May 25, 1954 F. AUTEM 2,679,358

STOCKING COUNTING DEVICE

Filed Aug. 2, 1949 4 Sheets-Sheet 1

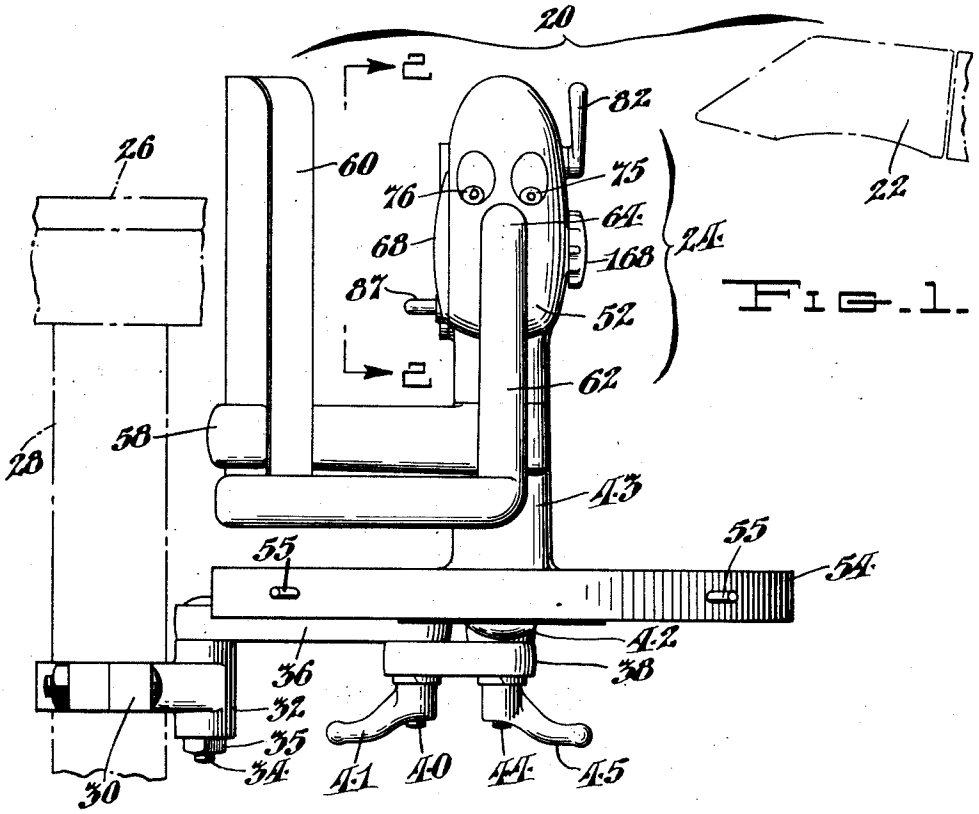


Fig. 1.

Fig. 2.

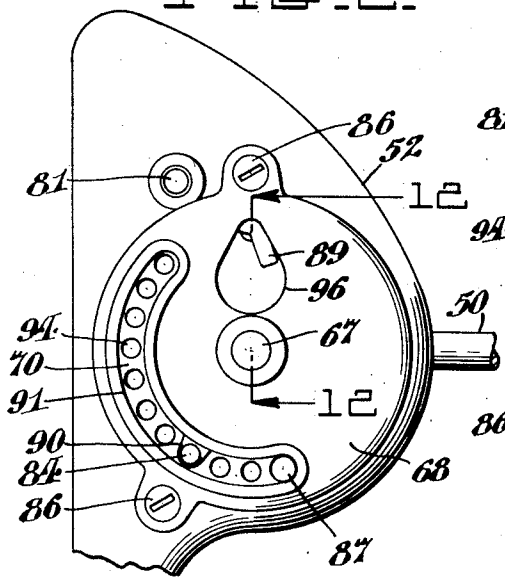
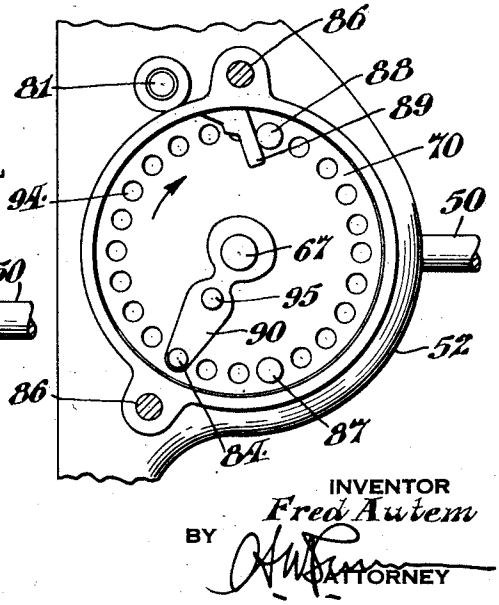


Fig. 3.



INVENTOR
Fred Autem
BY
ATTORNEY

May 25, 1954 F. AUTEM 2,679,358

STOCKING COUNTING DEVICE

Filed Aug. 2, 1949 4 Sheets-Sheet 2

Fig. 5.

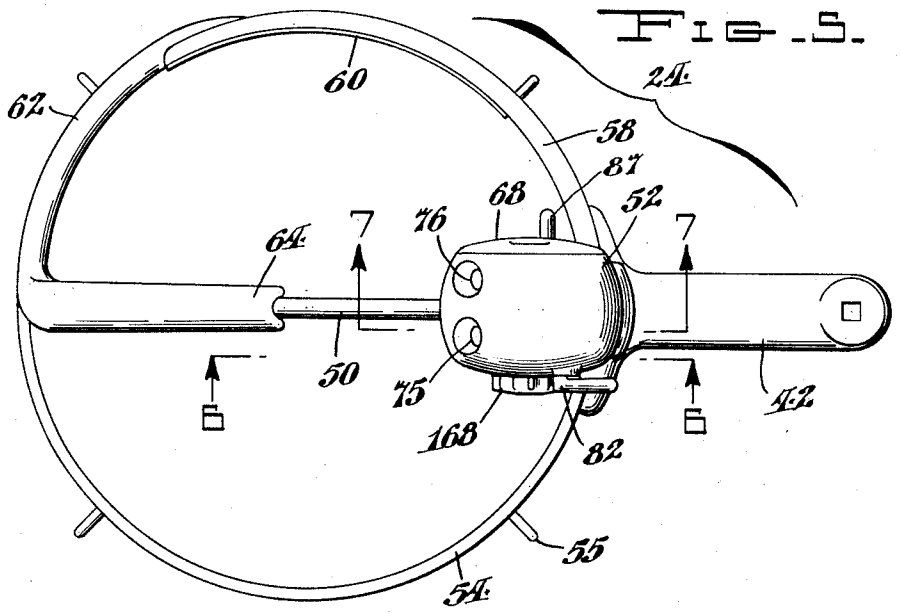
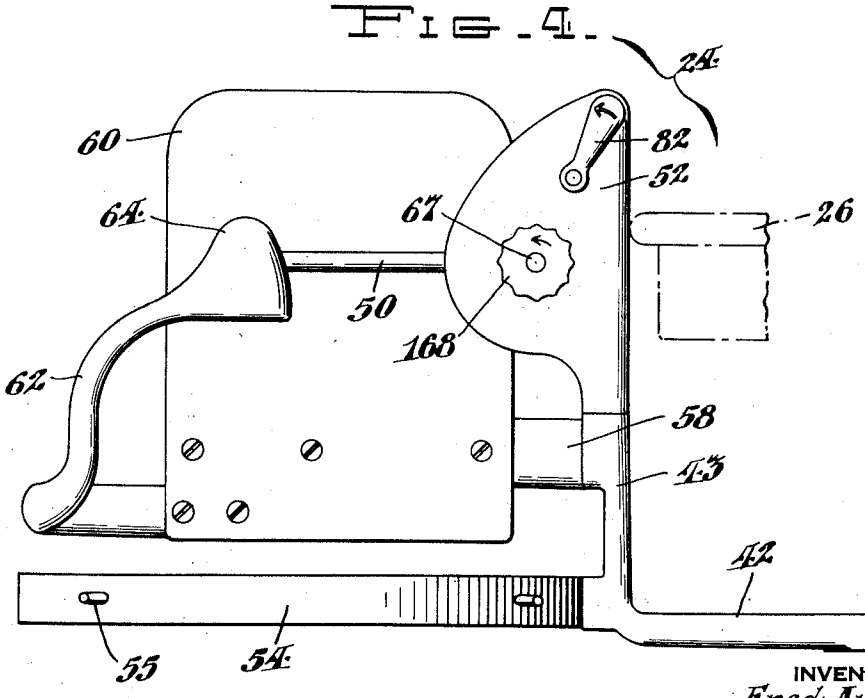


Fig. 4.



INVENTOR
Fred Autem
BY
ATTORNEY

May 25, 1954 F. AUTEM 2,679,358

STOCKING COUNTING DEVICE

Filed Aug. 2, 1949 4 Sheets-Sheet 3

Fig. 6.

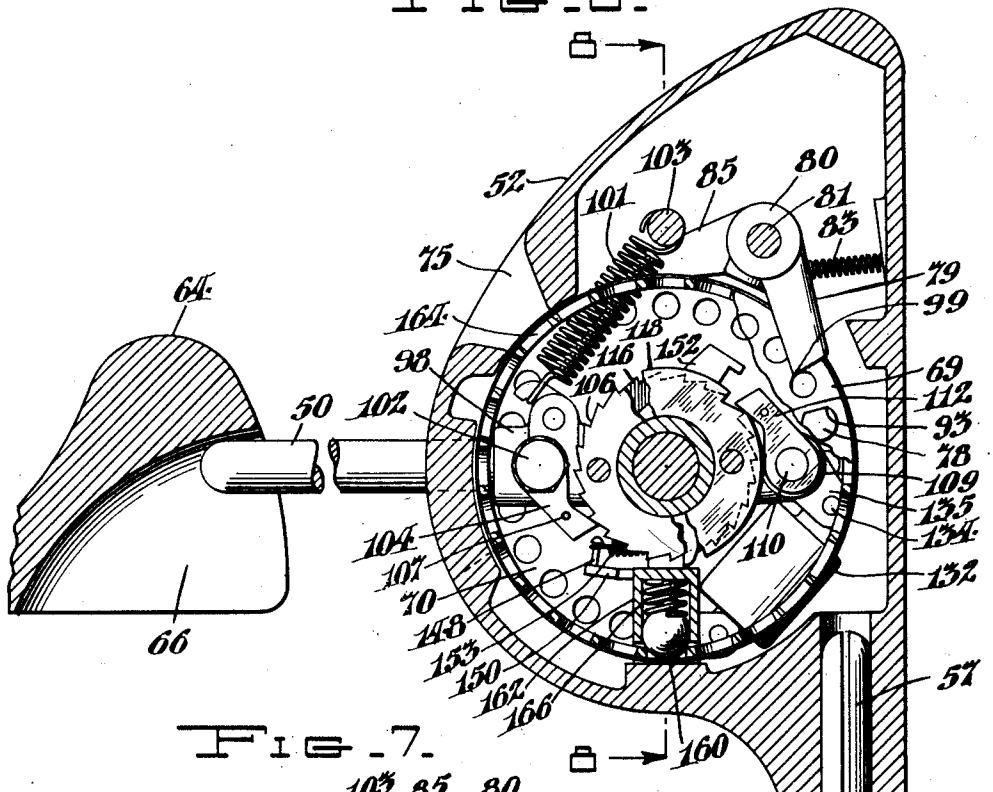
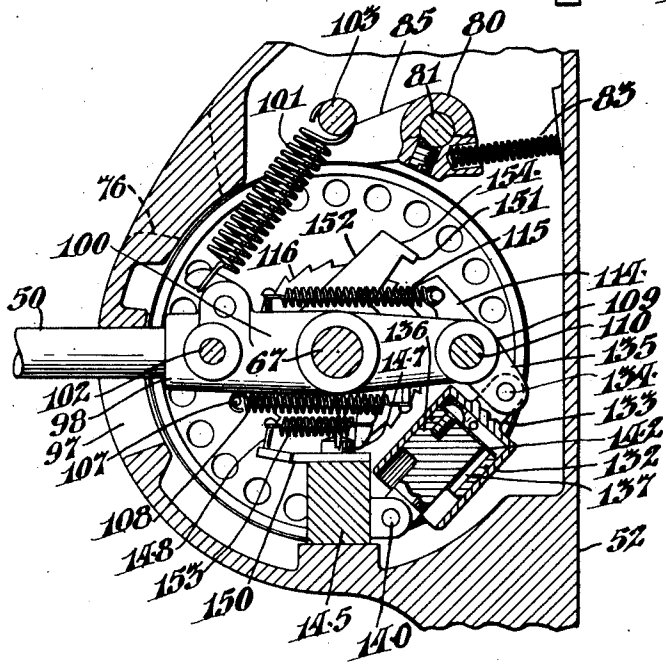


Fig. 7.



INVENTOR
Fred Autem
BY
ATTORNEY

May 25, 1954 F. AUTEM 2,679,358

STOCKING COUNTING DEVICE

Filed Aug. 2, 1949 4 Sheets-Sheet 4

FIG. 8.

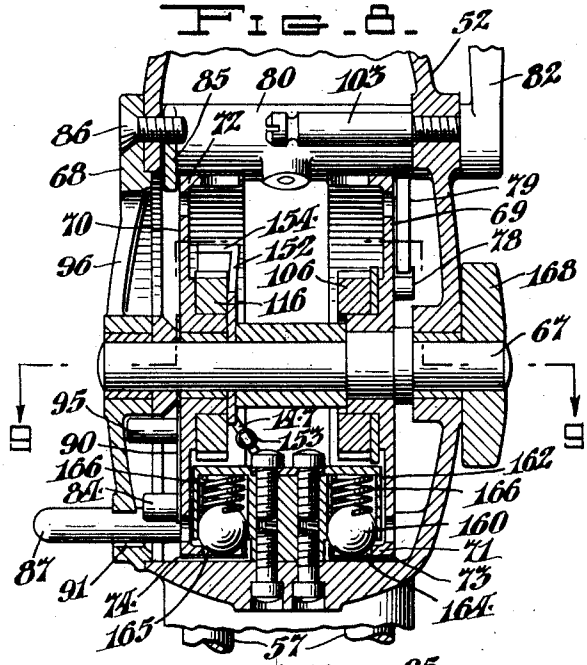


FIG. 11.

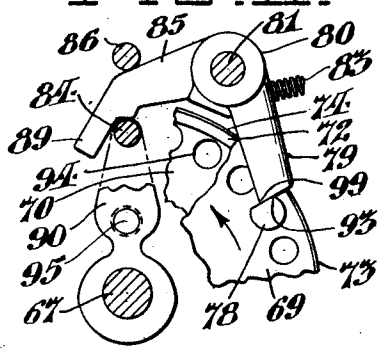


FIG. 10.

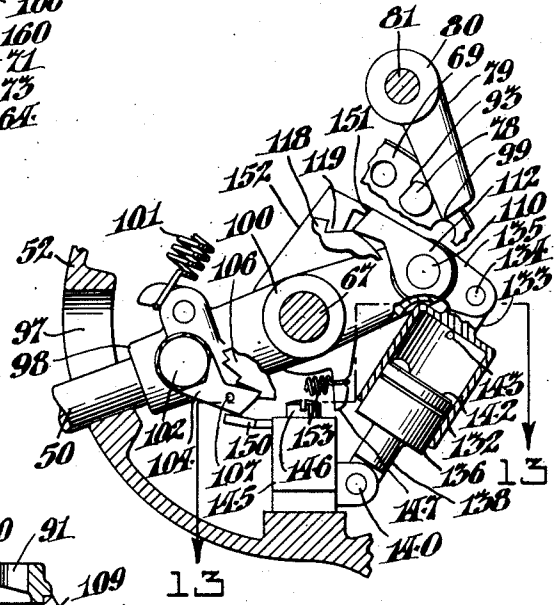


FIG. 12.

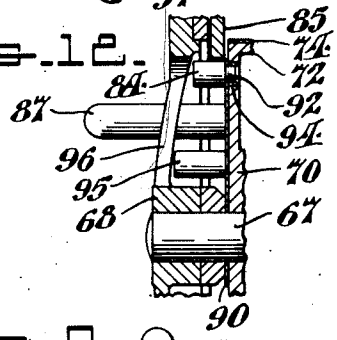


FIG. 9.

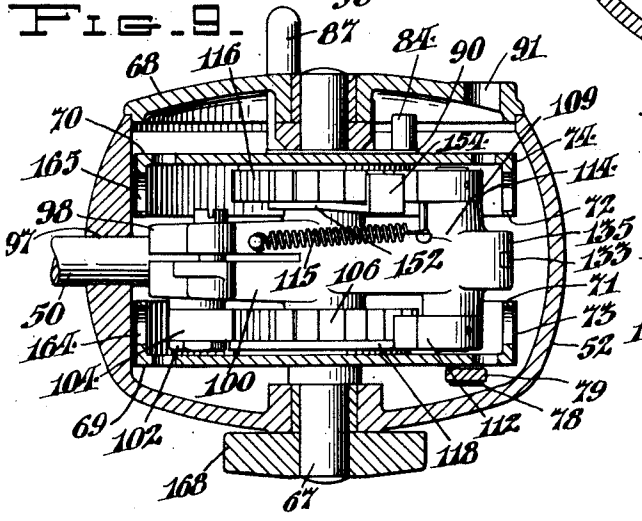
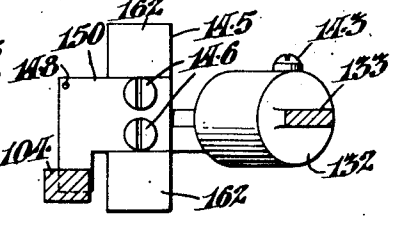


FIG. 13.



INVENTOR
Fred Autem
BY
ATTORNEY

Patented May 25, 1954

2,679,358

UNITED STATES PATENT OFFICE

2,679,358

STOCKING COUNTING DEVICE

Fred Autem, Mount Penn, Pa., assignor to Textile Machine Works, Wyomissing, Pa., a corporation of Pennsylvania

Application August 2, 1949, Serial No. 108,109

4 Claims. (Cl. 235—131)

1

The present invention relates to a registering or metering device adapted to tally or count textile articles such as stockings and the like.

Lever operated mechanical counting devices have been used in the textile trades for recording movements caused by a manual manipulation of the articles to be counted and have usually been arranged to count on the downward movements of their operating levers.

Such devices have caused difficulty in that counts have sometimes been wrong due to overrunning of the rotatable counting elements, to accidental repeat movements of the actuating levers, and to accidental operation of the levers in the opposite direction from the counting movement. This last accidental movement may cause the count to be one less than it should be or it may cause the register to be reset to zero, thereby creating a more serious error, depending on the type of device. Said accidental movements of the actuating levers causing undesired counts usually occur very close after an intentional counting movement.

It is an object of the invention to provide a counting device with a retarder to slow the return of the actuating lever to its initial position after a counting movement to minimize the chances of an accidental repeat movement of the actuating lever in passing the articles to be counted through the counting device.

Another object of the invention is to provide novel means for preventing overrunning of the counting means after it has received an unduly forceful counting actuation.

Still another object of the invention is to provide means to prevent movements of the actuating levers of counting devices in a reverse direction.

Commonly, hosiery and like articles are inspected in the gray and then bagged for dyeing.

It is another object of the invention to provide an arrangement of substantially maximum simplicity whereby stockings may be counted and bagged for dyeing after inspection with a maximum of convenience.

It is a further object of the invention to provide a detent means for releasably holding the actuating levers of the device so as not to materially hinder a counting movement of the actuating lever but to hold it strongly enough so that the average accidental contact with the actuating lever will not move it and thereby accidentally cause a counting movement.

As it is customary to tie stockings in bundles or groups of twenty-four (one dozen pairs)

2

before placing them in the dye-bag, it is desirable that the counting device be locked automatically against further rotation in the counting direction to call attention to the fact that a group of a dozen pairs has been counted.

It is still another object of the invention to provide a means which will act after a certain number has been counted to effectively latch or lock the counting means but which permits the ready release of the counting means for repeated counts up to the number at which said latch or lock becomes effective.

It is clearly desirable that a device to be used for counting stockings should have more than one counting wheel so that a number of dozens can be counted consecutively and with only a minimum time lost for releasing the counting means from said latch or lock means.

It is a still further object of the invention to provide a counting device having at least two numbered counting elements and which will be locked completely for a time against turning further in the counting direction as soon as their maximum capacity has been utilized.

A still further object of the invention is to provide a counting device of simple construction, having relatively few parts and capable of economical manufacture and adapted to be reset to zero position simply by turning a units counting element forwardly and a higher order counting element backwardly.

With these and other objects in view, which will become apparent from the following detailed description of the illustrative embodiment of the invention shown in the accompanying drawings, my invention resides in the novel elements, features of construction and arrangement of parts in cooperative relationship as hereinafter more particularly pointed out in the claims.

In the drawings:

Figure 1 is an elevational view of a counting device in accordance with the invention and showing certain of the stocking inspecting equipment in dot-and-dash outline with which the counting device may be associated;

Fig. 2 is an elevational view as viewed in the direction of the arrows 2—2 on Fig. 1 and shown on a larger scale relative thereto;

Fig. 3 is a view similar to Fig. 2 but with the cover part removed in order to more clearly show other parts;

Fig. 4 is an elevational view of the counting device as viewed from the right of Fig. 1;

Fig. 5 is a plan view of the device shown in Fig. 4;

Fig. 6 is a cross sectional view taken substantially on the line 6—6 of Fig. 5 and enlarged relative to Fig. 5, certain of the parts being broken away to more clearly show others;

Fig. 7 is a cross sectional view taken substantially on the line 7—7 of Fig. 5 and enlarged relative to Fig. 5, certain parts being broken away to more clearly show further details;

Fig. 8 is a cross sectional view taken substantially on the line 8—8 of Fig. 6;

Fig. 9 is a cross sectional view of the device taken substantially on the line 9—9 of Fig. 8 and turned at 90° with respect to Fig. 8;

Fig. 10 is a detailed view of certain of the parts shown in Figs. 6 and 7 but the parts being in different relative positions;

Fig. 11 is a detailed view of certain of the parts at the completion of the counting cycle;

Fig. 12 is a cross sectional view taken substantially on the line 12—12 of Fig. 2 but with the parts in the position of Fig. 11; and

Fig. 13 is a plan view partly in section, taken substantially on the line 13—13 of Fig. 10.

In Fig. 1 of the drawings, there is shown a hosiery inspection station 20 comprising an inspection form 22 of conventional character, as for instance, the one shown in the patent to Kalbach et al., No. 2,092,806, of September 14, 1937. Said station also includes a counting device 24 according to the invention and the device and said form are shown as arranged to promote the inspecting and counting of stockings with a maximum of convenience and materially fewer motions than has been the case heretofore. As shown, said station includes a table 26, shown in dot-and-dash outline, and it will be understood that form 22 is fixed to said table or to some other support member fixed in relation to the table (not shown) while counter 24 is shown as supported from a leg 28 of the table 26 by a clamp 30 having a portion 32 adapted to receive a bolt 34 having a nut 35 to clamp one end of an arm 36 to the upper face of portion 32 in adjusted angular position. At its other end, arm 36 is adjustably clamped to one end of a connecting plate 38 by means of a bolt 40 and a clamp nut 41. At its other end, plate 38 is adjustably clamped to an arm 42 (Figs. 1 and 4), of a bracket 43, by means of a bolt 44 and a clamp nut 45, counter 24 being carried in fixed relation on bracket 43. It will be seen that by the adjustable connections shown, counter 24 may be adjusted to a desired position with relation to the inspection form and fixed in such position. Further, as shown, the counter 24 has a finger or lever 50 which projects from a shell or case 52 of counter 24, as shown in Figs. 4 and 5, for actuating the counter as hereinafter set forth. Also as shown in Fig. 4, the bracket 43 has a ring 54 fixed thereto for supporting stockings or similar articles, which have been counted by moving the finger 50. The particular shape of the ring support is not critical, however, the ring type support 54 shown is advantageous in that it not only may support articles which the operator may lay on it after counting them but that it is adapted to hold open the mouth of a dye bag, or the like, attached thereto, so that, when desired, fabric articles may be counted directly into the bag. For holding a bag on the ring 54, the ring is shown as provided with radial pins 55.

Further, it will be understood that, at stations such as 20, it is the practise to pull stockings over the inspection forms before counting them and that the stockings are pulled onto the inspection forms 22 for the full length of the stockings so that any defects may be readily discovered and the perfect stockings then stripped from the form and counted. While stockings can be and are placed into a dye bag as counted, it is common practise to count them into groups of twenty-four, one dozen pairs, and to tie the stockings of such groups into bundles before placing them into the dye bags. It is therefore important, in order to economize time, to arrange the inspection form relatively to the finger for the counter 24 so as to promote the convenience of the operator by minimizing the length and/or number of motions required to remove a stocking from the inspection form and press the stocking against and past the finger 50 to operate the counter 24. After passing the finger 50 the stocking may be placed in the dye bag or on one side of the ring 54 as hereinbefore set forth. In this connection it will be further understood that the inspection form is commonly set so that the stocking is drawn onto the form from left to right, so that the welt is away from the counting device during the inspection period. At this time the stocking is wrong side out. It therefore is most convenient for the operator to remove the stocking from the form by taking hold of it at the welt, the extreme right end, and stripping it off the form by a leftward movement of the right hand and at the same time turning the stocking right side out. To facilitate counting after inspection, therefore, in accordance with said last mentioned feature of the invention, the inspection form 22 is so mounted that its free end is not only at a higher level than that of the finger 50 as shown in Fig. 1 but is conveniently adjacent thereto being shown in dotted lines in Fig. 1 as close to counter 24 and overlapping the ring 54 horizontally, while being mounted in a vertical plane substantially at right angles to the vertical plane which includes finger 50. Consequently, as the stocking is pulled off the free end of the form 22, it is in a position most convenient to the finger 50 and can be moved over and downward to contact and press the finger down to operate counter 24 and to drop the stocking into the bag, or to place the stocking on the ring 54.

As shown in Fig. 4, the bracket 43 is in the form of a standard or pedestal which carries threaded studs 57, as shown in Figs. 6 and 8, by means of which the casing or shell 52 is held in supported relation on the bracket 43. The bracket 43 has an arm 58 which extends above and parallel to a portion of the ring 54. Fixed to part 58 is a shield 60 which acts to deflect one end of the stocking into the ring 54 or into the dye bag as the stocking is passed through the counting device, as hereinbefore set forth. Shield 60 has connected thereto an arm 62 which extends horizontally at the same curvature as ring 54 and arm 58 until opposite the counter 24 at which point it bends upwardly and extends in the vertical plane of the finger 50 at an inclination to a point above the free end of finger 50. At its upper end arm 62 is enlarged into a knob 64, Fig. 4, which has an arcuate slot or groove 66, into which finger 50 extends in the horizontal position as shown in Fig. 6.

Considering the counting device or counter 24 more in detail, within the shell 52 are a pair of counting elements, shown as wheels 69 and 70 which are mounted on a shaft 67 rotatably carried in the shell 52 and a cover plate 68 for the shell, (see Fig. 8) the wheel 69 being fixed to shaft 67 to rotate therewith while wheel 70 is loosely

mounted on the shaft to rotate relative thereto, for purposes hereinafter set forth. The wheels 69 and 70 have flanges 71 and 72, respectively, which carry sheet-like members 73 and 74, respectively, having numerals arranged to register with one of apertures 75 and 76, respectively, in the shell 52, as shown in Fig. 1. The set of numerals on member 73 of wheel 69 registers with aperture 75 and runs from and including zero (0) up to and including twenty-three (23). The wheel 69 therefore counts one dozen pairs, the step between "23" and "0" being the 24th in a revolution while the set of numerals on member 74 on wheel 70 runs from zero (0) to ten (10). The counter 24 includes mechanism adapted and arranged to move wheel 69 the angular distance between two adjacent numerals each time the mechanism is actuated by the finger 50. Wheel 69 together with its numbered member 73, therefore constitutes the units counting element of the device 24. When the units element has counted twenty-four, a pin 78 on wheel 69 contacts one arm 79 of a member 80 fixed to a shaft 81, to stop the wheel 69, as shown in Fig. 11, the shaft 81 also having a handle 82 fixed thereto on the outside of the casing 52 of the counting device 24. After the arm 79 has stopped the units element, the arm must be turned in a counterclockwise direction as viewed in Fig. 11, by the handle 82 to release the units wheel, which stands at zero, and this releasing action being repeated until a predetermined number of dozens has been counted. After the required number of dozens has been counted, a pin 84 which revolves with the wheel 70, the dozens element, and which is adjustable with relation thereto, moves to a position beneath another arm 85 of member 80, as shown in Fig. 11. The shaft 81 and member 80 is biased into the position of Figs. 6 and 11, by a spring 83, in which position the arm 79 is in the path of movement of the pin 78 and the arm 85 contacts one of screws 86 for securing cover plate 68 to casing 52, as shown in Figs. 8 and 11. In this position of the parts, at the end of a complete counting cycle, the pin 84 is in the path of arm 85 to prevent movement of the shaft 81 by lever 82 to move arm 79 out of the path of pin 78 and release the wheel until the dozens wheel 70 has been moved oppositely to its counting movement at least the angular distance equal to that between two digits thereon. However, as the counter stands at this time, at the end of a counting cycle, the natural thing for the operator to do is to turn the dozens wheel back so that its register stands at zero, i. e., to the start of the dozens counting cycle. For so moving wheel 70, there is provided a pin 87 which is fastened to wheel 70 and projects through a slot 91 in the cover plate 68, as shown in Figs. 2 and 8. As the wheel 70 is turned by the pin 87, another pin 88 carried on the wheel 70, engages an end 89 of arm 85 to turn it to the position of Fig. 3, this action turning shaft 81 to remove arm 79 out of the path of pin 78. The arm 79 will remain out of the path of pin 78 until the first dozen counting movement of the wheel 70, during which movement the pin 88 will be moved in a clockwise direction as viewed in Fig. 3 out of engagement with end 89, spring 83 thereupon turning shaft 81 to again move arm 79 into the path of pin 78 on wheel 69 in which position the arm 79 will stop the wheel 69 at the end of a unit counting revolution. This action occurs after each unit counting revolution except the first one after resetting the dozen wheel 70, as hereinbefore

set forth. When the handle 82 is turned in a counterclockwise direction, as viewed in Fig. 4, to remove the arm 79 from the path of pin 78 to release the wheel 69, the tip 99 of arm 79, which has a greater radius than a corner 93 of pin 78 with respect to the center of shaft 81, presses the wheel in the clockwise direction, as viewed in Fig. 11, to permit the tip 99 to pass the corner 93, the wheel 69 immediately returning to its position of Fig. 11 by means hereinafter set forth. When the handle 82 is released the spring 83 biases the shaft 81 in the clockwise direction until the tip 99 of arm 79 engages the circumferential edge of pin 78 in which position the units wheel 69 is permitted to rotate in its units counting action.

The foregoing directions for resetting the counter in the present invention assume that the registers of the counting wheels stand, the units wheel at zero and the dozens wheel at 10 or some lesser digit serving at the time as the upper limit of the count. If, however, it is desired to reset the registers when both stand at positions between zero and their maximum count, it is only necessary to push the dozens wheel 70 backward to its zero position by means of pin 87 and to turn units wheel 69 forward to its zero position by hand wheel 168, "backward" in this case meaning contrary to the counting direction and "forward" meaning in the counting direction.

As hereinbefore set forth, the wheel 70 is adapted to count ten dozen, the setting of the device shown in the figures. In order to adjust the pin 84 so as to have a counting cycle of less than ten dozen, pin 84 is carried on the outer end of a flexible lever arm 90 which is pivotally mounted on the shaft 67. The pin is provided with an extension 92 adapted to engage in any one of ten of apertures 94 in the wheel 70, as shown in Figs. 2, 3 and 12, the apertures having a spacing equal to that of the numerals on the member 74 on wheel 70. The arm 90 also carries a pin 95 and by pressing the pin 95 toward the shaft 67, an opening 96 in plate 68 being provided for this purpose, as shown in Figs. 2 and 12, when the arm is in the position of Figs. 11 and 12, the extension 92 is withdrawn from the aperture 94 in which it is positioned. With the extension 92 withdrawn from the aperture 94, corresponding to ten dozen, the dozen wheel 70 is rotated clockwise, as viewed in Fig. 11, counterclockwise, as viewed in Figs. 2 and 3, until the desired number of dozens shows in the aperture 76 in the casing 52. The pin 95 is then released and the extension 92 enters the aligned aperture 94. The dozens element 74 including the wheel 70 may then be reset to zero for the start of the next counting cycle, as hereinbefore set forth. It will be understood that, as will presently appear, the mechanism within device 24 for operating the units element and the dozens element permit the dozens element to be turned backward as just described without affecting the units element in which the numeral zero does duty for both the actual zero of the count and the maximum, twenty-four, of the units element.

As has been indicated, the mechanism for moving the counting elements including the wheels 69 and 70 so as to produce an exact registration and count is operated from the finger 50 and, for this purpose, the finger 50 extends through an opening 97 in the casing 52 and is fixed in a socket in one end 98 of a rocking member 100 which is pivoted on the shaft 67. A spring 101, connected between the member 100 and a pin 103 in casing 52, biases the finger 50 and member to

the position of Figs. 6 and 7. Also carried on end 98, as shown in Figs. 6, 9 and 10, is a bolt 102 having a pawl 104 pivotally carried thereon which is adapted and arranged to engage teeth on a ratchet 106 secured to the wheel 69. A spring 108 connected between a pin 107 on the pawl 104 and the member 100 (Fig. 7) biases the pawl into engagement with the ratchet 106. The other end 109 of member 100 pivotally carries a pin 110 to one end of which is secured a false pawl 112 and having secured to its other end, a pawl 114, as shown in Figs. 6, 7, 9 and 10. The pawl 114 is adapted to engage the teeth of a ratchet 116 secured to the dozen wheel 70, the pawl, however, only periodically engaging its ratchet as determined by engagement of the pawl 112 with a disc 118, also secured to the wheel 69. The peripheral surface of the disc 118 is higher than that of the ratchet 116 and in order to permit engagement of the pawl 114 with the ratchet, to turn the wheel 70, the disc 118 is provided with a tooth 119 (Fig. 10) into which the pawl 112 enters once in each counting revolution of the unit wheel 69. A spring 115, connected between the pawl 114 and member 100, biases pawls 112 and 114 toward disc 118 and ratchet 116, respectively. With this arrangement, the pawl 114 is held out of engagement with the ratchet 116 by contact of the false pawl 112 with the disc 118 during twenty-three of the counting movements of the member 100. During said twenty-third counting movement the tooth 119 of disc 118 is moved to its position of Fig. 6 relative to the false pawl 112. On the twenty-fourth movement of finger 50 and member 100, the false pawl 112 enters the tooth 119 in disc 118 thereby permitting the pawl 114 to engage a tooth in the ratchet 116 and turn the wheel 70 a distance equal to one tooth of the ratchet and register the dozens of pairs.

In order that the counting elements will not receive an undesired actuation causing an inaccurate count from a counting movement of the finger 50, due to the biasing action of spring 101, a damping means is provided for the rocking member 100 which retards its return to its initial position to which it is biased by the spring 101. Said damping means is of the dash-pot type and is shown as including an open end cylinder 132 having a head 133 which is pivotally connected by means of a pin 134 to an extension 135 of the member 100. Further, a piston 136 having a longitudinal passage 137 is arranged to operate in the cylinder 132, the inner end of passage 137 being normally closed by a flap valve 142. The piston 136 is pivotally connected by a rod 138 to a pin 140 carried in a member 145 fixed to the shell 52 of the device between the counting wheels 69 and 70. As the member 100 is operated in a counting movement, the head 133 of cylinder 132 moves counterclockwise, from the position of Fig. 7 to the position of Fig. 10, with air being drawn into the cylinder through passage 137 and valve 142 thereby permitting free movement of the member 100 in the counting direction. After the counting movement of the member 100, the spring 101 tends to return the member and the cylinder 132 to the position of Fig. 7, which action closes the valve 142 on the piston 136. In order to exhaust the air in the cylinder 132 during this return movment and to control the speed of return and thereby substantially eliminate accidental counting movements of member 100, the cylinder is provided with an adjustable valve 143 in an opening in the wall of the cylinder.

In order to prevent overtravel of wheel 69 during a counting movement of member 100 there is provided a plate 150 fixed to the member 145 by screws 146 (Figs. 8 and 13). The plate 150 covers the pawl 104 in such manner that the slightest overtravel of wheel 69 and ratchet 106 will cause the riser portion between two adjacent teeth of the ratchet to wedge the pawl 104 against the plate thereby effectively preventing further movement of the wheel in the counting direction. On the return movement of the member to its position of Fig. 7, in the event the wheel 69 has received a slight overtravel, the wheel will be returned to accurate position, by detent means hereinafter set forth.

Overtravel of the wheel 70 is prevented by a plate member 152 pivotally mounted on the shaft 67 having a projecting portion 154 which covers the pawl 114 when it is permitted to contact the teeth of ratchet 116 by engagement of the false pawl 112 with tooth 119 in the disc 118. The member 152 is yieldably biased to the position of Figs. 6 and 7 by a spring 153 which is connected between an extension 147 of the member and a pin 148 carried in the plate 150. The plate member is limited in its clockwise movement by engagement of the extension 147 with one of the screws 146 (Fig. 10), as shown in Fig. 7. While the false pawl 112 contacts the outer periphery of the disc 118, due to the fact that the diameter of disk 118 is greater than that of ratchet 116, the pawl 114 engages an edge 151 of the plate member 152 during the counting movement of the member 100 to turn the member 152 in the counterclockwise direction against the action of the spring 153. Otherwise, pawl 114 would not be able to make an effective racking stroke or else would strike the ratchet 116 each time the actuator 50—100 is operated, thereby destroying the utility of the dozens wheel 70 in the organization shown. However, when the false pawl 112 enters the tooth 119 of the disc 118 and permits engagement of the pawl 114 with the teeth of ratchet 116, the counting movement of the member 100 carries the pawl 114 beneath the projection 154. Therefore, a slight overtravel of the wheel 70 will cause the riser between two adjacent teeth in the ratchet 116 to wedge the pawl 114 against the projection 154 and prevent further overtravel of the wheel 70. Upon return of the member 100 to its starting position (Fig. 7), the wheel 70 will be returned to accurate counting position as hereinafter set forth.

The detent means for accurately maintaining the wheels 69 and 70 in each counting position comprises balls 160 carried in extended portions 162 of member 145, overlying the inner surface of flanges 71 and 72 of wheels 69 and 70, respectively, and forming cages for the balls 160 as shown in Fig. 8. The balls 160 are pressed into apertures 164 and 165 in the flanges 71 and 72, respectively, by springs 166 abutting portions 162, the apertures in the flanges being equal in number to the counting positions of the wheels. With this arrangement when the wheels are given a slight accidental overtravel during the counting movement of the finger 50 and member 100, the balls 160 are pressed into the apertures by the springs 166 with sufficient force to return the wheels to accurate counting or registering position.

In the foregoing description, only the situation has been considered in which the counting device is stopped on an even dozen. Of course, there will be times when the batch of stockings being counted is less than twenty-four (two

dozens). Therefore it is necessary that means be provided for turning the counting wheel 69 to its zero or starting position. However, due to the constant engagement of the pawl 104 with the ratchet 106 on the wheel 69, the wheel may only be turned in the counting direction. The means shown for turning wheel 69 is in the form of a handwheel 168 which is secured to the shaft 67. Therefore, with the wheel fixed to the shaft, as hereinbefore set forth, turning the shaft by means of the wheel 168 will also turn the wheel 69. Insofar as the dozens wheel 70 is concerned, the wheel may always be reset by means of pin 87 as the pawl 114 is always maintained out of engagement with the ratchet 116 by engagement of the false pawl 112 with the disc 118, as hereinbefore set forth.

Of course, the improvements shown and described, by which I obtain the above results, can be changed and modified in various ways without departing from the scope of the invention herein disclosed and hereinafter claimed.

I claim:

1. A counting device having a counting means including a units wheel and a higher order wheel, means for actuating said wheels in the counting direction including a pawl and a toothed ratchet for each of said wheels, the ratchet means for the higher order wheel including a plate member connected to turn with the units wheel and having a tooth recessed in its surface, a false pawl connected to the pawl for the higher order wheel and adapted to engage said plate member, and means for preventing overrunning of the ratchet for the higher order wheel including a pivoted member having a portion against which the pawl for the higher order wheel thrusts in positions in which the false pawl is out of engagement with the tooth of said plate member to turn said pivoted member out of the way of said pawl for the higher order wheel but beneath which said latter pawl slides without turning said pivoted member when the false pawl engages the tooth in said plate member.

2. A counting device having lower and higher order counting wheels, means for actuating said wheels in the counting direction including a pawl and a toothed ratchet for the lower order of wheel and a second pawl and toothed ratchet for the higher order wheel, a lever operated at each counting action of the device and on which said pawls are pivoted, a disc having a recess in the outer periphery thereof connected to said lower order counting wheel for rotation therewith, a pawl-like member connected to said second pawl and adapted to engage the outer periphery of said disc to prevent engagement of said second pawl with its toothed ratchet and actuation of said higher order counting wheel except when said pawl-like member engages said recess, and means for preventing overrunning of said higher order counting wheel including a pivoted member having a portion overlying said second pawl when it is permitted to engage said toothed ratchet.

3. A counting device having a higher order counting wheel, means for actuating said wheel including a toothed ratchet, a lower order counting wheel, a lever operated at each counting action of the device, a pawl for cooperation with said ratchet and connected to said lever for operation thereby through uniform strokes, a disc having a recess on the outer periphery thereof, means connecting said disc to said lower order counting wheel for rotation therewith, a member connected to said pawl and adapted to engage the outer periphery of said disc to hold said pawl disengaged from the toothed ratchet during said strokes except when said member enters said recess, and means cooperating with said pawl for preventing overrunning of the higher order counting wheel when moved by the engagement of said pawl with said ratchet.

4. A counting device having a counting means including a units wheel and a higher order wheel, actuating means for turning said wheels in the counting direction and movable through actuating strokes upon each operation of said counting device, means for normally holding said higher order wheel actuating means in inactive position during its stroke and including means to permit said actuating means to move to active position to turn said higher order wheel at intervals, means for preventing overrunning of said units wheel, and pivoted means cooperating with the higher order counting wheel actuating means for preventing overrunning of said higher order wheel while permitting said actuating means for the higher order wheel to move through strokes of the same length in both active and inactive positions.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
396,063	Bemis	Jan. 15, 1889
415,982	Solon et al.	Nov. 26, 1889
454,556	Cooley et al.	June 23, 1891
478,241	Shaw	July 5, 1892
543,816	Stitzer	July 30, 1895
628,273	Mallmann	July 4, 1899
723,213	Rinsche	Mar. 17, 1903
751,007	Pratt et al.	Feb. 2, 1904
1,030,304	Hollerith	June 25, 1912
1,036,381	Togna	Aug. 20, 1912
1,333,061	Browne	Mar. 9, 1920
1,517,413	Doerr	Dec. 2, 1924
1,765,262	Farrior	June 17, 1930
1,781,055	Dudley	Nov. 11, 1930
1,917,732	Petter	July 11, 1933
2,022,613	Ammon	Nov. 26, 1935
2,054,385	Meier	Sept. 15, 1936
2,102,046	Tyler	Dec. 14, 1937
2,153,215	Torkelson	Apr. 4, 1939
2,165,527	Autem	July 11, 1939
2,191,616	Grizey	Feb. 27, 1940
2,192,430	Branner	Mar. 5, 1940
2,406,726	Weimont	Aug. 27, 1946
2,441,767	Johanson	May 18, 1948