oscillated.

5. In a counter as set forth in claim 4 wherein the casing comprises two shells separable at the journals to permit assembly of the hubs of the frame therein and wherein the hubs of the frame are slotted to permit the hubs to be moved transversely into seated position on the reset shaft.

6. In a counter, a casing having journals at opposite ends thereof, a number wheel supporting shaft mounted in said journals, a generally U-shaped frame having spaced-apart hubs mounted on the shaft for oscillating movement, a plurality of side-by-side number wheels of successive order rotatably supported on the shaft between the hubs of the frame, the number wheel of lowest order having a ratchet wheel fixed thereto, said frame being formed of plastic and having an integral flexible finger formed thereon provided a drive pawl for the ratchet wheel, and said casing being formed of plastic and having an integral flexible finger formed thereon providing a no-back pawl for the ratchet wheel.

7. In a counter, a reset shaft mounted for rotational movement, a counter wheel having a hub mounted on the shaft for rotational movement relative to the shaft, said

hub having a notch in its inner surface forming a radial shoulder, said reset shaft having a recess registering with the hub of the number wheel and being provided with a tongue between the hub and shaft extending circumferentially from one end of the recess, said tongue having a free end portion normally extending beyond the periphery of the shaft for abutment against the radial shoulder in the hub of the wheel to permit resetting of the number wheel when the reset shaft is turned in one direction but said tongue being flexible to permit the same to bend radially of the shaft for depression of said free end portion laterally into the recess to permit turning of the number wheel in said one direction relative to the reset shaft.

8. In a counter as set forth in claim 7 wherein the reset shaft is formed of plastic and the movable tongue is an integrally formed flexible member joined at one end to the shaft.

9. A counter comprising a casing, a reset shaft rotatably mounted in the casing and extending outwardly from one end thereof, said reset shaft being formed of plastic and having flexible reset pawls integrally formed thereon, a plurality of plastic number wheels of successive order mounted on the shaft having notches for engagement by the reset pawls of said reset shaft, a frame formed of plastic pivotally mounted on the reset shaft and having a drive pawl integrally formed thereon, the number wheel of lowest order having a ratchet wheel integrally formed thereon for engagement by the drive pawl, transfer means operatively connecting successive wheels of lower and higher order and being movable towards and away from said reset shaft, and means for disengaging the transfer means during a resetting operation.

10. A counter comprising a casing formed of plastic having journals in the opposite end walls thereof, said casing being separable at the journals, an assembly supported in said journals comprising a reset shaft formed of plastic, a plurality of plastic number wheels of successive order rotatably mounted on the shaft, and a frame formed of plastic mounted on the shaft for oscillating movement, said frame having hubs engaged on the reset shaft and supported in the casing journals, an extension on one of the hubs forming an operating member for the frame, each number wheel of lower order having a driving gear segment and a locking ring integrally formed thereon, each number wheel of higher order having a driven gear integrally formed thereon, and the number wheel of lowest order having a ratchet wheel integrally formed thereon, an integral drive pawl formed on the frame for engagement with the ratchet wheel of the number wheel of lowest order, reset pawls integrally formed on the reset shaft, said number wheels having notches for engagement by the reset pawls, transfer pinions intermediate the number wheels for engagement by the gears and locking rings of the number wheels, a transfer pinion shaft supporting the transfer pinions, and means yieldably mounting the transfer pinion shaft for movement away from the reset shaft during a resetting operation.

11. A counter comprising a casing having journals in the opposite end walls thereof, a reset shaft rotatably supported in said journals and having one end thereof extending outwardly of the casing, a plurality of number wheels of different order rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear, each number wheel of lower order having a driving gear segment and a locking ring, and the number wheel of lowest order having a ratchet wheel thereon, a U-shaped frame having arms bracketing the number wheels and having hubs pivotally mounted on the reset shaft and received in the journals in the opposite end walls of the casing, an extension on one of the hubs extending outwardly of the casing to provide an actuating member for the frame, said frame having a drive pawl thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the

frame is oscillated, a no-back pawl on the casing engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, means on the casing forming a support for the pinion shaft permitting transverse movement of the pinion shaft toward and away from the reset shaft, biasing means on the casing engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, and pick-up means on the reset shaft and number wheels to cause rotation of the number wheels when the reset shaft is turned to zeroize the counter.

12. A counter comprising a casing having journals in the opposite end walls thereof, a reset shaft rotatably supported on said journals and having one end thereof extending outwardly of the casing, a plurality of number wheels of different order having hubs rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear fixed thereto, each number wheel of lower order having a driving gear segment and locking ring fixed thereto, and the number wheel of lowest order having a ratchet wheel fixed thereto, a U-shaped frame having arms formed with hubs rotatably received in the journals in the opposite end walls of the casing and pivotally engaging the reset shaft, the hub engaged with the end of the reset shaft opposite from the extending one end thereof having an extension coaxial with the reset shaft and extending outwardly of the casing to provide an actuating member for the frame, said frame having a flexible finger thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the frame is oscillated, a flexible no-back pawl on the casing and engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, bearing surfaces on the casing forming a support for the pinion shaft permitting transverse movement of the pinion shaft toward and away from the reset shaft, flexible biasing members on the casing engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, and pick-up means on the reset shaft and hubs of the number wheels for rotating the number wheels when the reset shaft is turned to zeroize the counter.

13. A counter comprising a composite casing formed of two shells secured together in edge-abutting relationship, said casing having journals in the opposite end walls thereof formed by registering concave bearing surfaces in the abutting edges of the end walls of the shells, a reset shaft rotatably supported in said journals and having one end thereof extending outwardly of the casing, an operating knob fixed to said one end of the reset shaft, a plurality of number wheels of different order having hubs rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear secured thereto, each number wheel of lower order having a driving gear segment and locking ring secured thereto, and the number wheel of lowest order having a ratchet wheel secured thereto, a U-shaped frame having arms formed with hubs rotatably received in the journals in the opposite end walls of the casing, said hubs being slotted to accommodate the reset shaft therein, one of the hubs being engaged on the reset shaft at the said one end adjacent the operating knob thereon and the other of the hubs being engaged with the other end of the reset shaft and having an extension coaxial with the reset shaft and extending outwardly of the casing to provide an actuating member for the frame, said frame having a flexible projection thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the frame is oscillated, a flexible no-back pawl on one of the casing shells and engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, bearing surfaces on the casing shells forming a support for the pinion shaft permitting transverse movement of the pinion shaft toward and away from the reset shaft, flexible biasing members on one of the casing shells and engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, a plurality of reset tongues on the reset shaft and registering with the hubs of the number wheels, and notches in the hubs of the number wheels for engagement by the tongues when the reset shaft is turned to zeroize the counter.

14. A counter comprising a composite casing formed of two shells secured together in edge-abutting relationship, said casing having journals in the opposite end walls thereof formed by registering concave bearing surfaces in the abutting edges of the end walls of the shells, a reset shaft rotatably seated in said journals and having one end thereof extending outwardly of the casing to provide means for rotating the reset shaft, a plurality of number wheels of different order having hubs rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear integrally formed thereon, each number wheel of lower order having a driving gear segment and locking ring integrally formed thereon, and the number wheel of lowest order having a ratchet wheel integrally formed thereon, a U-shaped frame having arms formed with hubs rotatably received in the journals in the opposite end walls of the casing, said hubs being slotted to accommodate the reset shaft therein, one of the hubs being engaged on the reset shaft at the said one end adjacent the operating knob thereon and the other of the hubs being engaged with the other end of the reset shaft and having an extension coaxial with the reset shaft and extending outwardly of the casing to provide an actuating member for the frame, said frame having an integrally formed flexible projection thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the frame is oscillated, a flexible no-back pawl integrally formed on one of the casing shells and engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, bearing surfaces on the casing shells forming a support for the pinion shaft permitting transverse movement of the pinion shaft toward and away from the reset shaft, flexible fingers integrally formed on one of the casing shells and engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, a plurality of tongues integrally formed on the reset shaft and registering with the hubs of the number wheels, and notches in the hubs of the number wheels for engagement by the tongues when the reset shaft is turned to zeroize the counter.

15. A counter comprising a composite casing formed of two shells secured together in edge-abutting relationship, said casing having journals in the opposite end walls thereof formed by registering concave bearing surfaces in the abutting edges of the end walls of the shells, raised arcuate bearing segments on the bearing surfaces of one of the shells, a reset shaft rotatably supported on said bearing segments and having one end thereof extending outwardly of the casing, an operating knob integrally formed on said one end of the reset shaft, a plurality of number wheels of different order having hubs rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear integrally formed thereon, each number wheel of lower order having a driving gear segment and locking ring integrally formed thereon, and the num-

ber wheel of lowest order having a ratchet wheel integrally formed thereon, a U-shaped frame having arms formed with hubs rotatably received in the journals in the opposite end walls of the casing, said hubs being slotted to accommodate the reset shaft therein, one of the hubs being engaged on the reset shaft at the said one end adjacent the operating knob thereon and the other of the hubs being engaged with the other end of the reset shaft and having an extension coaxial with the reset shaft and extending outwardly of the casing to provide an actuating member for the frame, said frame having an integrally formed flexible projection thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the frame is oscillated, a flexible no-back pawl integrally formed on one of the casing shells and engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, bearing surfaces on the casing shells forming a support for the pinion shaft permitting rotational movement of the pinion shaft and also transverse movement thereof toward and away from the reset shaft, flexible biasing members integrally formed on one of the casing shells and engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, a plurality of reset pawls integrally formed on the reset shaft and registering with the hubs of the number wheels, and notches in the hubs of the number wheels for engagement by the pawls when the reset shaft is turned to zeroize the counter.

16. A counter comprising a composite casing formed of two shells secured together in edge-abutting relationship, said casing having journals in the opposite end walls thereof formed by registering concave bearing surfaces in the abutting edges of the end walls of the shells, raised arcuate bearing segments on the bearing surfaces of one of the shells, a reset shaft rotatably supported on said bearing segments and having one end thereof extending outwardly of the casing, an operating knob integrally formed on said one end of the reset shaft, a plurality of number wheels of different order having hubs rotatably mounted on the reset shaft in side-by-side relationship, each number wheel of higher order having a driven gear integrally formed thereon, each number wheel of lower order having a driving gear segment and locking ring integrally formed thereon, and the number wheel of lowest order having a ratchet wheel integrally formed thereon, a U-shaped frame having arms formed with hubs rotatably received in the journals in the opposite end walls of the casing, said hubs being slotted to accommodate the reset shaft therein, one of the hubs being engaged on the reset shaft at the said one end adjacent the operating knob thereon and the other of the hubs being engaged with the other end of the reset shaft and having an extension coaxial with the reset shaft and extending outwardly of the casing to provide an actuating member for the frame, said hubs having radial shoulders engageable with the ends of the arcuate bearing sections to limit oscillating movement of the frame, said frame having an integrally formed flexible projection thereon engaging the ratchet wheel of the number wheel of lowest order and adapted to advance the number wheel in a stepwise fashion when the frame is oscillated, a spring biasing the frame in one direction, a flexible no-back pawl integrally formed on one of the casing shells and engaging the said ratchet wheel, a pinion shaft extending parallel to the reset shaft, bearing surfaces on the casing shells forming a support for the pinion shaft permitting transverse movement of the pinion shaft toward and away from the reset shaft, flexible biasing members integrally formed on one of the casing shells and engaging the pinion shaft for urging the pinion shaft toward the reset shaft, transfer pinions on the pinion shaft engaging the gears and locking rings of the number wheels to provide for the transfer of the count therebetween, a plurality of tongues integrally formed on the reset shaft and registering with the hubs of the number wheels, and notches in the hubs of the number wheels for engagement by the tongues when the reset shaft is turned to zeroize the counter.

17. A counter comprising a casing having journals in the opposite end wall thereof, an assembly supported on said journals comprising a reset shaft, a plurality of number wheels of successive order rotatably mounted on the shaft, and a frame mounted on the shaft for oscillating movement, said frame having means for driving the number wheel of lowest order upon oscillation of the frame, said shaft and number wheels having pickup means for permitting the number wheels to be zeroized by rotation of the shaft, and transfer means including transfer pinions disposed intermediate the number wheels and a shaft supporting the pinions extending generally parallel to the reset shaft and mounted on the casing for movement towards and away from the reset shaft and at least one flexible finger projecting from the casing into engagement with the pinion supporting shaft for yieldably urging the pinion supporting shaft toward the reset shaft.

18. In a counter as set forth in claim 17 wherein the casing is formed of plastic and wherein said flexible finger is integral with the casing.

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