April 7, 1931. W. C. BULL 1,799,408

LISTING, COUNTING, AND PRINTING MACHINE

Filed Sept. 24 1928 9 Sheets-Sheet 1

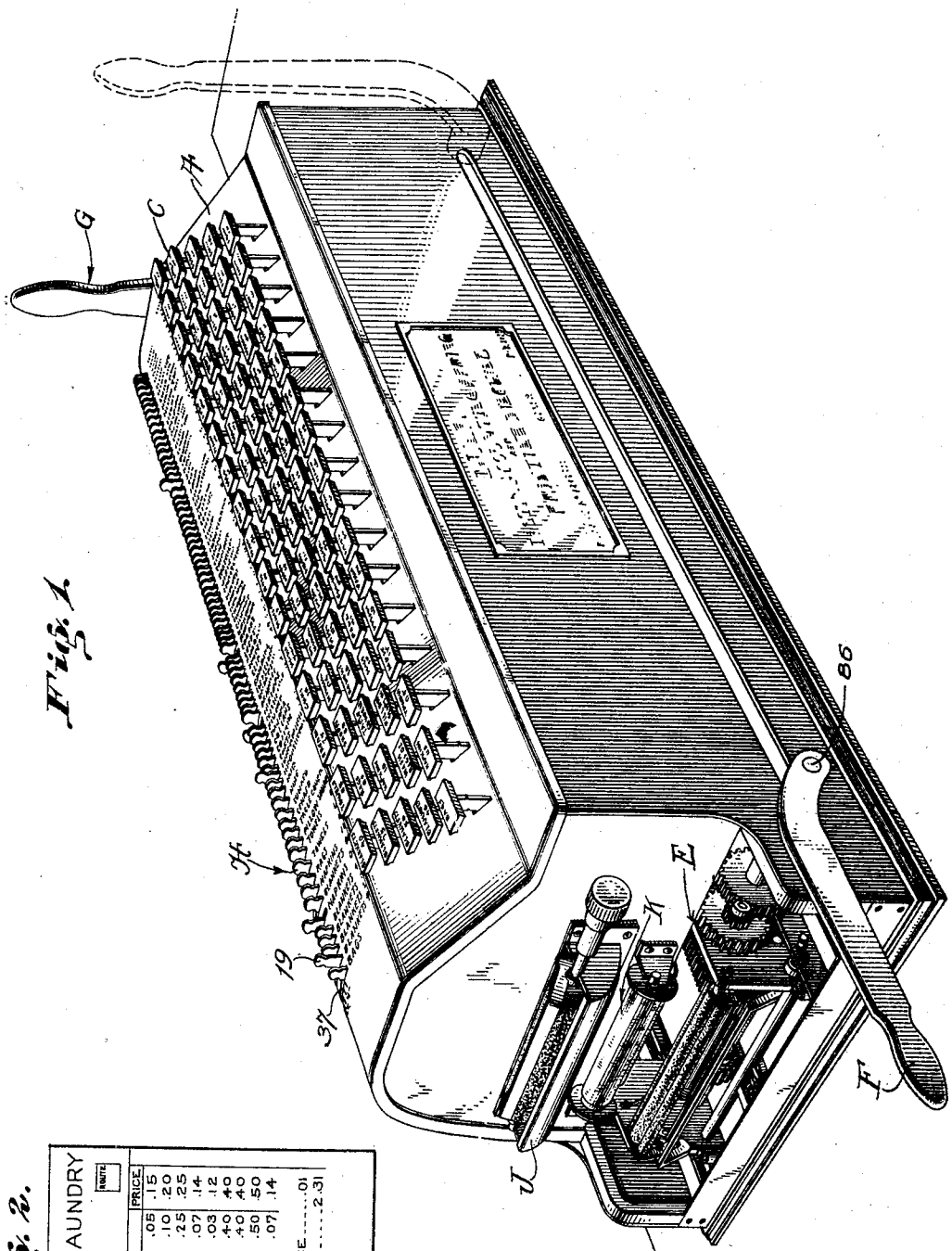

Fig. 1.

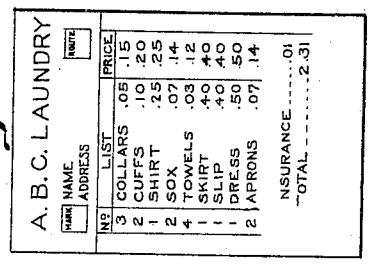

Fig. 2.

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LISTING, COUNTING, AND PRINTING MACHINE

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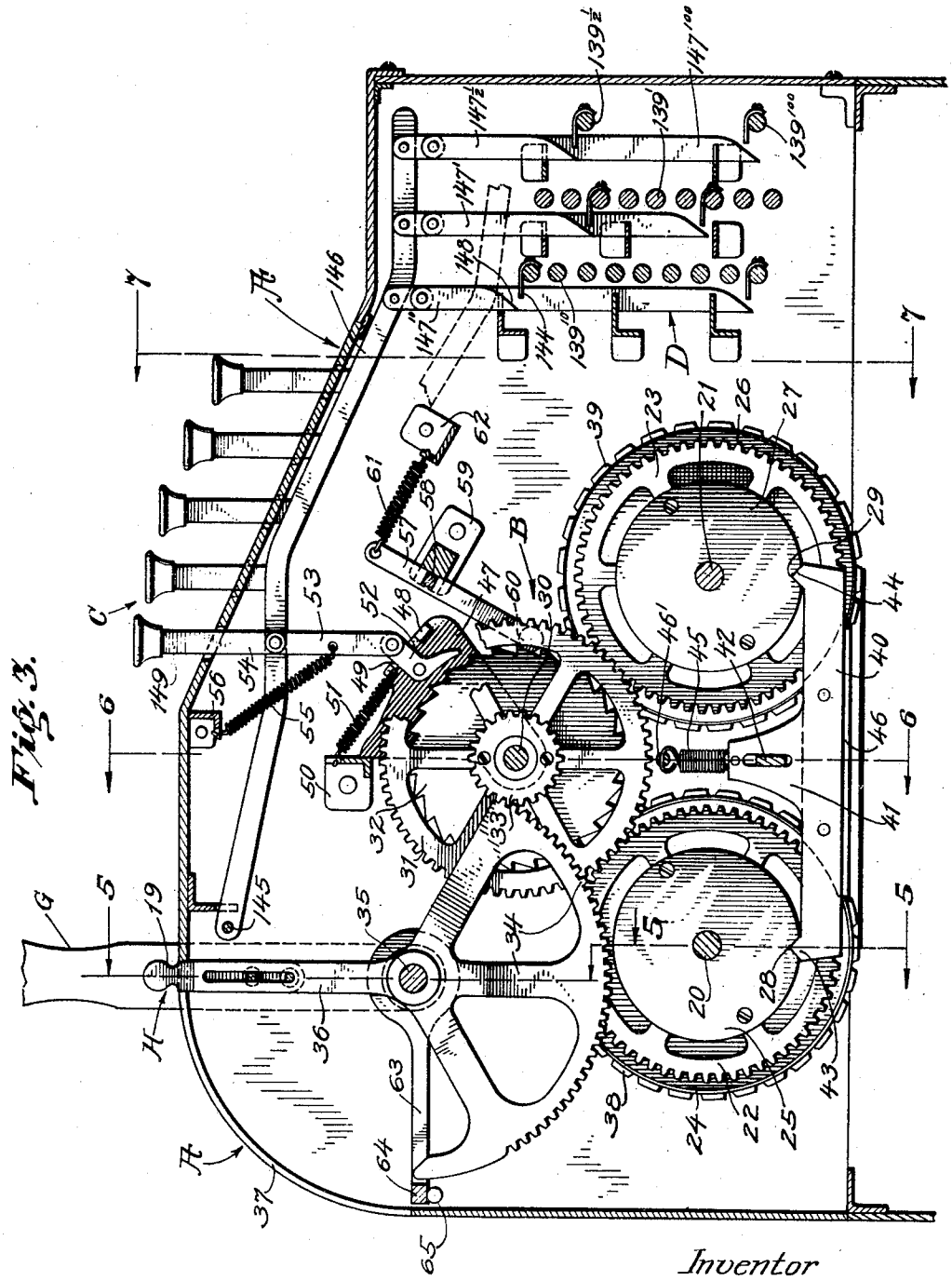

Fig. 3.

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LISTING, COUNTING, AND PRINTING MACHINE

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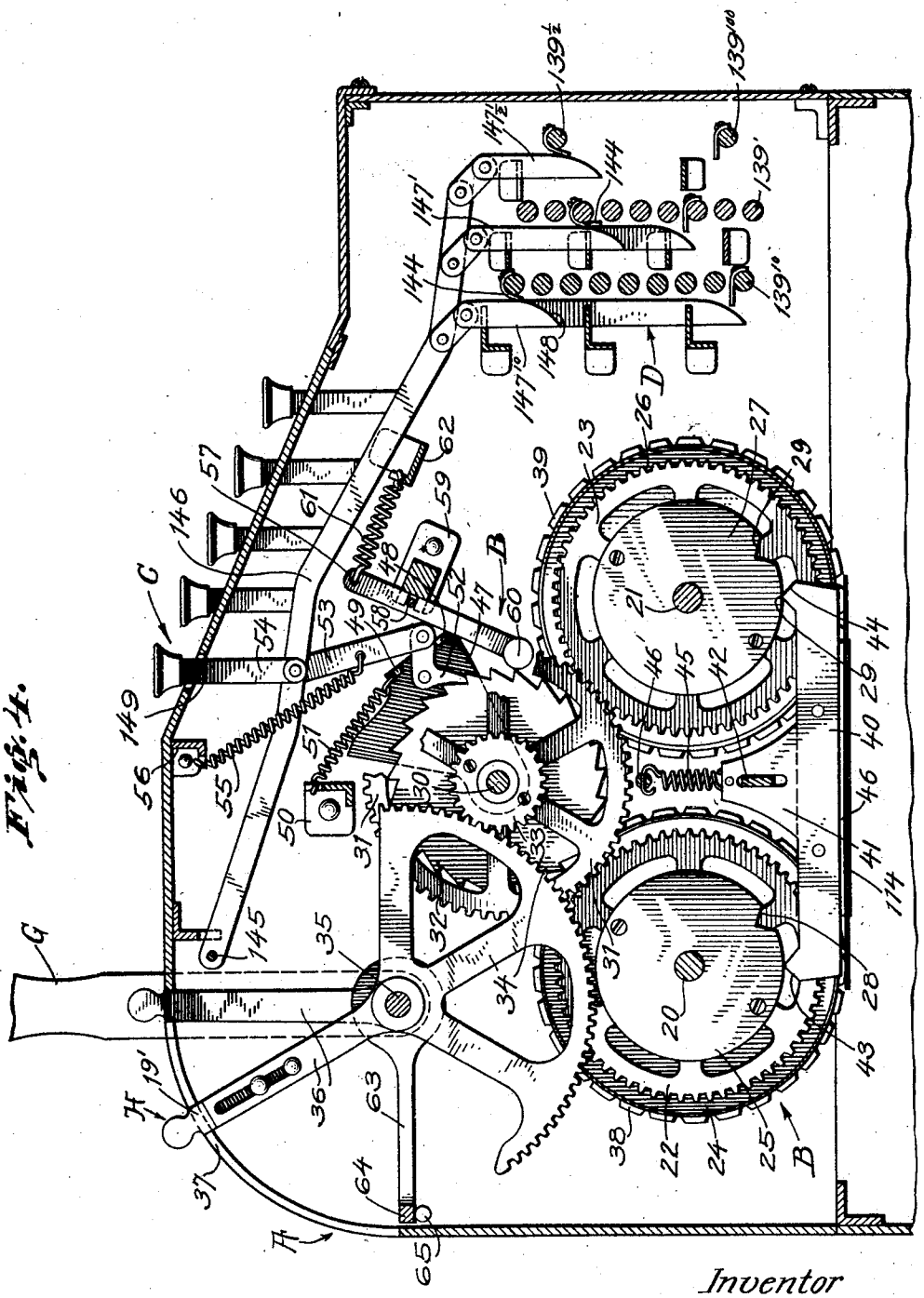

Fig. 4.

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Fig. 7.

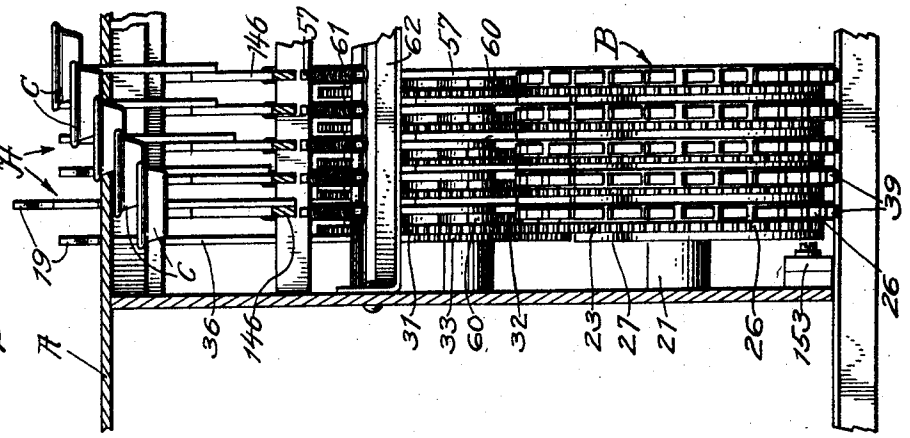


Fig. 6.

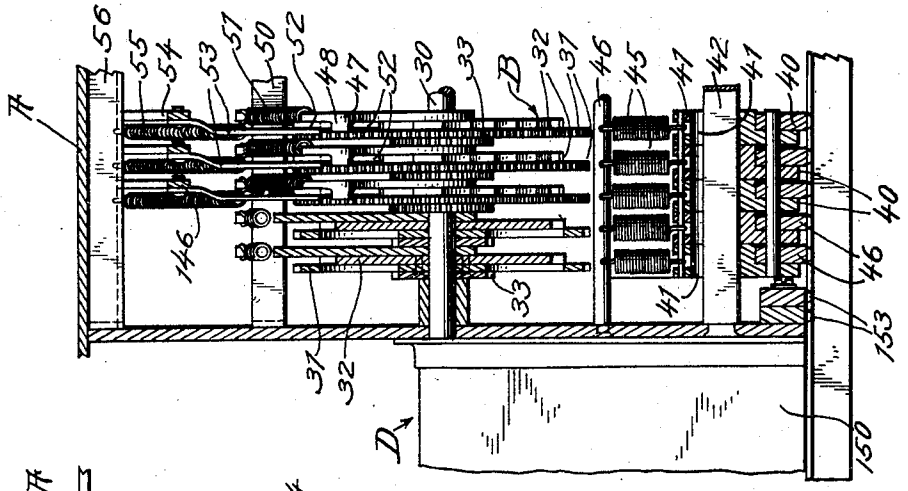
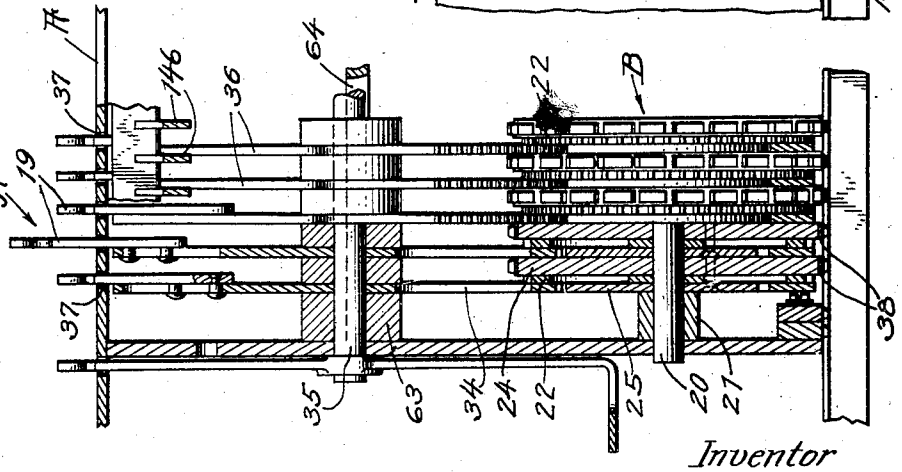


Fig. 5.



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LISTING, COUNTING, AND PRINTING MACHINE

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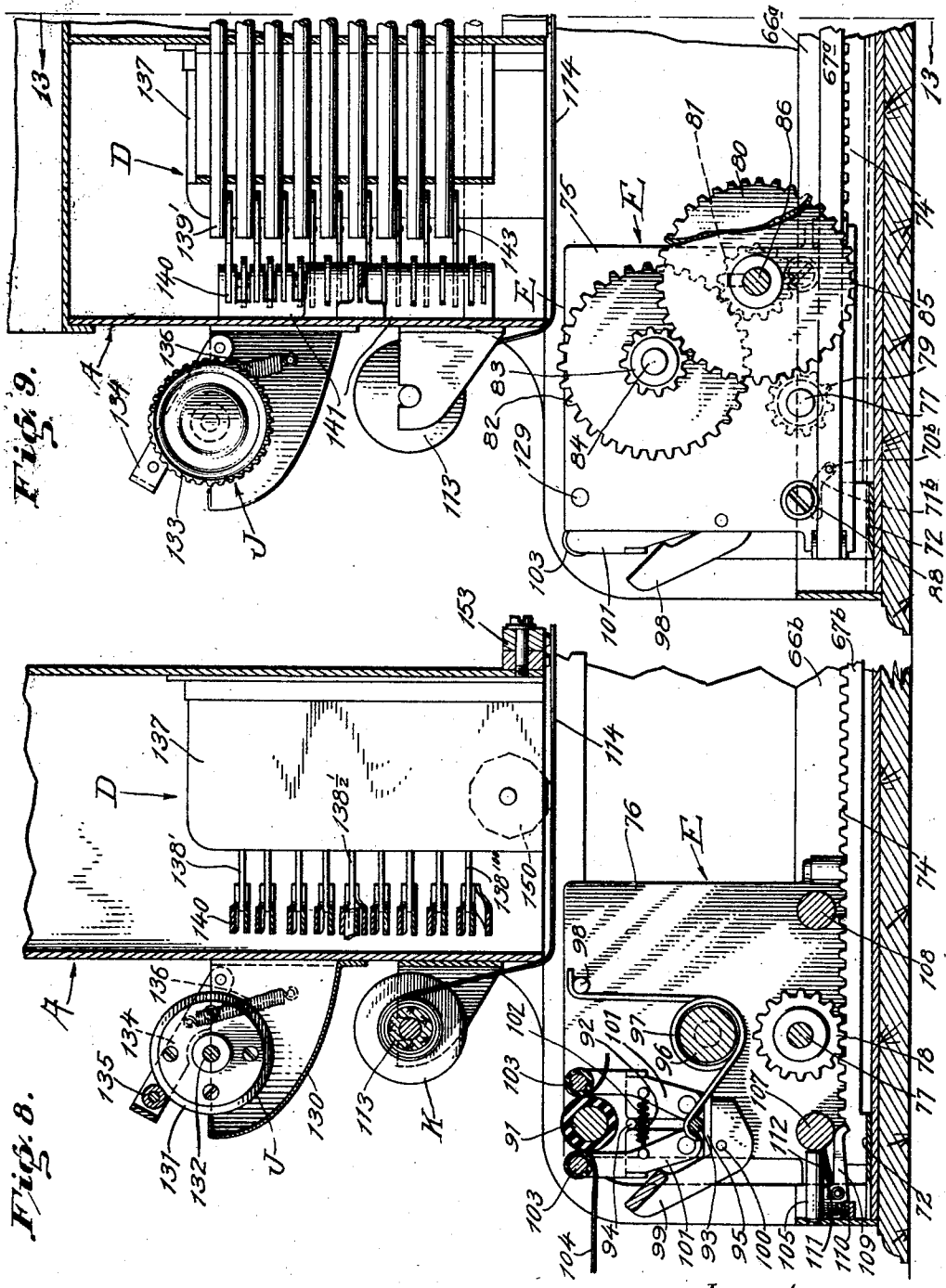

Fig. 9.

Fig. 8.

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LISTING, COUNTING, AND PRINTING MACHINE

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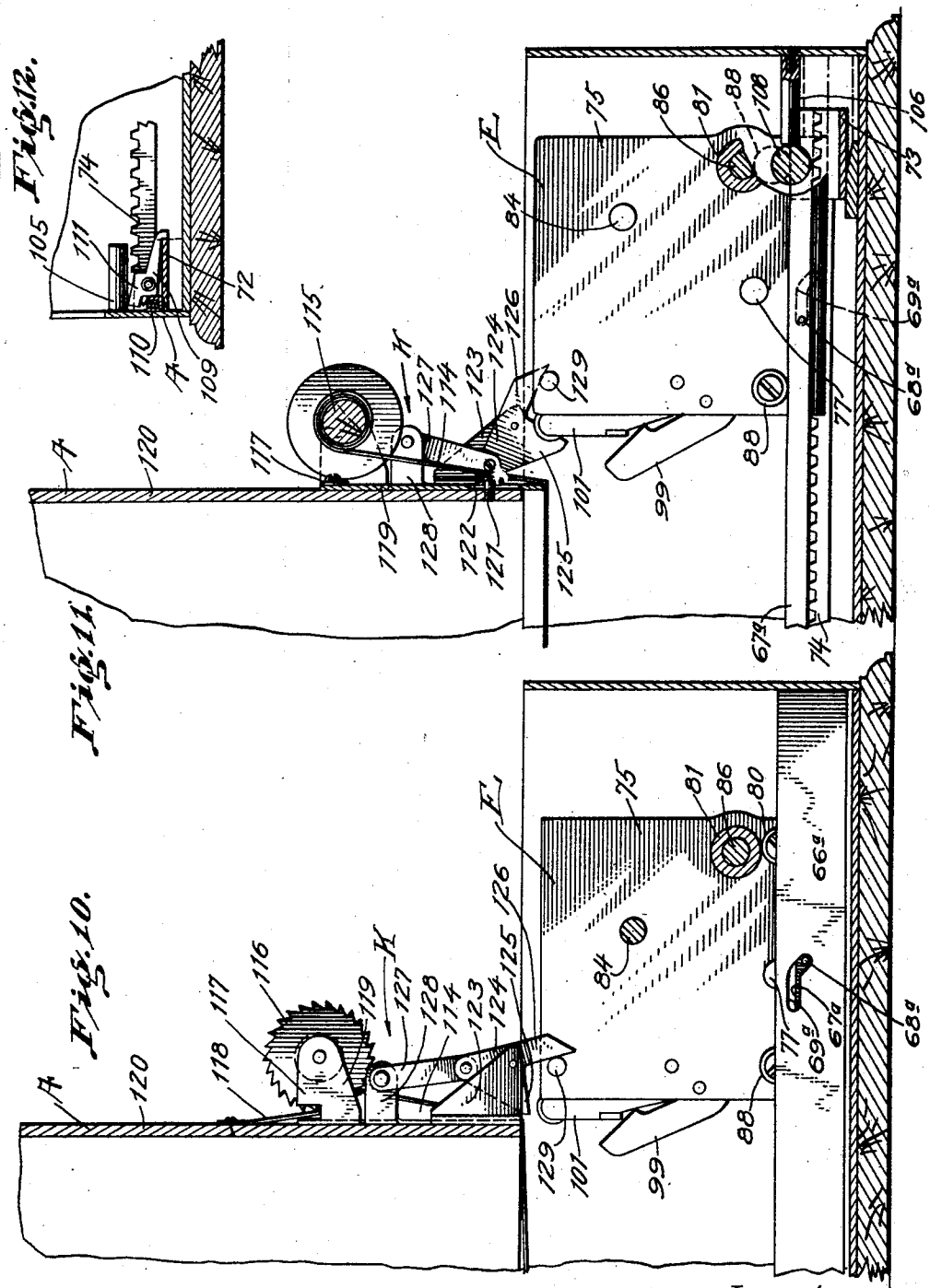

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Fig. 14.

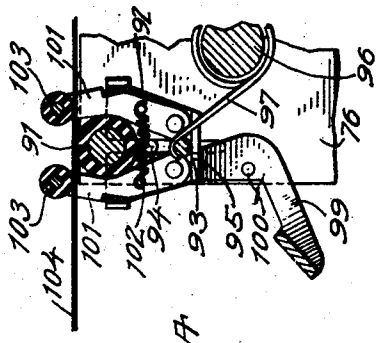

Fig. 13.

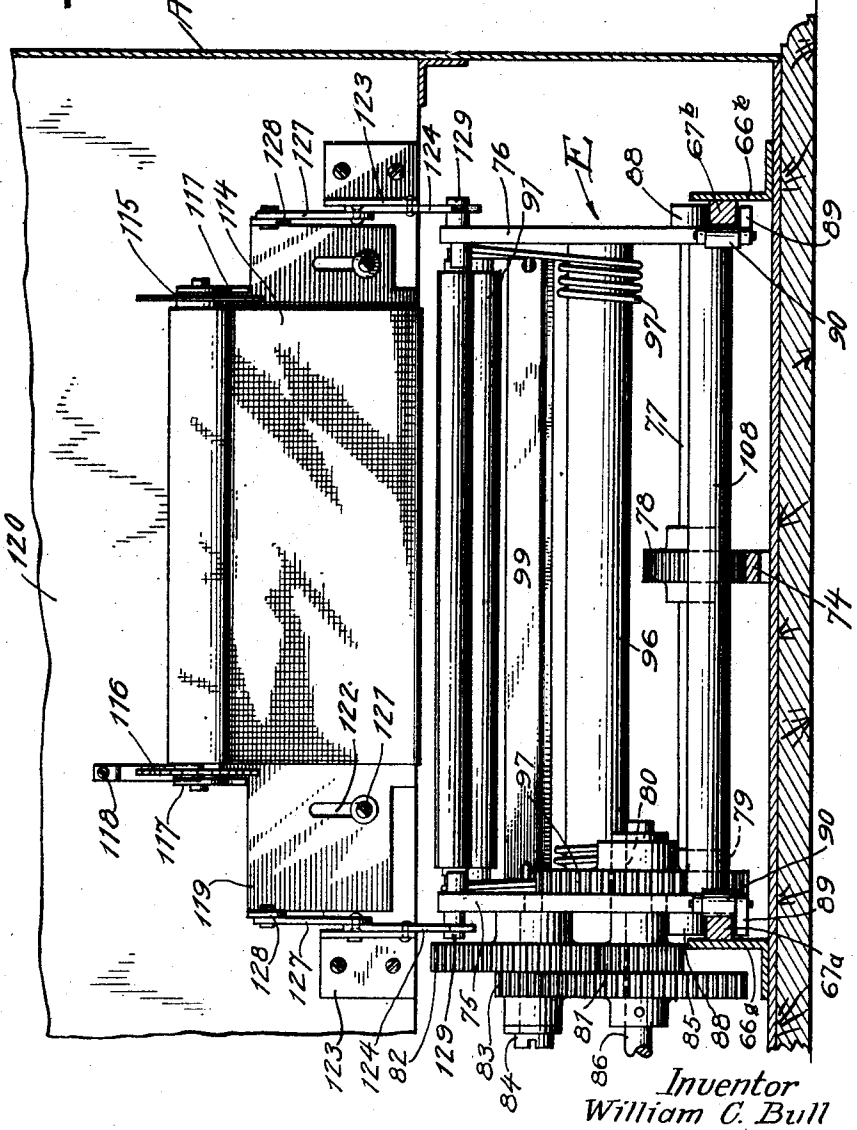

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Fig. 16.

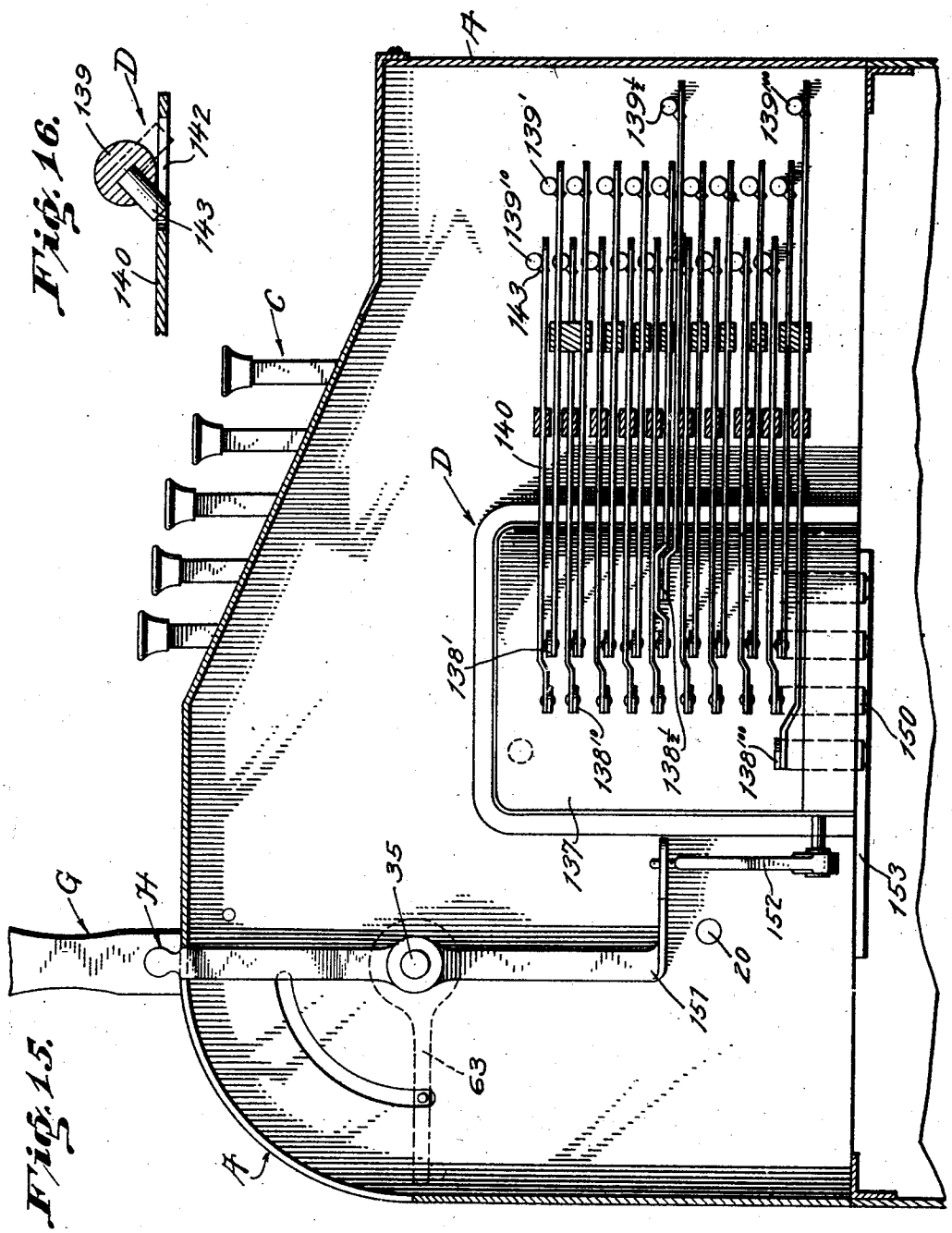

Fig. 15.

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LISTING, COUNTING, AND PRINTING MACHINE

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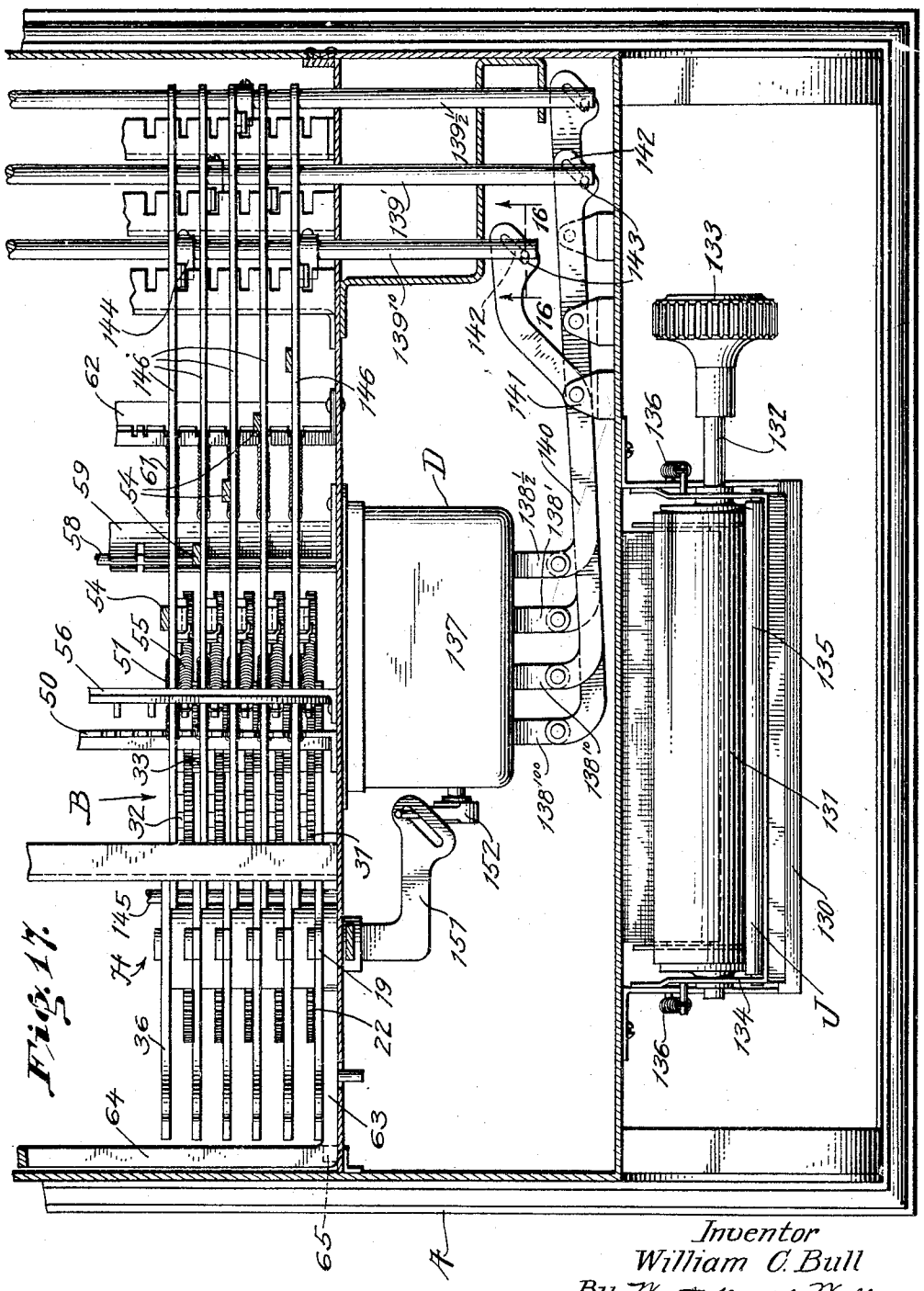

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Patented Apr. 7, 1931 1,799,408

UNITED STATES PATENT OFFICE

WILLIAM C. BULL, OF SANTA MONICA, CALIFORNIA

LISTING, COUNTING, AND PRINTING MACHINE

Application filed September 24, 1928. Serial No. 307,906.

This invention relates to an accounting machine for printing selectively a list of separate articles, the count or number of such articles, the corresponding price or the quantity of each group of the several selected articles. It also contemplates the provision of a totalizer for indicating the total amount of all the prices and, if desired, an insurance rate. Such a machine has a variety of uses, but herein, as illustrative of a specific use, it is described as applied to listing, counting, and carrying out the prices of articles to be laundered. However, it will be understood that it is in no manner limited to such use.

In laundries, it is the common practice to employ a previously printed slip containing a list of all articles which may form the objects to be laundered. A checker upon receipt of a laundry bundle, examines the same and prepares a slip by noting thereon opposite each printed article the quantity of each found in the bundle. This slip is then completed by clerks carrying out the quantity prices and totaling them. Obviously, a long list is required containing all of the various articles which may be laundered and only a few of these articles may be present in the bundle. The checker must make indications on the list in the spaces provided opposite the separate articles, and must search over the list to find the printed location of the articles. Also, the separate articles of the same character preferably must be grouped before making the notations. This requires time and the operation is subject to error on the part of the checker, such as by failure to indicate the quantity opposite the proper article. The list is not easily read, due to the scattering location of the printed articles on the sheet. Inadvertent marks on the slips result in indicating articles not present. The ultimate result is that time of an adjuster is required to correct the errors thus made. The present invention contemplates a machine for overcoming these objections. The primary object of this invention is to provide a machine having groups of article-indicating printing members, quantity printing members, and price printing members, setting mechanism to set selected groups in printing position and impression means to cause said selected groups to print on a sheet in tabulated form with each group adjacent an immediately preceding group. Such as a machine without the price printing members as disclosed in my Patent No. 1,664,768, dated April 3, 1928.

Other objects of this invention are to provide a printing machine of the character described having any or all of the following features: means upon the operation of a selected actuator to set in printing position a printing member to designate the article and, if desired, the price for a single article, a corresponding printing member to designate the quantity of such selected articles as determined by operation of the actuator, and a corresponding printing member to designate the price of the quantity of such articles; means to set in printing position several groups of printing members; means to print at one operation on a slip and in tabulated form with no open spaces between the printed groups, the articles, quantities and prices of the selected articles, so that no intervening gaps occur on the slip between the printed groups; means to visualy indicate the groups of printing members set in printing position; actuating means to operate the quantity and price printing members of a selected group successively step by step, or by one operation the total quantity and prices of a selected group; means to print the total of all the prices of all selected articles and, if desired, an insurance charge; means to restore all the printing members to initial or zero position for another listing; and structural details for accomplishing these purposes.

Fig. 1 is a perspective view of a machine; Fig. 2 is a face view of a laundry slip as printed by the machine; Fig. 3 is a sectional view from front to back through the upper portion of a machine showing a unit of the imprinter with the elements thereof in initial or non-printing position; Fig. 4 is a view like Fig. 3 with a unit in printing position; Figs. 5, 6 and 7 are sections as seen on the lines correspondingly numbered in Fig. 3; Fig. 8 is a

sectional view transverse to Fig. 3 showing a fragment of the machine with the platen carriage at one end of the machine in initial position; Fig. 9 is a view similar to Fig. 8 showing parts in elevation; Figs. 10 and 11 are sectional views of a fragment of the machine showing the platen carriage in two positions adjacent the other end of the machine; Fig. 12 is a sectional view of a fragment of the device showing the rail locking mechanism; Fig. 13 is a sectional view through the machine showing a fragment thereof and including the platen carriage in side elevation; Fig. 14 is a transverse section through a fragment of the platen carriage showing the slip holding device in detail; Fig. 15 is a section through the machine showing an end elevation of the totalizer; Fig. 16 is a sectional view on an enlarged scale showing the details of the connection between the totalizer operating shafts and levers, and Fig. 17 is a horizontal section through a fragment of the machine showing the relation between the totalizer and the key bars.

Referring more particularly to the drawings, A marks a frame or case enclosing the imprinter and totalizer parts, in the top of which is mounted the imprinter B. The imprinter includes imprinter units of like character arranged side by side and structurally duplicates of one another. These are actuated by keys C to set selected imprinter units in printing position so as to be ready to impress on a laundry slip the article, quantity and price. At the same operation, the totalizer D is actuated to accumulate the price amounts registered by the operation of the keys. The platen carriage E is reciprocable by a lever F to cause an impression to be made on a laundry slip and to return the same for removal. A restoring lever G is provided for operation to cause the return of the imprinter units to initial or zero position. H are indicating levers to visually indicate the impression position of the set units and to serve for setting of the units independent of the keys. As each depression of the keys moves a corresponding unit one step, it may be found convenient when a number of the same kind of articles are to be registered to operate the corresponding indicating lever to set the units and thereby avoid a multiplicity of depressions of the corresponding key. J is a device mounted upon the end of the case for smoothing a laundry slip which may become crumpled. An inking ribbon mechanism is marked K.

Referring particularly to Figs. 3 to 7, parallel shafts 20 and 21 extend longitudinally of the case and have rotatably mounted thereon like gear wheels 22 and 23 respectively. Fixed to each wheel 22 so as to be rotatable therewith is a type wheel 24 and a cam wheel 25. The wheels 22, 24 and 25 are operated together as a unit and referred to as an imprinter wheel. It is obvious they may be made integral. There are a number of these wheels mounted side by side, each one corresponding to a separate article to be printed. Shaft 21 has rotatably mounted thereon corresponding wheel units comprising a gear 23, a type wheel 26 and a cam wheel 27 all secured together. There are a multiplicity of the latter wheel units corresponding in number to the imprinter wheel units on shaft 20. The wheel units on shafts 20 and 21 are alined in pairs. Each cam wheel 25 has a notch or low point or dwell 28, and each cam wheel 27 has a like notch 29. Extending longitudinally through the case is a shaft 30 disposed parallel to shafts 20 and 21 and above the level thereof. Rotatably mounted upon the shaft 30 side by side are gear wheels 31 corresponding in number to the pairs of gear wheels 22 and 23 and disposed so that each gear wheel 31 meshes with a pair of alined gear wheels 22 and 23. Secured to each gear wheel 31 is a ratchet wheel 32 and also a pinion 33. Each ratchet wheel serves for operation of its attached gear, or the gear may be operated by a corresponding segmental gear 34 in mesh with pinion 33. There are a group of segmental gears rotatably mounted upon a shaft 35 extending longitudinally of the case. Each segmental gear has an operating arm 36 extending therefrom through a corresponding slot 37 in the case. The arms have finger pieces 19 slidably attached thereto by a pin and slot connection permitting extension of a finger piece to better position it for manual operation of its arm. The type wheels 24 and 26 have rims adapted to receive type bands 38 and 39 carrying type. These bands have type arranged in progression to indicate quantity and to indicate prices. The type wheel 26 carries the prices arranged in arithmetical progression. By providing separable type bands, the prices may be changed for any price type wheel. The type bands upon the quantity type wheels may be changed for replacement. At the lower side of each pair of cam wheels is a follower bar 40 having an extension 41 with an elongated slot, through which extends a guide bar 42 secured at its ends to the case. At the ends of each follower bar are projecting tips 43 and 44 adapted to ride over the surfaces of the corresponding cam wheels and to enter the notches 28 and 29. Secured to each follower bar is a tension spring 45 fastened at its upper end to a supporting rod 46 extending longitudinally of the case. Each pair of gear wheels 22 and 23 are operated by a gear wheel 31 and rotate in the same direction. The cam wheels of the pairs are so positioned that the notches 28 and 29 will be in the parallel angular position whereby the tips 43 and 44 will intrude in the notches 28 and 29 at the same time. The

edges of the tips and the notches are inclined so that the tips will be caused to ride in and out of the notches on rotation of the cam wheels. When in the notches, the follower bars are in retracted or upper position as shown in Fig. 3. When the tips are out of the notches or in the printing position dwell, the follower bars are projected as shown in Fig. 4. Each follower bar carries a type slug 46 to indicate an article and is hereinafter called an article printing member. The type slug projects beyond the follower bars, so that when the latter are projected, they will be in the same plane as the type on the type band. The zero on non-printing position of the quantity and price wheel is that shown in Fig. 3, the follower bar 40 being retracted so that it will not be in printing position. The quantity, price and article printing members which are geared together constitute a group.

Pivotally mounted upon the shaft 30 between adjacent wheel units are plates 47 forming a part of ratchet mecahnism and serving as spacers for the wheel units on the shaft. Each plate has spaced laterally extending lugs 48 and 49 to accommodate a ratchet pawl. The rear end of each plate provides a shoulder for abutting a limiting bar 50 extending longitudinally of the case. A retracting spring 51 is provided for each plate and is secured to the bar 50, tending to hold the plate in abutment with the bar. Pivotally mounted upon each plate is a pawl 52 of bell crank form having a tooth adapted to engage between the teeth on a corresponding ratchet wheel. A link 53 is pivotally secured to each pawl and to the stem 54 of a key C. Each link has a tension spring 55 secured thereto and to a bar 56. The springs 55 tend to buckle the links and pawls so as to maintain them in position shown in Fig. 3, with the pawls out of engagement with the ratchet wheels. Upon depression of a selected key, its link 53 is buckled in the opposite direction as shown in Fig. 4 against the action of its spring 55, engaging lug 48 on the plate 47, and moving the plate and tooth of the pawl into engagement with the corresponding ratchet wheel, and turning the latter one tooth, the plate being swung downwardly against the action of its spring 51. Upon the release of the depressed key, its spring 55 returns it to upper position, the pawl following the lug 49 during its return which is effected by spring 51 until the plate abuts the bar 50 at the end of its movement. The key and its associated parts are then ready for another operation. A centering and latching pawl is provided for each ratchet wheel and comprises a lever 57 having a pivot bar slot to receive a pivot shaft 58 extending along a transversely slotted bar 59, each lever operating in a slot in the bar 59. Each lever bar 57 has at its end adjacent its corresponding ratchet wheel a laterally extending cylindrical lug 60 adapted to ride over and between the teeth on its ratchet wheels. A retraction spring 61 is provided for each lever 57 and is secured to a bar 62 extending across the case. The centering pawls are maintained against the ratchet wheels and tend to center the latter and hold the ratchet wheels in set position. However, due to the cylindrical stubs 60, the ratchet wheels may be moved against the action of the centering pawls in either direction. Depression of a key to advance a ratchet wheel, causes the segmental gear 34 to be turned and the corresponding indicating lever 36 to be swung in its slot. Scales may be marked on the case alongside of each indicating lever head with numerals so that the set positions correspond with the number of depressions of the actuator keys, or quantity beginning in their initial or zero positions. The cap of each actuator key may be marked with the name of the article, or the case may be marked adjacent the keys. Obviously, the groups may be operated independently of the actuator keys by swinging the indicating levers to the desired printing numeral for quantity marked on the scale along side of the indicating lever. Also the indicating levers may be employed to correct errors in quantity.

The initial non-printing position of a group is indicated in Fig. 3. Upon actuation of any key, the imprinter wheels are advanced one step to bring the quantity type on imprinter wheel 24 to its lower or printing position. At the same time imprinter wheel 26 is moved a corresponding amount to bring the appropriate price type into printing position. Upon turning of the pair of imprinter wheels, the corresponding follower bar 40 is projected, so that the article type thereon is in printing position. The follower bar is maintained projected during further advance of the imprinter wheels by reasons of its tips riding on the high dwell of the cam wheels. Another depression of the same actuator key will advance the imprinter wheels another step to bring the succeeding quantity type and the succeeding price type into printing position, the article type being maintained projected. Suppose that there are five articles of the same kind picked from the bundle, instead of operating the corresponding key five times, the indicating lever H for that article may be swung to the position on its scale, thereby positioning the quantity and price imprinter wheels in position to make their proper impression and maintaining the follower bar with its article type projected to make an impression. If an error is made in registering too great a quantity, the indicating lever may be returned to correct position.

In order to restore the groups to their initial or zero position, the indicating levers

are turned back to their initial positions. A single means for performing this operation is shown. Pivotally mounted upon the shaft 35 at opposite sides of the group of segmental gears are arms 63 carrying a cross bar 64. Upon swinging the arms 63 toward the indicating lever, bar 64 will engage any or all of the indicating levers which have been advanced and will carry them back to the ends of their slots in the case. This causes the groups to be returned to their initial position or non-printing position. Secured to one of the arms 63 is the operating lever G mounted outside the end of the frame. By swinging the lever G toward the front of the machine, the indicator bars and the associated mechanisms will be returned to their initial position. A stop rod 65 limits the rearward position of the arms 63.

It is obvious that by operating the keys or the indicating levers the types indicating the selected articles will be projected and the quantities and prices associated with each article advanced into printing position. It is now only necessary to impress upon a slip the types set or positioned in printing position. To this end, a platen carriage supporting the slip of paper is reciprocated along the face of the type and moved toward or away from the type to print or non-print.

Mounted along the base of the case and extending longitudinally thereof in spaced parallel relation are guide bars 66*a* and 66*b*. Disposed on the inside of the guide bars and slidably resting against them are rails 67*a* and 67*b*. Rail 67*a* is connected by pins thereon riding in slots in the guide bar 66*a*, one of these pins being indicated by 68*a* and its slot by 69*a* in Figs. 10 and 11. The slot 69*a* is of angular form having an end inclined portion leading upwardly to the left to a horizontal portion. At the other ends of the guide bar 67*a* and rail 66*a* are corresponding pins and slots. The rail and guide bar 67*b* and 66*b* are similarly connected. In Fig. 9, the pin and slot at the opposite end are marked 70*b* and 71*b*. A cross member 72 connects the rails at the left ends and a similar cross member 73 connects the rails at the other ends so as to provide a rail frame. The rails are thus tied together and slidable between the guide bars longitudinally thereof for a limited distance. The rail frame at one end of its travel will be elevated, the pins being disposed in the horizontal portions of the slots, and at the other end of their travel will be lowered, the pins being disposed in the lower ends of the inclined portions of the slots. By reciprocating the rail frame, the rails are thus raised and lowered. Extending longitudinally of the rails and intermediate them is a rack bar 74 secured to the cross members 72 and 73 and coextensive with the rails.

The platen carriage comprises side plates 75 and 76 suitably spaced and tied together by cross member. A shaft 77 extends between and is journalled in the side plates. Fixed to the shaft is a ponion 78 meshing with the rack. Also fixed to the shaft 77 is a smaller pinion 79. Pinion 79 meshes with a gear 80 having an extended hollow hub constituting a hollow shaft journalled in the side plates. Fixed to the extended end of the hub so as to be rotatable with pinion 80 is a pinion 81 meshing with a gear 82 having an extended hub carrying a pinion 83 meshing with a gear on a shaft 84 secured to the plate 75. A gear 85 is secured to a shaft 86 journalled on the hollow hub of pinions 80 and 81 and extends through a slot in the front of the case as shown in Fig. 1, it having secured thereto handle F. Gears and pinions 79 to 84 constitute step-up gearing between the lever handle F and the shaft 77. Rollers 88 mounted on the side plates ride upon the tops of the rails, and cooperating lugs 89 extend beneath the rails from the side plates so as to hold the platen carriage to the rails. Bearing against the inner faces of the rails are rollers 90. This provides for anti-friction bearing between the rails and the carriage. The step-up gearing is so designed that by pulling the lever F through a quarter of a revolution, the pinion 78 will be caused to rotate a number of times sufficient to move the carriage from one end of the rack to the other and to move the rail frame a slight distance.

Extending between the side plates of the carriage and journalled therein is a platen roller 91, preferably covered with rubber or the like. Referring to Figs. 8 and 14, slide plates 92 are slidably disposed on the inside of the side plates 75 and 76. The slide plates are connected by a cross rod 93, and pins 94 on the slide plates are disposed to ride in the slots on the slide plates and guide the latter. Extending laterally inwardly from the slide plates are projections 95 serving as shoulders for the arms of a trigger yoke described. A cross rod 96 ties the side plates of the carriage together and has spiral springs 97 wound around it with ends hooked over a cross rod 98, the other ends being hooked over the rod 93, thereby tending to depress the slide plates 92. The arms of a trigger yoke 99 are pivotally secured to the side plates by pins 100. The ends of the trigger arms engage the shoulders 95, on the slide plates. In the position shown in Fig. 8, the slide plates are in their lower position resting against the trigger yoke, and in Fig. 14 the slide plates are in their upper position resting against the ends of the trigger yoke. Pivotally mounted upon each slide plate are a pair of arms 101, tied together by a tension spring 102 which tends to collapse the arms toward one another. Clamping rollers 103 are journalled between opposite arms and are

preferably covered with rubber or like material. These clamping rollers are held against the platen roller by the spring 102, when the side plates are in depressed position. When in elevated position as shown in Fig. 14, the arms rest against the platen roller with the clamping rollers disposed above and spaced therefrom. A laundry slip indicated by 104 in Fig. 8 is passed around and between the clamping rollers and platen roller as shown. The operation of passing the paper around the rollers is conveniently performed when the parts are in the position shown in Fig. 14, and the slip may be released from the position shown in Fig. 8 by raising the trigger to the position shown in Fig. 14. The platen roller is so positioned that when the rail frame is in elevated position, movement of the carriage below the imprinter will cause the laundry slip to travel against the type which are in set position, the slip being caused to travel over the roller in making the impression.

Raising and lowering of the rails brings the platen into printing or non-printing position. In order to make this automatic so that the platen carriage is lowered at one end of its travel for reciprocation in printing position and then raised at the other end for reciprocation in printing position, I have provided the following described mechanism: The case carries end plates to which are secured limiting posts 105 and 106 limiting the travel of the platen carriage by reason of engagement with cross rods 107 and 108 and permitting a limited travel of the rail frames. Pivotally mounted upon the base at one end is a latch 109 having a tip for hooking over the cross bar 72 on the rail frame. A compression spring 110 tends to maintain the latch with its tip in lower position. A shoulder 111 is provided on the latch and is disposed in the path of travel of a pin 112 projecting from the cross rod 107. This pin is disposed to engage the shoulder 111 of the latch, just before the cross member 107 engages the limiting post 105. Upon rotation of the pinion 78 in a clockwise direction, the latch being in the position shown in Fig. 12, the carriage will be caused to travel from the left to the right over the rail frame. In this position of the rail frame as shown in Figs. 8, 9 and 10, the frame will be in lowered or non-printing position. Obviously, the rail frame may have a limited travel after the platen carriage has reached the right hand end of its travel by reason of the pin and slot connections between the rail and the side plates. When the platen carriage reaches the right hand side of the machine as shown in Fig. 11, its travel is stopped by cross rod 108 engaging limiting post 106 and further rotation of the pinion 78 in clockwise direction cause movement of the rail frame toward the left, latch 109 hooking over cross bar 72. This causes elevation of the rail frame, and positioning of the platen carriage in impression position. The lever F is then swung in the opposite direction to cause rotation of pinion 78 and return of the platen carriage to the left. On its return the laundry slip is caused to engage the set groups of type, first one group thereby printing and rolling the slip over the platen roll and then the succeeding group until the carriage has neared the left hand end of its travel. Pin 112 engages the latch 109 and lifts the latter thereby releasing the rail frame. Finally cross rod 107 engages limiting post 105 arresting further travel of the carriage. Continued rotation of the pinion 78 slides the rail frame to the right thereby lowering the carriage to non-impression position ready for another operation. The restoring lever G is then swung to restore the printing mechanism to zero. To release the slip printed, the trigger yoke 100 is depressed, raising the clamping rollers 103, permitting removal of the printed slip and insertion of a blank slip. After insertion of the new slip, the finger piece 100 is raised to clamp the slip in position. The setting mechanism is then operated to place in printing position the type for the next bundle.

An inking ribbon is provided between the type and the platen. This ribbon is wound upon a magazine spool 113, the ribbon 114 being passed below the imprinter over the face of the type and over a take-up spool 115. The take-up spool has a ratchet 116 secured thereto, the spool being journalled in brackets 117. A pawl 118 mounted on a spring arm fixed to the case also serves the purpose of advancing the spool 115. Brackets 117 are mounted upon a plate 119 slidably secured to the wall 120 of the case by means of pins 121 operating in slots 122 in the plate 119. Brackets 123 are secured to wall 120, and pivotally mounted upon the brackets are arms 124 having fingers 125 and 126. Each arm 124 comprises a member of a toggle, the other arm of which is marked 127 and is pivotally secured to brackets 128 extending from the plate 119. Pins or stubs 129 project from the side plates 75 and 76 of the platen carriage for operating arms 124. On the travel of the platen carriage toward the right, pins 129 engage the fingers 126 as shown in Fig. 11 buckling the toggles, causing plate 119 with the take-up spool to be lowered. Pawl 118 being fixed upon the wall 120 causes the take-up spool to be rotated one step and to move to ribbon 114. On the return trip of the platen carriage, the stubs 129 engage the fingers 125, straightening the toggles and elevating the plate 119 and the take-up spool to cause it to be pulled tight across the face of the type ready for an impression to be made upon a slip by the machine. The operation is then repeated.

The magazine spool is shown disposed under a trough 130. In the trough is a smoothing roller 131 journalled in the sides thereof and having a shaft 132 for operation by a knob 133. A yoke 134 has its arms pivotally secured to the trough and carries a roller 135 journalled therein and paralleling the roller 131. Tension springs 136 are secured to the arms of the yoke and to the trough tending to press the roller 135 against the roller 131. In order to straighten paper, such as crumpled slips, the latter are fed between the rollers 131 and 135, and the roller 131 is turned back and forth by means of knob 133 to smooth the paper.

I have included in the machine a totalizing device for accumulating the prices and printing the total upon the slip. Secured in the case to a wall thereof is a sub case 137 carrying a computing machine or totalizer. This may be a calculator of any well known type having keys for operating it, there being rows of nine keys for units, a parallel row of nine keys for tens, a key for hundred and a key for one half. A set of totalizing wheels are operated by these keys, the case being positioned so that the totalizing printing wheels project in the plane of the type on the imprinter head. Such a machine is well known under the trade name of comptometer. The stems of the keys are marked 138 and the keys in the units row have the exponent 1 added to the 138. The keys in the tens row are indicated by the same numerals and have an exponent 10. The hundred key is marked by the numeral 138 with an exponent 100 and the one-half key is marked 138 with the exponent ½. Extending longitudinally of the case are shafts 139 corresponding to the keys and being marked with corresponding exponents. The shafts are connected to the keys in the following manner. Instead of the caps on the keys, a pivotal connection is made thereto by means ol levers 140 pivotally mounted intermediate their ends in brackets 141. The levers are suitably offset to clear one another and the brackets are arranged to provide for the requisite movement of the keys 138. Slots 142 in the levers are inclined and accommodate pins 143, see Fig. 16. Upon turning a shaft through an angle, its corresponding lever is rocked to actuate the corresponding key 138. Crank pieces 144 are secured to the shafts in position hereinafter more fully explained. Mounted upon a pivot shaft 145 extending longitudinally of the case as best shown in Figs. 3 and 4 are levers 146, one for each key C. Each lever is pivotally attached to a key stem 54 and overhangs the shafts 139. Depending from each lever 146 are fingers 147 arranged in predetermined position and of predetermined length. These fingers are jointed and have inclined shoulders 148 for engaging the crank pieces 144. The number and position of the fingers are arranged in the following manner. Suppose the key marked 149 is arranged to actuate the mechanism to indicate a certain article whose price per article is 13½ cents. A finger indicated by 147 with the exponent 10 is attached to the lever 146 actuated by key 149. This finger is positioned in line with the tens row of shafts and its shoulder is positioned opposite the crank piece on the shaft corresponding to the digit 1 of that row. A second finger indicated by 147 with the exponent 1 is positioned in line with the unit row and with its shoulder located so as to operate the crank piece on the shaft corresponding to the digit 3 of that row. A third finger 147 with an exponent ½ is disposed in line with the crank on the shaft operating the ½ key. Each of the other keys has fingers positioned and arranged to operate the shaft corresponding to the price per article. Upon depression of a selected key C, the shafts corresponding to the price per article for that key are turned, swinging the corresponding levers and operating the corresponding key stems of the calculator. Thus, at the end of the registration by the actuator keys for the various articles and their quantity, the calculator will have been operated to set its printing wheels in position to print the total. Such printing wheels are indicated as a group by the reference numeral 150. The calculator is restored to zero by a linkage 151 connected to a restoring arm 63 and operating the usual restoring lever 152 on the calculator.

Fixed to the wall of the case in advance printing position of the calculator wheels is a type bar 153 always in printing position and indicating "Insurance one cent" or the amount of insurance which is commonly charged. A type bar bearing the legend "Total" is fixed to the case intermediate the insurance bar and calculator printing wheels. The calculating machine may be set ahead one cent to include this amount in the total.

In the operation of the machine, the lever F is swung to bring the platen carriage to its left hand position. The trigger yoke 100 is depressed and a slip for printing is inserted therein, the trigger member then being raised so as to clamp the slip to the platen roller, and the lever F then swung to cause the platen carriage to travel to the right. The setting mechanism will be in zero position. The keys C are then selectively operated to set the type and indicate the articles and the quantity, and then the lever is returned to cause return movement of the carriage. On the return movement of the carriage, the latter is elevated into impression position and the slip rolls below the type to imprint and make a tabulated record of the articles, quantities, prices, insurance and total registered. Upon the platen carriage reaching the left hand position, it is lowered to non-printing position. The registering parts are then restored by

swinging lever G to return the indicating lever G to their zero position. The printed slip is removed and another inserted placing the machine in condition for another operation. In case of an error in setting for a particular article a head 19 corresponding to the article is grasped and lifted, the indicating lever being moved to correct position. The totalizer carries the error and notation thereof must be made on the slip. If the groups are operated by the indication keys a correction must also be made as the totalizer is not operated.

What I claim is:—

1. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing member having characters arranged in numerical progression to designate different quantities, a price printing member having characters indicating values proportioned and corresponding to the characters on said quantity printing member, an article printing member, said quantity and price printing members having a non-printing zero position, actuating means operatively connecting the quantity printing and price printing members of a group to move them in unison into printing position, means operatively connecting each article printing member to the other printing members of a group to place said article printing member in non-printing position at zero position of said other printing member and to set and maintain it in printing position upon disposition of said quantity printing and price printing members out of zero position; and setting mechanism to selectively operate said groups in progressively advancing numerical printing positions.

2. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing member having characters arranged in numerical progression to designate different quantities, a price printing member having characters indicating values proportional and corresponding to the characters on said quantity printing member, an article printing member, said quantity and price printing members having a non-printing zero position, actuating means operatively connecting the quantity printing and price printing members of a group to move them in unison into printing position, means operatively connecting each article printing member to the other printing members of a group to place said article printing member in non-printing position at zero position of said other printing members and to set and maintain it in printing position upon disposition of said quantity printing and price printing members out of zero position; setting mechanism to selectively operate said groups in progressively advancing numerical printing positions; and means to restore said groups to zero position.

3. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a price printing member having characters arranged in numerical progression, an article printing member, said price printing member having a non-printing zero position, actuating means operatively connected to said price printing members to selectively advance them step by step into printing position, means operatively connecting each article printing member to the price printing member of a group to place said article printing member in non-printing position at zero position of said price printing member and maintain it in printing position upon dispositon of said price printing member out of zero position; a plurality of printing position visual indicators, one operatively connected to each group; and setting mechanism to selectively operate said groups in progressively advancing numerical printing positions.

4. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a price printing member having characters arranged in numerical progression, an article printing member, said price printing member having a non-printing zero position, actuating means operatively connected to said price printing members to selectively advance them step by step into printing position, means operatively connecting each article printing member to the price printing member of a group to place said article printing member in non-printing position at zero position of said price printing member and maintain it in printing position upon dispositon of said price printing member out of zero position; a plurality of printing position visual indicators, one operatively connected to each group; setting mechanism to selectively operate said groups in progressively advancing numerical printing positions; and means to restore all of said groups and said indicators to zero position.

5. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing member having characters arranged in numerical progression to designate different quantities, a price printing member having characters indicating values proportional and corresponding to the characters on said quantity printing member, an article printing member, said quantity and price printing members having a non-

printing zero position, actuating means operatively connecting the quantity printing and price printing members of a group to move them in unison into printing position, means operatively connecting each article printing member to the other printing members of a group to place said article printing member in non-printing position at zero position of said other printing members and to set and maintain it in printing position upon disposition of said quantity printing and price printing members out of zero position; a plurality of printing position visual indicators, one operatively connected to each group; and setting mechanism to selectively operate said groups in progressively advancing numerical printing positions.

6. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing member having characters arranged in numerical progression to designate different quantities, a price printing member having characters indicating values proportional and corresponding to the characters on said quantity printing member, an article printing member, said quantity and price printing members having a non-printing zero position, actuating means operatively connecting the quantity printing and price printing members of a group to move them in unison into printing position, means operatively connecting each article printing member to the other printing members of a group to place said article printing member in non-printing position at zero position of said other printing members and to set and maintain it in printing position upon disposition of said quantity printing and price printing members out of zero position; a plurality of printing position visual indicators, one operatively connected to each group; setting mechanism to selectively operate said groups in progressively advancing numerical printing positions; and means to restore all of said groups and said indicators to zero position.

7. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit and geared to said quantity printing unit to rotate in unison therewith, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; and actuators to selectively move a group in unison and progressively step by step into printing position.

8. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit and geared to said quantity printing unit to rotate in unison therewith, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position; and means to restore all said units to zero position.

9. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit and geared to said quantity printing unit to rotate in unison therewith, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position, and indicator levers, one geared to each group for indicating visually the printing position of said units, and operable to move said units independent of said actuators.

10. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities,

a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit and geared to said quantity printing unit to rotate in unison therewith, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position; indicator levers, one geared to each group for indicating visually the printing position of said units and operable to move said units independent of said actuators; and a restoring member engaging all of said indicators for returning them and their coacting units to zero position.

11. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit geared to said quantity printing unit an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position; and a platen carriage reciprocable with relation to said printing members having means to carry a laundry slip over the set printing faces of said members and bar.

12. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit geared to said quantity printing unit, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position; a platen carriage reciprocable with relation to said printing members having means to carry a laundry slip over the set printing faces of said members and bar, and including means to elevate said carriage into impression position on one stroke and to depress said carriage into non-printing position on the other stroke of a cycle.

13. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing wheel unit having characters arranged in numerical progression to designate different quantities, a price printing wheel unit having characters indicating values proportioned and corresponding to the characters on said quantity printing unit geared to said quantity printing unit, an article printing bar, said quantity and price printing units having a non-printing zero position, a cam on each member of a unit with an article printing bar non-printing dwell corresponding to zero position of said quantity and price and a dwell to maintain said article printing bar in printing position at printing position of said units, said bar being disposed to follow said cams; actuators to selectively move a group in unison and progressively step by step into printing position; and a platen carriage mechanism including a platen carriage reciprocable with relation to said printing members having means to carry a laundry slip, rails on which said carriage travels joined to form to a frame, a support for said frame, means connecting said support and frame to allow a limited reciprocation of said frame with respect to said support to raise said frame at one end of its travel to carriage impression position and to lower said carriage to non-impression position at the other end of its travel.

14. In a machine of the character described, the combination of a plurality of groups of independently settable printing members disposed side by side; each group comprising a quantity printing member having characters arranged in numerical progression to designate different quantities, a price printing member having characters indicating values proportional and corresponding to the characters on said quantity printing member, an article printing member, said quantity and price printing members having a non-printing zero position, actuating means operatively connecting the quantity printing and

price printing members of a group to move them in unison into printing position, means operatively connecting each article printing member to the other printing members of a group to place said article printing member in non-printing position at zero position of said other printing members and to set and maintain it in printing position upon disposition of said quantity printing and price printing members out of zero position; setting mechanism to selectively operate said groups in progressively advancing numerical printing positions; means to restore said groups to zero position; and a platen carriage mechanism including a platen carriage reciprocable with relation to said printing members having means to carry a laundry slip, rails on which said carriage travels joined to form a frame, a support for said frame, means connecting said support and frame to allow a limited reciprocation of said frame with respect to said support to raise said frame at one end of its travel to carriage impression position and to lower said carriage to non-impression position at the other end of its travel, a rack on said frame, a pinion on said carriage meshing with said rack to cause reciprocation of said frame, and means to arrest travel of said carriage at the ends of its strokes and to cause reciprocation of said frame.

In witness that I claim the foregoing I have hereunto subscribed my name this 6th day of September, 1928.

WILLIAM C. BULL.