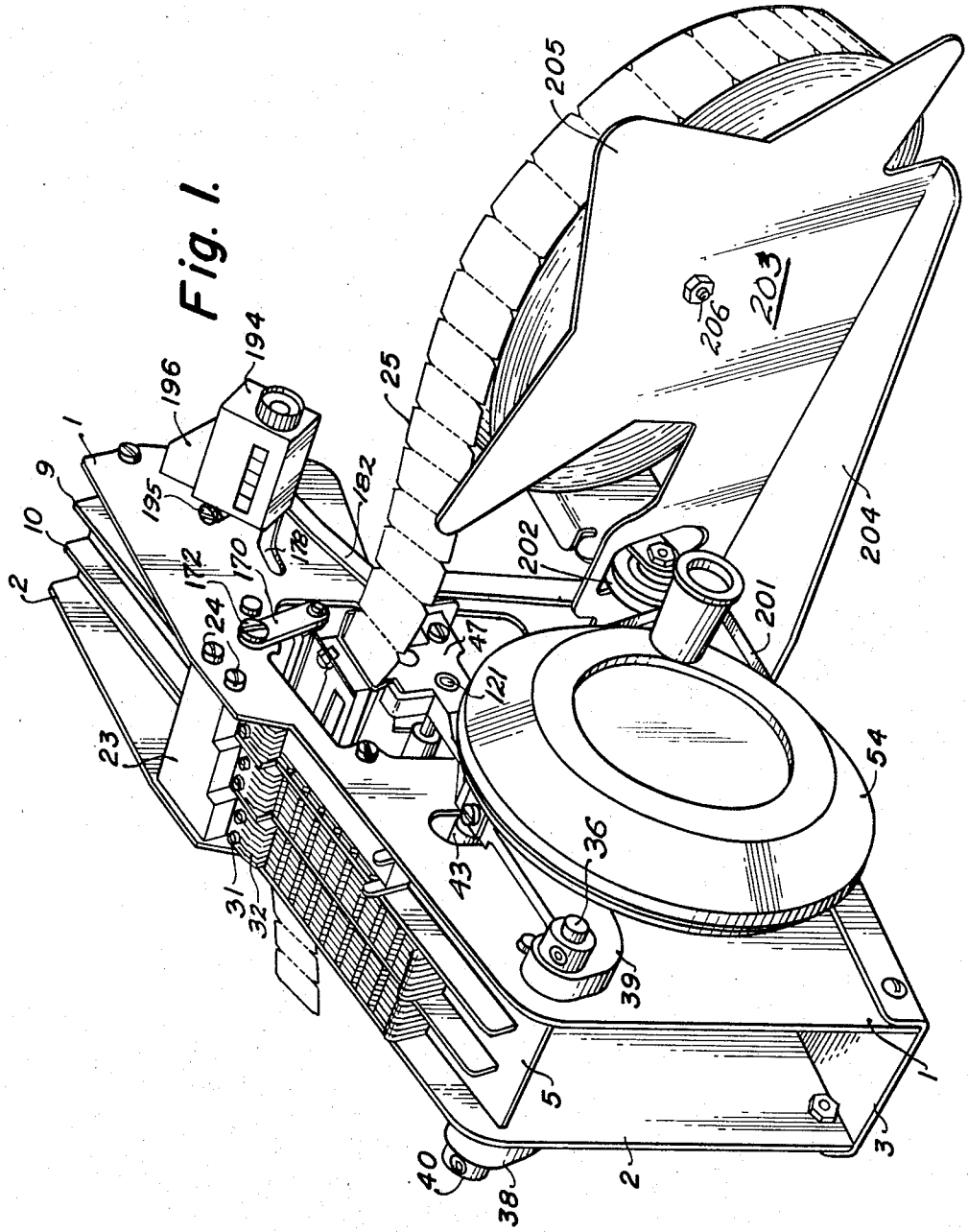
July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 1

Fig. 1.



INVENTOR.
WALTON M. HENRY.
BY Edward L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 2

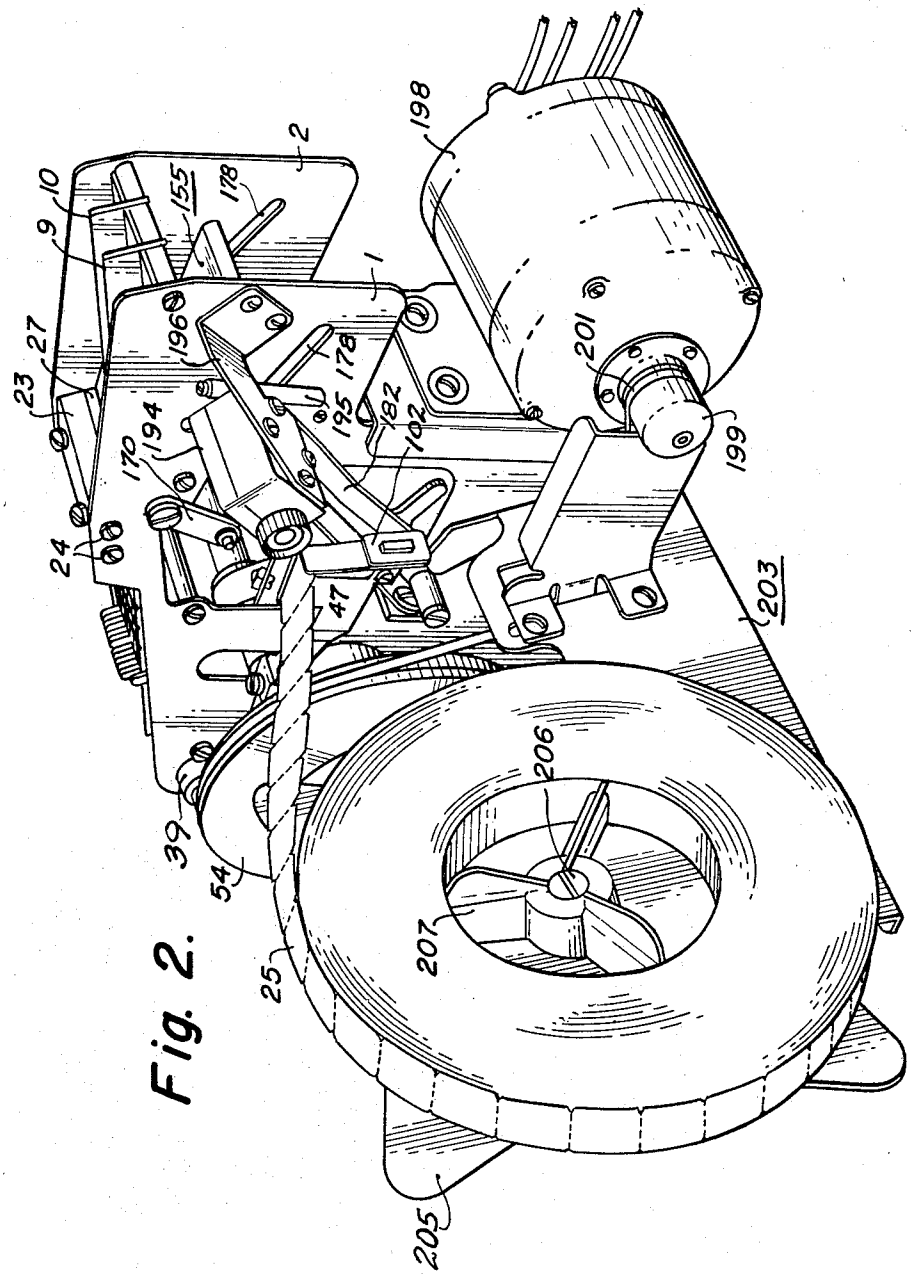


Fig. 2.

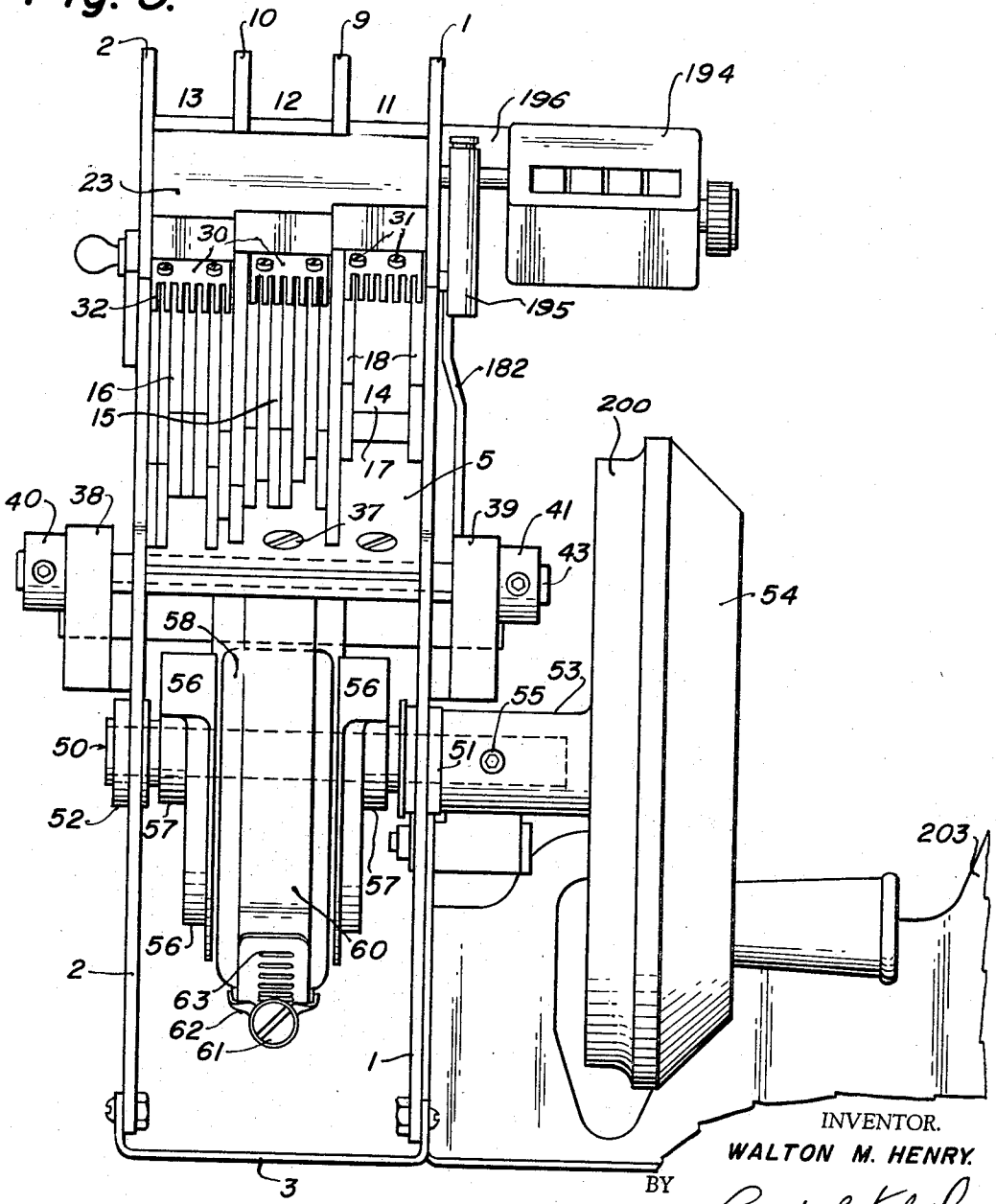
INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 3

Fig. 3.



INVENTOR.
WALTON M. HENRY.
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 4

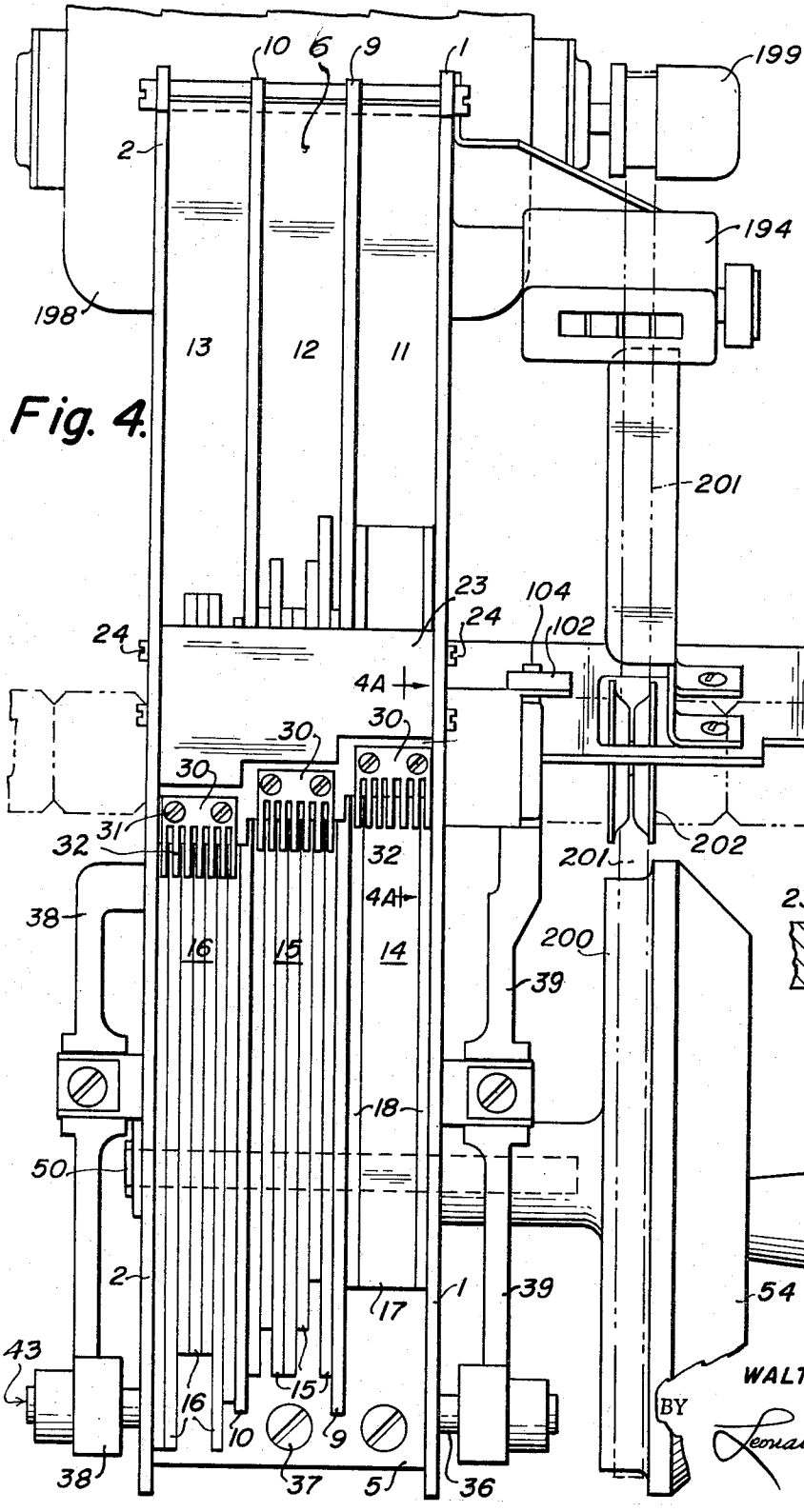


Fig. 4.

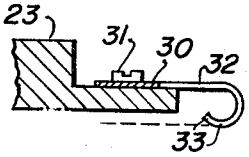


Fig. 4A

INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 5

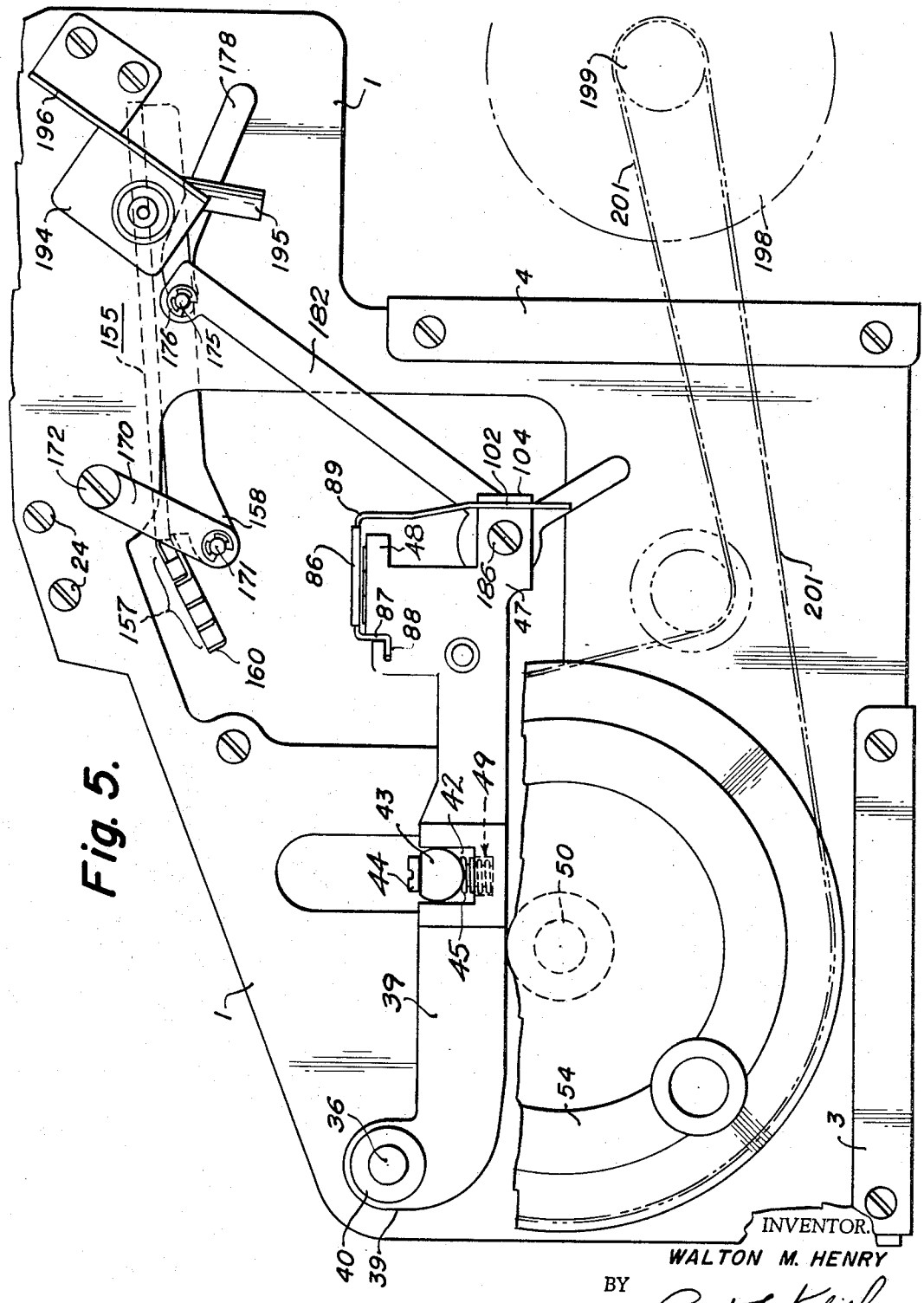


Fig. 5.

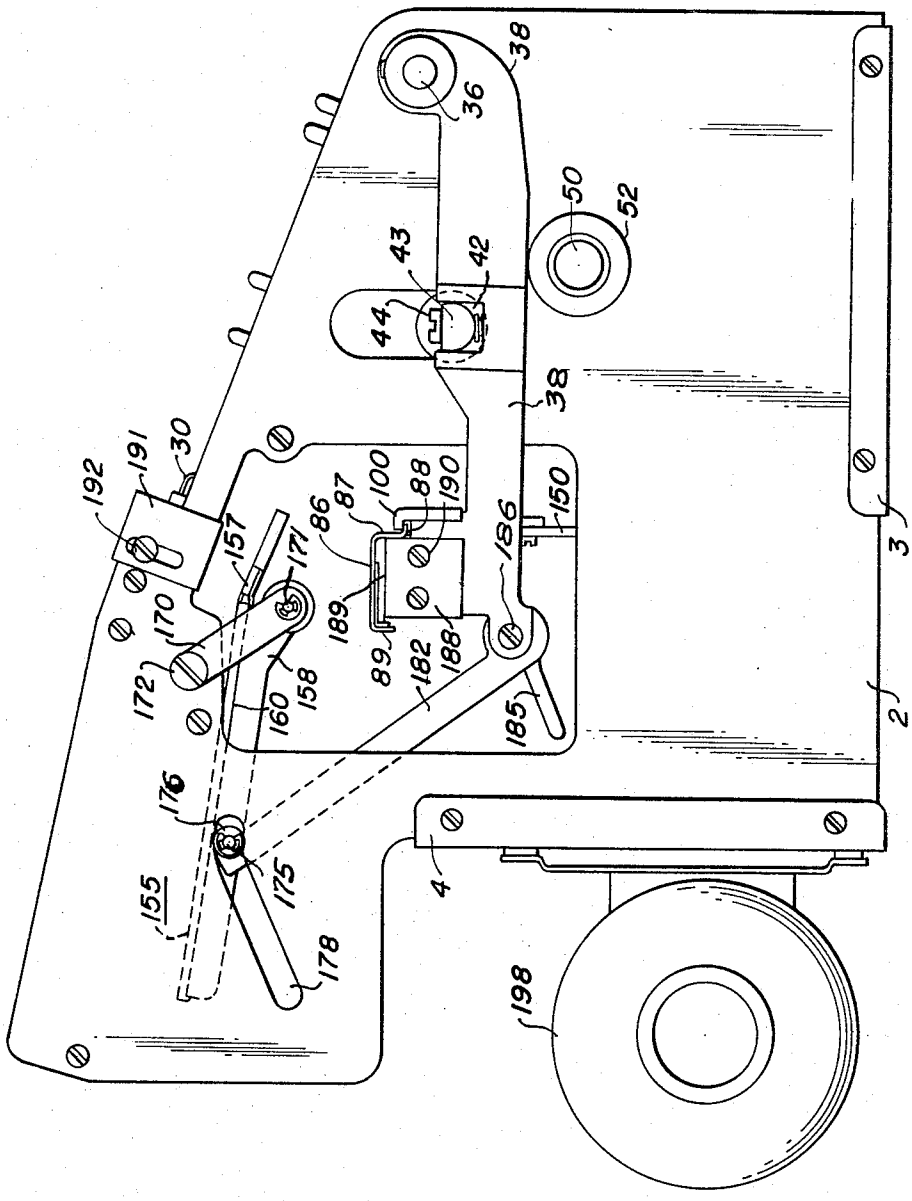
INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 6

Fig. 6



INVENTOR.
WALTON M. HENRY.
BY Leonard L. Kalish
ATTORNEY.

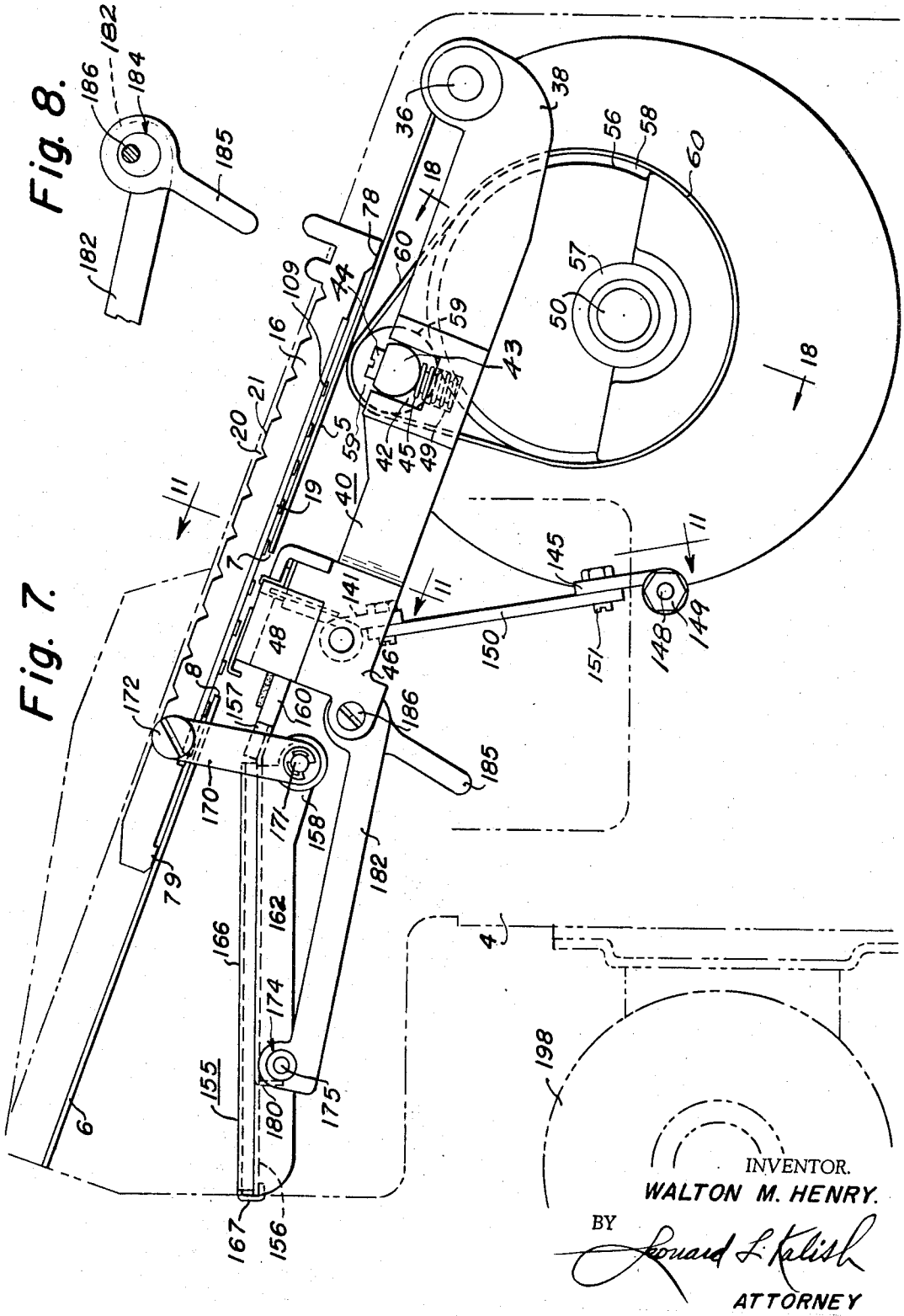
July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 7

Fig. 8.

Fig. 7.



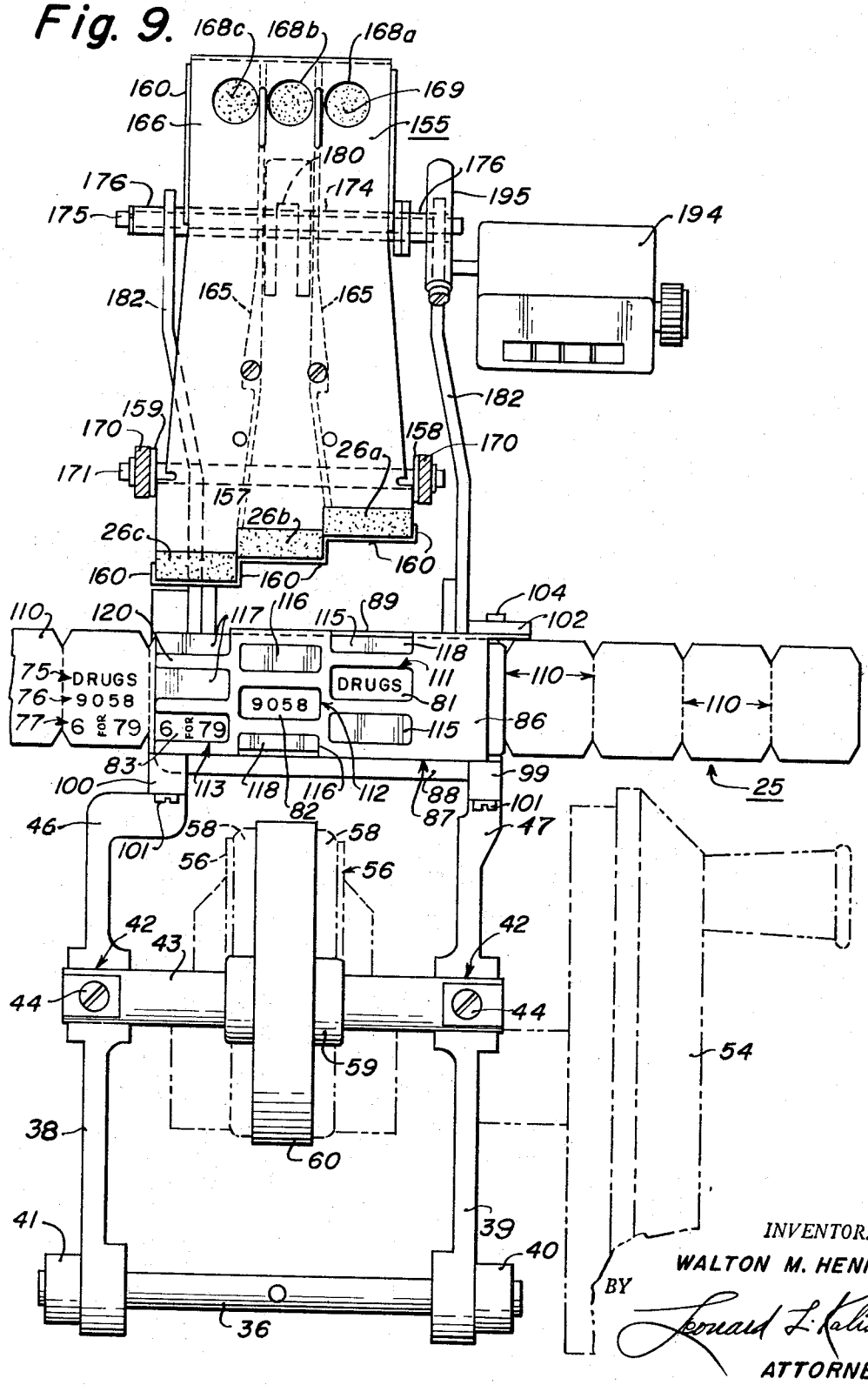
INVENTOR.
WALTON M. HENRY.
BY Leonard L. Kalish
ATTORNEY

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 8

Fig. 9.



INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 9

Fig. 10.

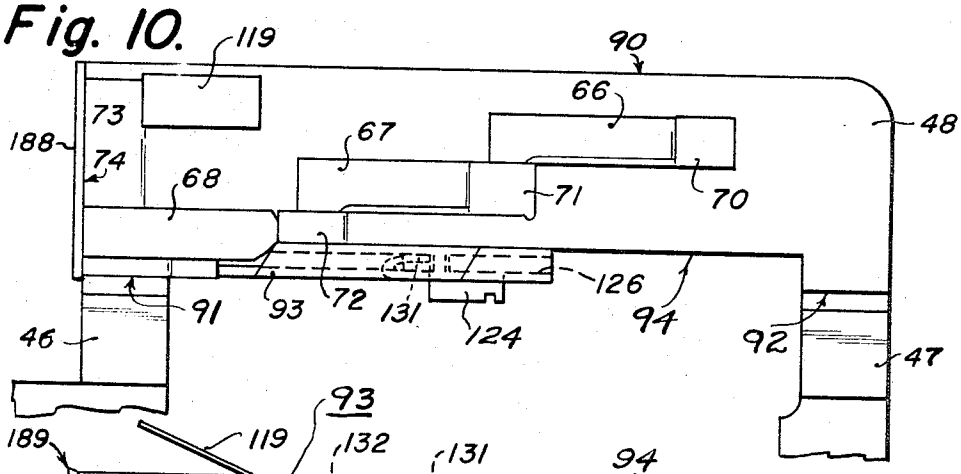


Fig. 11.

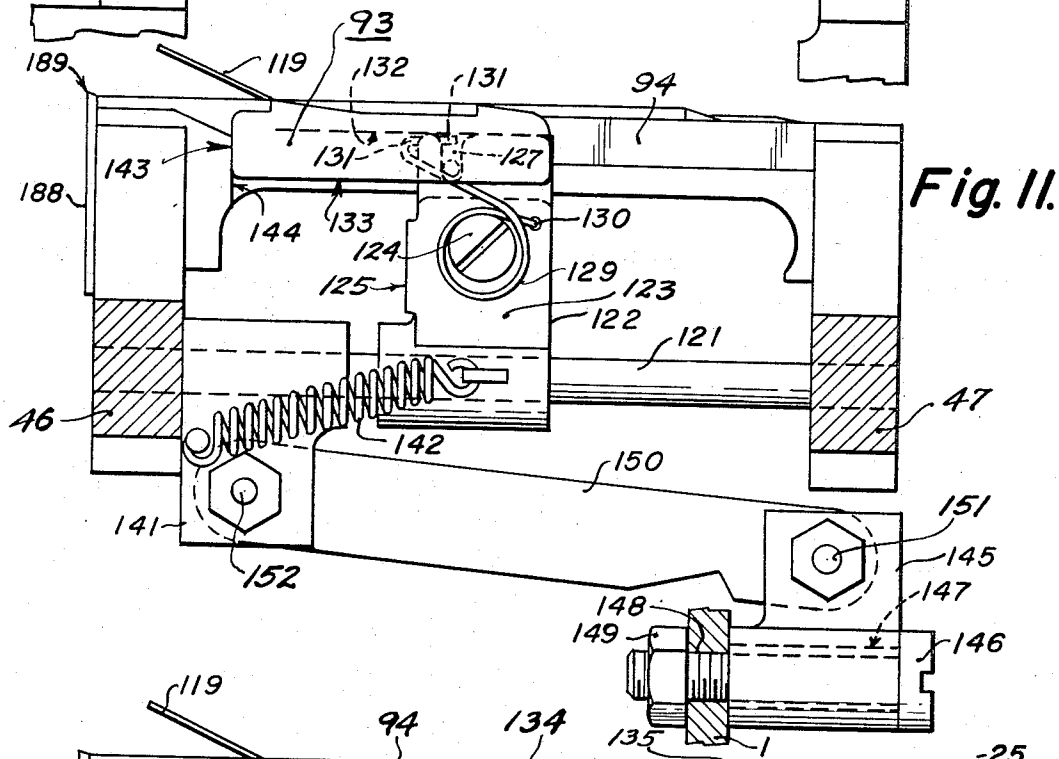
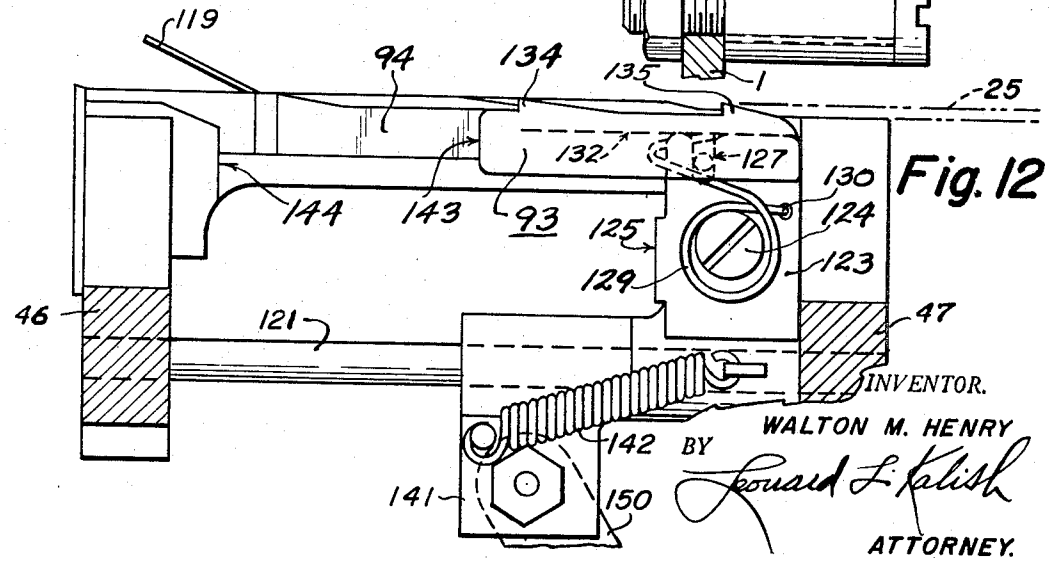


Fig. 12



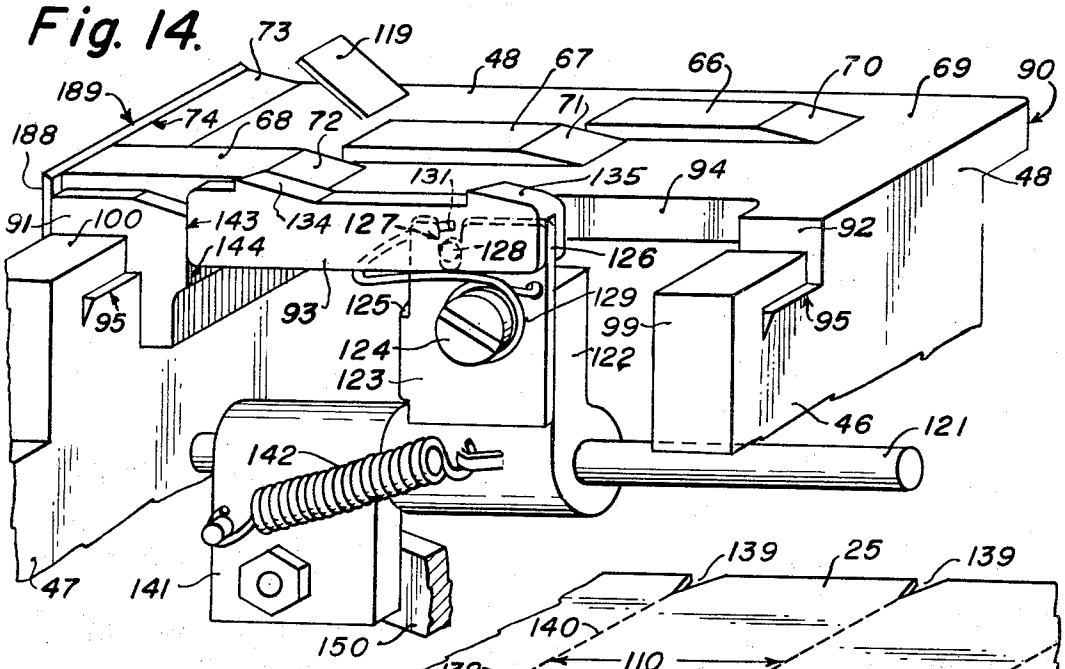
INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 10

Fig. 14.



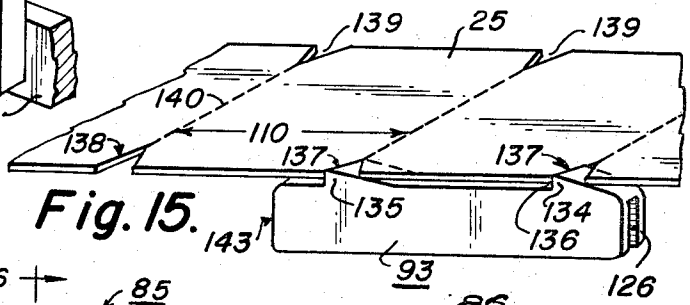


Fig. 15.

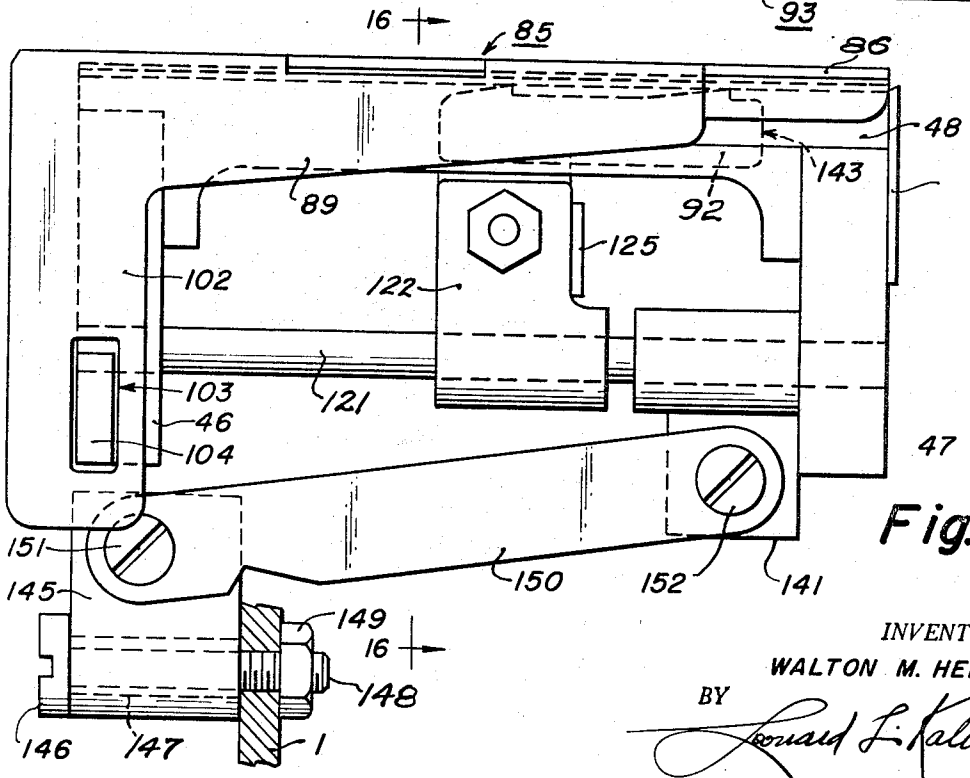


Fig. 13.

INVENTOR.
WALTON M. HENRY.
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 11

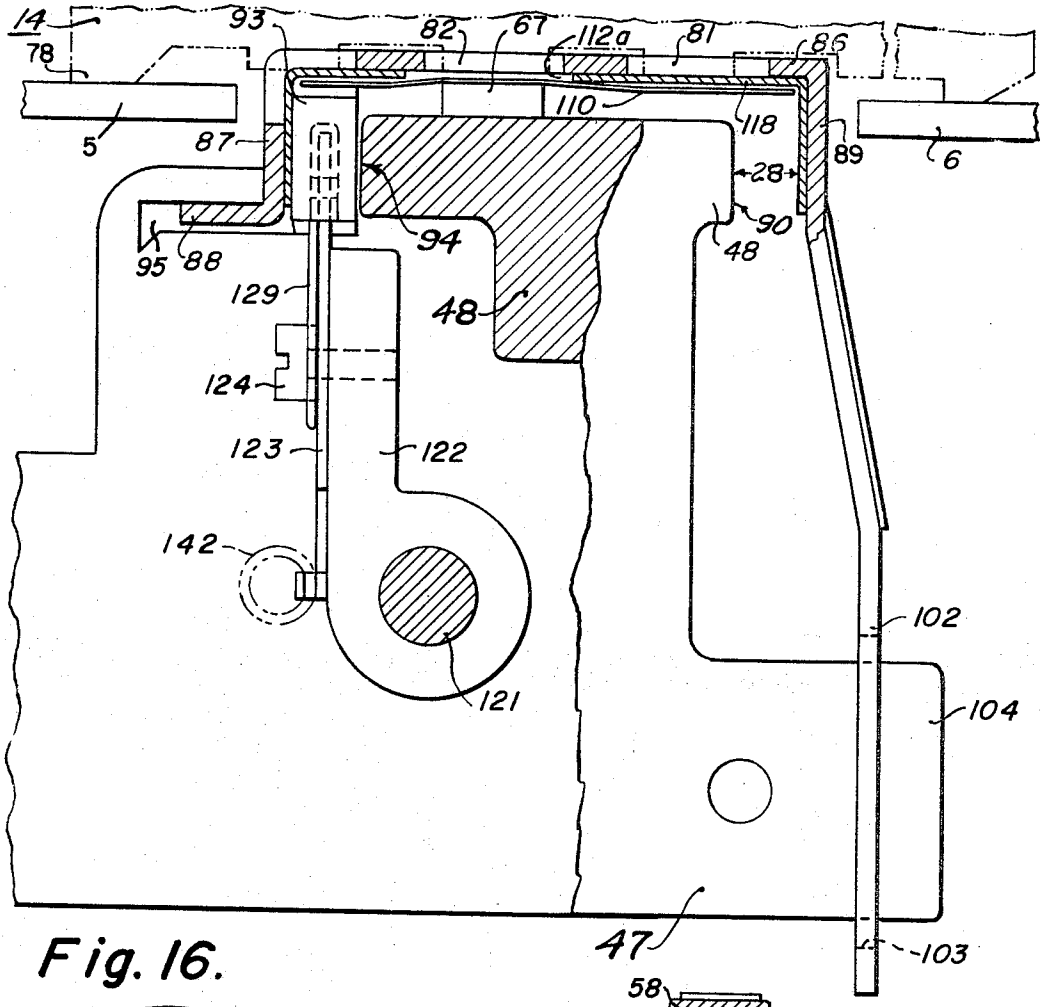


Fig. 16.

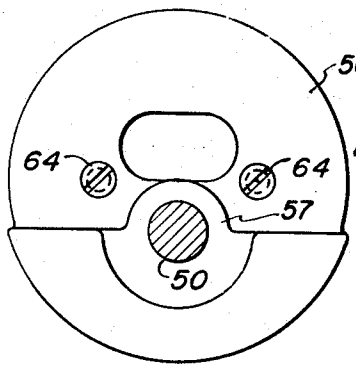


Fig. 17.

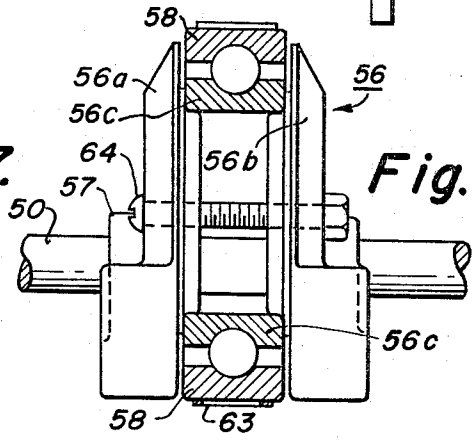


Fig. 18.

INVENTOR.
WALTON M. HENRY.
BY Leonard L. Kalish
ATTORNEY.

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 12

Fig. 19

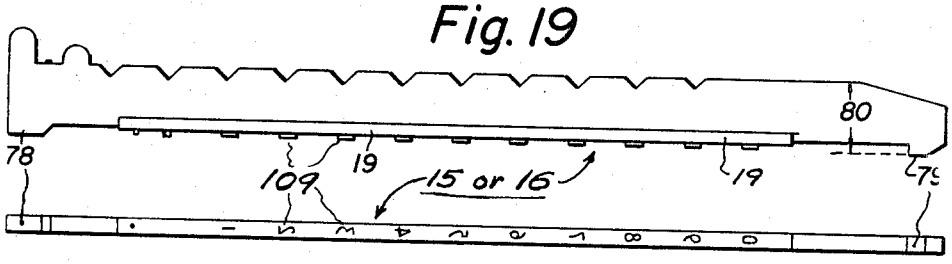


Fig. 20

Fig. 21

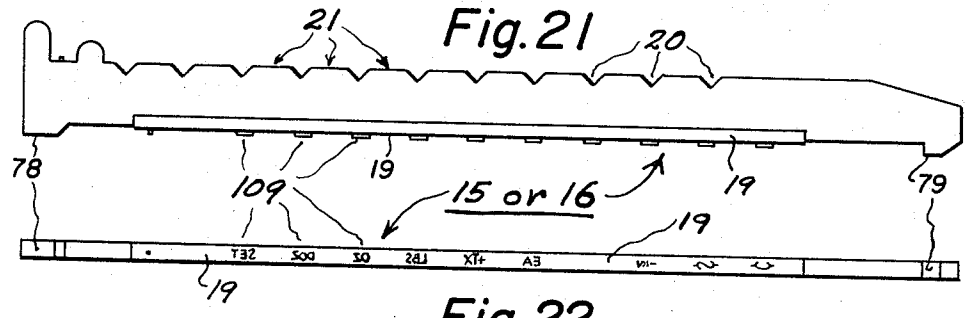


Fig. 22

Fig. 23

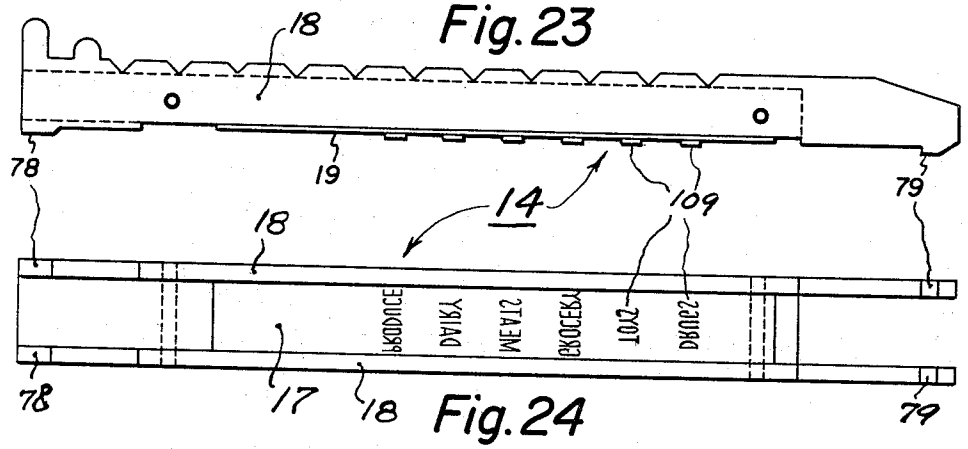


Fig. 24

INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY

July 18, 1967 W. M. HENRY 3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Filed Aug. 30, 1963 13 Sheets-Sheet 13

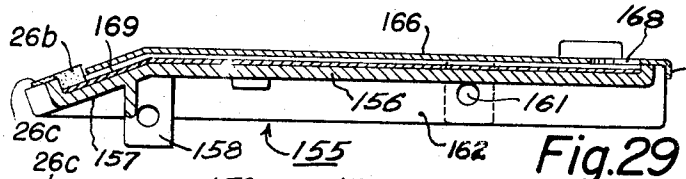


Fig. 29

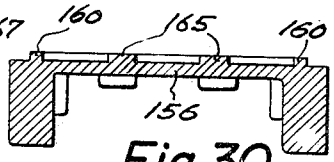


Fig. 30

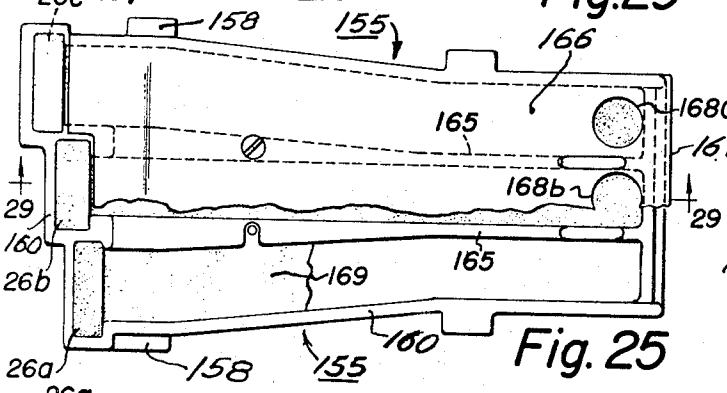


Fig. 25

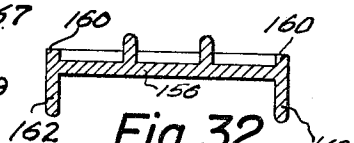


Fig. 32

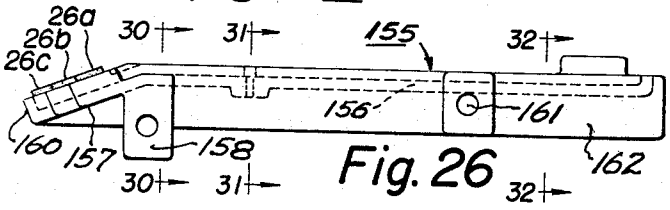


Fig. 26

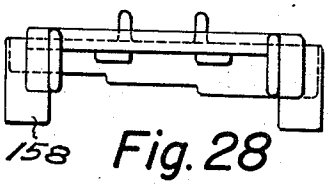


Fig. 28

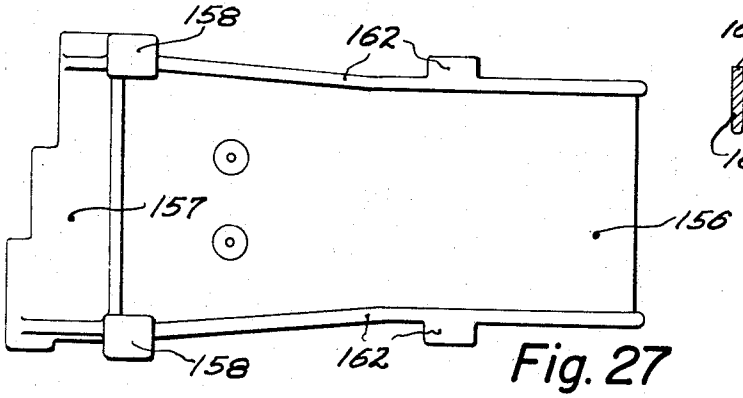


Fig. 27

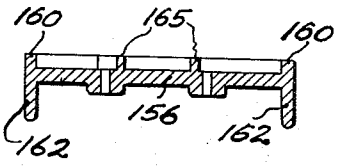


Fig. 31

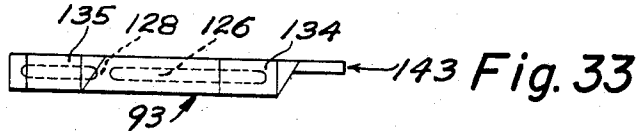


Fig. 33

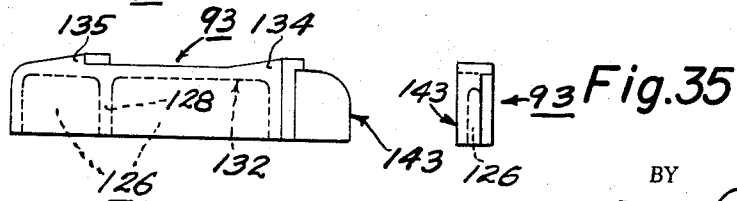


Fig. 35

Fig. 34

INVENTOR.
WALTON M. HENRY
BY Leonard L. Kalish
ATTORNEY

United States Patent Office 3,331,315 Patented July 18, 1967

3,331,315

SETTABLE TYPE-BAR INKING AND PRINTING MEANS IN TICKET ISSUING MACHINES

Walton M. Henry, Rydal, Pa., assignor to Soabar Company, Pa., a corporation of Pennsylvania

Filed Aug. 30, 1963, Ser. No. 305,743
11 Claims. (Cl. 101—68)

The present invention relates to new and useful label and ticket printing and dispensing apparatus for progressively or stepwise imprinting several lines of information on successive ticket or label length portions of a tape, as the tape is intermittently fed through the apparatus, automatically, in successive ticket or label length steps thereof.

An object of the present invention is to provide an inexpensive, efficient and reliable ticket or label printing and dispensing machine, for printing and dispensing merchandise-pricing tickets or labels and similar tickets or labels for other purposes, in a rapid and efficient manner and with quick change of composition.

A further object of the present invention is to permit the rapid change of the composition of the several lines of printed matter, without the usual burdens of conventional type-setting.

With the above and other objects in view which will appear more fully from the following description and accompanying drawings, one aspect of the machine of the present invention is a plurality or sets of longitudinally shiftable type-bars, each set nested and slideably disposed within a channel representing one of the several printing positions corresponding to one of the several lines of information to be imprinted progressively or stepwise on each ticket or label, with each type-bar carrying longitudinally distributed downwardly-facing type-faces, and an upwardly and downwardly oscillatable tape-carrying and tape-feeding press-platen beneath and in operative juxtaposition to said type-bars.

Another aspect of the machine of the present invention is an inking-pad means oscillatable up and down and also forwardly and rearwardly, in operative juxtaposition to the type-bars and said press-platen and having its inking oscillations or strokes alternating with the printing strokes of said press-platen, so that while the press-platen is in the receded phase of its oscillatory cycle, the inking means will be in the ink-applying portion of its oscillatory cycle, and vice versa.

Another aspect or phase of the machine of the present invention is the automatic tape feeding means and label cut-off means carried by said press-platen and timing means therefor.

Still other novel aspects and features of the machine of the present invention will appear from the accompanying description and the appended claims and the accompanying drawings.

In the accompanying drawings, in which like reference characters indicate like parts,

FIGURE 1 represents a perspective view of a machine embodying the present invention, viewed from the front and right side of the machine.

FIGURE 2 represents a rear-right perspective view of said machine.

FIGURE 3 represents a front elevational view of the machine.

FIGURE 4 represents a top plan view of the machine; viewed normal to the plane of the type-bar supporting bed thereof.

FIGURE 4A represents a section on line 4A—4A of FIGURE 4.

FIGURE 5 represents a right side elevational view of said fachine, with the tape roll supporting means omitted and with the motor omitted and with the uppermost portion of the machine broken away; this view showing the machine with the tape-carrying press-platen thereof nearly in its lowermost position and with the inking pad nearly in its uppermost or ink-applying position.

FIGURE 6 represents a left side elevational view of the machine in the same phase thereof.

FIGURE 7 represents a left side elevational view of the machine with the left frame plate omitted and shown in dotted lines, and showing the tape-carrying press-platen in its uppermost or printing position and with the inking pad in its retracted position.

FIGURE 8 represents an elevational view of the inking pad adjust eccentric.

FIGURE 9 represents a top plan view of the printer arms and of the press-platen and tape-guide carried thereby and of the inker and the oscillating means therefor; with the press-platen shown in its upper or printing position and with the inker shown in its retracted position.

FIGURE 10 represents a top plan view, on an enlarged scale, of the tape-carrying press-platen, with the upper tape-guiding plate removed.

FIGURE 11 represents a front elevational view of the press-platen and of the tape feeding means, on the same scale as FIGURE 10, taken generally on lines 11—11 of FIGURE 7; with the press-platen shown in its retracted or lowermost position and with the tape feeding means shown at the end of its tape-advancing stroke.

FIGURE 12 represents a front elevational view of the same, with the press-platen in its uppermost or printing position and with the tape feeding means in its retracted position.

FIGURE 13 represents a rear elevational view of the press-platen and tape feeding means in the same phase as that shown in FIGURE 11, but including also the upper tape-guide plate.

FIGURE 14 represents a front perspective view of the press-platen and tape-feeding means, with the upper tape-guide plate omitted, with the press-platen shown in or near its lowermost position and with the tape-feeding means shown at or near the end of its tape-advancing stroke.

FIGURE 15 represents a perspective view of a fragmentary portion of the tape and of the tape-feeding finger member, showing their interlocking relationship during the tape-advancing stroke of the finger member.

FIGURE 16 represents a cross-sectional view of line 16—16 of FIGURE 13.

FIGURE 17 represents a side elevational view of the type bar actuating eccentric.

FIGURE 18 represents a front elevational view of the same, with the ball-bearing and strap thereof in cross-section, on line 18—18 of FIGURE 7.

FIGURE 19 represents a side elevational view of one of the narrow type bars having eleven type elements thereon from 1 to 0 and the period (.).

FIGURE 20 represents a bottom plan view of the same, showing the aforementioned type elements thereof, this showing of the type faces being that of their imprints; the type faces being mirror images of what is shown in FIGURE 20.

FIGURE 21 represents a side elevational view of another narrow type bar.

FIGURE 22 represents a bottom plan view of the same, showing type faces of abbreviations and symbols; the type faces shown in FIGURE 22 being likewise that of their imprints, and the actual type faces would be mirror images of those in FIGURE 22.

FIGURE 23 represents a side elevational view of the wide type bar.

FIGURE 24 represents a bottom plan view of the same, showing the type faces thereof comprising typical words which may be printed by such wide type bar.

FIGURE 25 represents a top plan view of the inker, with its cover partly broken away.

FIGURE 26 represents a side elevational view of the inker.

FIGURE 27 represents a bottom plan view of the inker.

FIGURE 28 represents a rear end elevational view of the inker.

FIGURE 29 represents a section on line **29—29** of FIGURE 25.

FIGURE 30 represents a section on line **30—30** of FIGURE 26.

FIGURE 31 represents a section on line **31—31** of FIGURE 26.

FIGURE 32 represents a section on line **32—32** of FIGURE 26.

FIGURE 33 represents a top plan view of the ticket-feed member **93**.

FIGURE 34 represents a front elevational view of the same.

FIGURE 35 represents an end elevational view of the same.

In the embodiment of the present invention shown in the drawings, the reference numerals **1** and **2** designate similar vertical side plates or frame members held in spaced relationship by the flanged front base plate or member **3** at the front of the basal portions thereof and by the similar flanged rear motor-mounting member or bracket **4**; the corresponding marginal zones of the side plates **1** and **2** being secured to the flanges of the members **3** and **4** by screws or other suitable fastening means.

Similar inclined co-planar lower and upper or front and rear plates **5** and **6** are disposed between the side frame members **1** and **2**, with their inner facing ends **7** and **8** spaced from each other a suitable distance to provide a clearance through which the tape supporting and guiding press-platen **48** carried by the inner ends of a pair of oscillatory printer-arms **38** and **39** is moved upwardly for pressing the three adjacent ticket-portions **110** of the tape **25** into printing engagement with the downwardly facing printing-faces **109** of the multi-face type-bars or type-bearing members **14**, **15** and **16** or of the vinyl printing plates or strips **19** secured to the lower edges or faces thereof, and also for permitting the entrance of the inking pads **26** during the inking strokes of the machine. The lower and upper type bar supporting plates **5** and **6** constitute a bed upon which the type-bars **14**, **15** and **16** slideably rest, and said plates **5** and **6** are rigidly secured between the side plates **1** and **2** in any suitable manner.

Separators **9** and **10** are mounted on the plates **5** and **6**, parallel with the side plates **1** and **2**, and in suitable spaced relation thereto and in relation to each other, so as to provide three type bar receiving channels **11**, **12** and **13**, respectively, corresponding to the three printing positions at which the three lines of information are imprinted.

Within each of the channels **12** and **13** a plurality (as, for instance, seven) type-bars **15** and **16**, respectively, are slideably disposed and nested, with just enough side-clearance to permit the bars to be slid individually or collectively, without any appreciable side-play.

A single type-bar **14** is disposed in the channel **11**, having a lower type-bearing face which is the full width or nearly the full width of the channel. The channel-wide type-bar **14** is preferably of U-shaped cross-section having the lower type-bearing web **17** and having side-flanges **18** which nest between the side frame member **1** and the separator **9**.

Printing plates or strips **19** are formed of vinyl or other suitable slightly deformable and form-retrieving plaster or elastomer material and having longitudinally spaced and distributed type-faces projecting downwardly therefrom are adhesively secured to the lower faces of the type-bars **14**, **15** and **16**. These type-faces may be numbers from zero to nine on some of the type-bars **15** and **16** and may be numerals as well as other symbols or indicia (such as "for," "@," "by," etc.) or other type-bars **15** and **16**, and may be department designating words or abbreviations on type-bar **14**, for price-marking and otherwise marking goods or merchandise, so that by properly shifting the seven type-bars in the two channels **12** and **13**, the product-code number and unit-price may be printed in two of the lines, while by shifting the type-bar **14**, the department-designation may be printed in still another line.

Detnet-notches or position-notches **20** are formed in the upper edges of the type-bars of **15** and **16** and in the upper edges of the side-flanges **18** of the type-bar **14**. On the intervening portions **21** of the upper surfaces of the type-bars **15** and **16** and of the flanges **18** of the type-bar **14**, readable counterparts of the type-faces therebeneath are provided as raised characters or are stamped into or otherwise applied so that the type-bars may readily be "set" to their desired positions for presenting the selected type-faces thereof in their respective printing positions of the channels **11**, **12** and **13**.

An upper impression-support type-back-up member **23** is mounted between the side frame-plates **1** and **2**, by means of the screws **24**, for backing up the type-bars **14**, **15** and **16** against the upward pressure exerted against their type-faces when the tape **25** is pressed upwardly thereagainst for the printing impression and also when the inking pads **26** are pressed upwardly there-against during the alternate inking operations. To the forwardly extending stepped-down marginal portions of the support **23** the three comb-like spring-fingered type-bar-positioning members or detent combs **30** are secured by the screws **31**. The individual spring-fingers **32** of the detent-combs are bent downwardly and rearwardly upon themselves, to form the downwardly projecting detent portions **33**, which are adapted to engage in the notches **20** along the upper edges of the type-bars **14**, **15** and **16**, thereby to position the type faces thereof in registration with the respective printing-positions (**81**, **82** and **83**, in FIGURE 9) of the three channels **11**, **12** and **13**. The clearance between the upper surfaces of the type-bar-supporting bed-plates **5** and **6** and the lower surface of the type-back-up member **23** is generally equal to the vertical distance 80 between the upper surface **21** of the type-bars and the basal plane defined by the flat bottom surfaces of the terminal portions or feet **78** and **79** thereof. This permits the type-bars **14**, **15** and **16** to slide back and forth between said plates **5** and **6** and the member **23** with a neat sliding fit and without undue friction exerted thereon between said plates **5** and **6** and said member **23**, but without any appreciable or undue play between the type-bars **14**, **15** and **16** and the plates **5** and **6**, on the one hand, and the member **23**, on the other hand. Hence when the aforementioned upward pressure is exerted on the type-bars by the alternate printing contacts and inking contacts with the type-faces thereof, the

type-bars will not be appreciably displaced in an upward direction but will be held firmly against such upward printing and inking pressures.

The printer-fulcrum **36** is extended through corresponding holes in the two side frame members **1** and **2**, at the front of the machine, and is mounted stationarily therein. The front plate **5** may have its front end secured to and supported on the printer-fulcrum **36**, by means of a screw or screws **37** extending through the plate **5** and threaded into the fulcrum member **36**; whereby the fulcrum is also secured against turning.

On the laterally projecting free ends of the printer-fulcrum **36**, the printer-arms **38** and **39** are pivotally mounted and held against axial displacement thereon by the collars **40** and **41** secured to the fulcrum **36** by set-screws or other suitable means.

Each of the printer-arms **38** and **39** is provided with a recess **42**, in which the opposite ends of the printer drive shaft or bar **43** are nested (as indicated in FIGURES 7 and 9) and secured by the screws **44**. Helical compression springs **45**, surrounding the stems of the screws **44**, are interposed between the ends of the printer drive **43** and the printer arms **38** and **39**, so that the ends of the printer drive shaft or bar **43** do not bottom in the recesses **42** but rest on the helical compression springs **45**, whereby the screws **44** may be tightened or loosened slightly, with the springs **45** taking up the variation of what otherwise would be a slack, thereby adjusting the height of the uppermost or printing position of the inner ends **46** and **47** of the printer arms **38** and **39** and consequently adjusting the upper most or printing position of the press-platen **48** carried by said inner ends of the arms **38** and **39**. The lower ends of the springs **45** may be nested, loosely, in spring-chambers **49** formed in the arms **38** and **39**, so as to permit the use of springs **45** having a greater number of turns.

A drive shaft **50** is journaled in bearings **51** and **52** mounted in the side frame members **1** and **2**, as indicated in FIGURE 3. To the extending right hand end of the drive shaft **50**, the hub **53** of the drive-wheel **54** is keyed or secured by set-screws **55** or the like.

An eccentric, designated generally by the numeral **56**, is fixedly mounted on the drive-shaft **50** by having the hub **57** thereof keyed or pinned thereto or by being affixed thereto by set screws or the like. A ring **58** is journaled on the eccentric **56** in any suitable manner as shown particularly in FIGURES 17 and 18.

In the embodiment of the invention shown in the drawings, the eccentric **56** is formed of two identical halves **56***a* and **56***b* facing each other and have the inner race **56***c* of a ball-bearing clamped therebetween; the three elements **56***a*, **56***b* and **56***c* being secured to each other by the screws **64** which draw the two halves **56***a* and **56***b* toward each other. The outer race of such ball-bearing constituting the aforementioned ring **58**.

A bushing **59** is journaled on the printer-shaft **43**. A contractable steel band or strap **60** is extended around the ring **58** and the bushing **59** and is then tightened by means of the screw **61** carried by the saddle **62** on one end of the strap **60**, which screw engages the screw-slots **63** in the other end of the band **60**, in the manner of a worm-tightened hose-clamp. In this manner, the bushing **59** and the ring **58** are brought into contact with each other and held firmly secured to each other, as though they were integral with each other. By this means, the printer-arms **38** and **39** are alternately swung up and down about the fulcrum **36**, as the drive-shaft **50** is rotated by means of the drive-wheel **54**. If desired, the bushing **59** and the ring **58** may be otherwise secured to each other, or may be made integral with each other.

The press-platen **48** is affixed to the inner ends **46** and **47** of the printer-arms **38** and **39**, by means of screws or other suitable means or is formed integrally therewith.

Suitably raised flat-surfaced co-planar elongated pads **66**, **67** and **68** are formed on the upper surface **69** of the press-platen **48**, as shown in FIGURE 14, and are preferably formed integrally with the press-platen or the platen **48** is relieved between said pads. Inclined tape-leading ramps **70**, **71** and **72** are provided immediately adjacent the tape-receiving ends of the elongated pads **66**, **67** and **68**, so as to guide the leading edge of the tape **25** onto the pads **66**, **67** and **68**. A similarly inclined discharge ramp **73** is provided as the discharge end of the platen **48**, extending thereacross from the pad **68** to the rear edge thereof and having its uppermost or discharge edge **74** at the same level as the surface of the pad **68**.

The lengths of the pads **66**, **67** and **68** are generally equal to the widths of the respective channels **13**, **12** and **11** and their fore-and-aft width is slightly greater than the vertical height of the type-faces carried by the type-bars **16**, **15** and **14**. The press-pads **66**, **67** and **68** are offset laterally, in relation to each other, in columnar fashion, in vertical alignment with the channels **13**, **12** and **11**, respectively, and with the type-bars within said channels, and are also offset in a fore-and-aft direction at a spacing corresponding to the vertical spacing of the three printed lines **75**, **76** and **77** (FIGURE 9).

A tape or ticket guide **85** is superimposed on the press-platen **48**, and comprises an upper plate **86**, a front vertical flange **87** having a horizonal flange **88** extending forwardly therefrom, and a rear flange **89**. The rear flange **89** is disposed suitably rearward of the rear vertical face **90** of the press-platen **48** to provide a string-clearance or pin-clearance **28**, while the front vertical flange **87** is disposed adjacent the front vertical faces **91** and **92** of the press-platen **48** (FIGURES 10 and 14), and also adjacent the front face of the laterally reciprocable tape-feed member **93**, so as reciprocably to confine and to guide the tape-feed member **93** by the inner surface of the flange **87**, as shown in FIGURE 16. The horizontal flange **88** is slidably nested and confined in the horizontal slots **95** provided in the inner terminal portions **46** and **47** of the printer-arms **38** and **39**.

A spring-arm **102** extends downwardly from the rear vertical flange **89** of the ticket-guide **85** and has a vertically elongated latch-opening **103**. A rearwardly extending vertically elongated locking or latching projection or detent **104** is carried by the rear surface of the terminal portion **46** of the printer-arm **38** (FIGURES 5, 13 and 16) in operative alignment with said vertically elongated latch-opening **103**. By flexing the spring-arm **102** rearwardly, the lower end thereof may be moved rearwardly to clear the projection **104** so that the entire ticket-guide **85** may be slid laterally in a right-hand direction, as viewed from the front, in order to slide the guide **85** off the press-platen **48**. To restore the guide **85**, it is slid in a left-hand direction, with the front flanges **87** and **88** thereof nested between the front guide-surfaces **91** and **92** of the press-platen **48** and the slots **95**, until it is in its operative position as shown in FIGURES 9 and 16, when the spring-arm **102** is released so as to snap into its latching position with the projection **104** in the opening **103**.

The upper wall or plate **86** of the ticket-guide **85** is provided with three printing-windows **111**, **112** and **113**, corresponding to and in registration with and defining the three printing-positions **81**, **82** and **83** (FIGURE 9), through which printing-windows the selected type-faces of the aforementioned type-bars project when the press-platen is raised into its printing position, thereby to imprint such type-faces on the corresponding three portions of three adjacent tickets **110** which are disposed beneath the three channels **11**, **12** and **13**.

In addition to the three printing-windows **111**, **112** and **113**, type-clearance windows **115**, **116** and **117** are provided in the upper plate **86** of the ticket-guide **85**, and spaced from their ticket-windows in a fore-and-aft direction the same as the fore-and-aft spacing between adjacent type-faces on the aforementioned type-bars. These type-clearance windows permit the non-selected type-

faces or type-elements of the type-bars adjacent the selected type-faces in a fore-and-aft direction and overlying or in registration with the upper plate **86** of the ticket-guide **85**, to pass through or penetrate the plate **86**, so as not to obstruct or bar the passage of the selected type-faces through the printing-windows or openings **111**, **112** and **113** by contact with the upper surface of the plate **86**.

A thin type-barring or print-barring sheet **118** of steel, bronze, brass or other suitable material is disposed immediately beneath the upper plate **86** of the ticket-guide **85** and adjacent the inner surfaces of the flanges **87** and **89** and is preferably adhesively secured thereto. The print-barring sheet **118** is provided with three printing-windows or openings **111***a*, **112***a* and **113***a*, in registration with the printing-windows **111**, **112** and **113**, but is otherwise solid or windowless, thereby preventing contact between the fore-and-aft adjacent non-selected type-faces and the ticket **110** beneath the ticket-guide plate **86**, during the printing stroke of the press-platen **48**. The print-barring sheet **118** is of a thickness of the order of five thousandths of an inch, more or less, and is sufficiently resilient so that when the non-selected type-faces bear thereagainst, they will yield sufficiently to permit the selected type-faces in the printing-windows **111**, **112** and **113**, to reach the ticket **110** therebeneath and to make an adequate printing impression thereon. The thickness of the upper guide-plate **86** of the ticket-guide **85** is slightly less than the vertical height of the type elements **109** of the type plates or strips **19**.

The aforementioned printing-windows **111**, **112** and **113** are directly over and in registration with the printing-pads **66**, **67** and **68** and are slightly larger than said pads and the printing-windows **111***a*, **112***a* and **113***a* in the type-barring sheet **118** are slightly larger than the printing-windows **111**, **112** and **113** in the plate **86**. The ticket-tape **25** is disposed between the press-pads and the lower surface of the type-barring sheet **118**.

A tape-checking leaf-spring **119**, of a thickness substantially less than the vertical height of the pads **66**, **67** and **68**, is secured to the top of the press-platen **48**, by having its stationary end suitably anchored in an appropriate recess or slot in or through the press-platen **48**, and is extended in the direction of the travel of the tape, which is from the right to the left in FIGURES 10, 11, 12 and 14.

When the ticket-guide **85** is operatively assembled to the press-platen **48**, the spring **119** is depressed from its position as shown in FIGURES 11, 12 and 14, and consequently its free end exerts an upward force and hence resiliently engages the underside of the ticket or tape and presses it upwardly against the membrane **118** in the zone indicated by the numeral **120** (FIGURE 9) where the membrane is backed up by the solid portion of the plate **86** intervening the two clearance-windows **117**. By this means, a suitable frictional resistance or grip is imposed upon the tape against any retrogressive motion thereof. A plurality of small downwardly projecting dimples or ribs are pressed into the thin print-barring sheet **118** along horizontal lines between and flanking the print-areas of the tape, so that the contact between the tape and the membrane will be confined to these dimples or ribs whereby the swearing of the theretofore imprinted ink will be prevented when the tape is advanced successive ticket-lengths.

A feed-guide bar or rod **121** is mounted between the two terminal portions **46** and **47** of the printer-arms, by having its ends mounted and secured in corresponding openings therein, as indicated in FIGURES 7 and 9 to 14, inclusive. A ticket-feed slider **122** is slidably mounted on the guide-rod or bar **121**, and a feed-plate **123** is secured to its upwardly extending body portion by the screw **124** or by any other suitable means; the plate **123** having a flange **125** extending rearwardly from one edge thereof and flanking the corresponding vertical edge of the body portion of the slider **122**, so as to keep the plate **123** from rotating about the screw **124**. The tape-feed member **93** is generally channel-shaped or has a cross-section which is an inverted U-shape, providing a generally horizontal and upwardly extending channel **126** therein which fits over the upper marginal zone or portion of the plate **123**, as indicated in FIGURE 14. A vertical slot **127** is provided in the plate **123**, and a pin or web **128** is extended through or across the slot **126** of the feed-finger **93**. As the feed-finger **93** is placed over the upper end of the plate **123**, the pin or web **128** thereof engages in the slot **127** of the plate **123**, thereby forming a driving interconnection between the plate **123** and the feed-member **93**. A helical torsion spring **129** is disposed about the head of the screw **124**, and has the end **130** thereof anchored in a hole in the plate **123**, while the free end **131** thereof is suitably bent either to extend into and be vertically movable within the channel **126** and to bear upwardly against the lower edges or faces **132** of the slot **26** of the feed-member **93**; thereby resiliently to urge said feed-member **93** in an upward direction against the lower surface of the membrane **118** beneath the plate **86** which also functions as the upper guide for said tape-feed member **93**.

The tape-feed member **93** is provided with a pair of ticket-feeding fingers **134** and **135** having generally vertical feeding faces **136**, and having their horizontal terminal edges **137** disposed at generally the same angle as that of the edges **138** of the V-shaped notches **139** along the opposite marginal edges of the tape **25**; the facing apices of which notches delineate the boundary-lines **140** between succesive ticket-portions **110**, and along which lines the tape is cut, by the cutters **188** and **191** described hereinafter, as each successive ticket-portion **110** is paid out on the left side of the press-platen **48** during successive downward motions of the printer-arms. As will be seen from FIGURES 14 and 15, the tape-feed member **93** underlies the front marginal portion of the ticket-tape **25** which is below the lowermost print-line **77** and printing-window **113** and press-pad **66**. Along this lower marginal zone the ticket-tape is supported or backed up by the thin resilient membrane **118** (FIGURE 9) and the upper plate **86** of the ticket-guide **85**. The distance between the two fingers **134** and **135** is the same as the distance between successive notches **139**, as shown in FIGURE 15. As the ticket-feed member **93** is horizontally reciprocated to and fro, parallel with the front surface **94** of the press-platen **48** and parallel with the lower surface of the membrane **118** beneath the plate **86**, and through a travel-path slightly greater than the distance between successive notches **139**, the fingers **134** and **135** thereof will engage the edges **138** of pairs of notches **139** and will thus interlock therewith and advance the ticket-tape **25** a distance equal to one ticket-length **110** with each leftward stroke of the feed-member **93**. Upon the rightward stroke of the feed-member **93**, the spring **129** will yield and permit the feed-member **93** to be depressed downwardly sufficiently to permit fingers **134** and **135** thereof to ride beneath and in contact with the lower surface of the ticket-tape, intermediate the notches **139** thereof.

A driving slider **141** is slidably mounted on the rod **121**, to the left of the slider **122**, and a helical tension spring **142** is operatively interposed between the sliders **122** and **141**, by having its opposite ends secured to suitable anchorage means on said sliders, so that the driving slider **141** will pull the slider **122** after it when moved in a leftward or tape-advancing direction and so that it will move the slider **122** in a rightward or finger-retracting direction by direct contact therewith as indicated in FIGURE 14. By means of this spring or resilient tape-advancing connection between the sliders **122** and **141**, the latter is enabled to travel a short distance in a leftward direction beyond the left end of the travel-path of the slider **122**, so that when the left end **143** of the feed-member **93** is brought up against the stop-surface **144**, by

which the limit of its ticket-advancing travel is fixed, the driving slider **141** may still move a slight additional distance in a leftward direction; thereby assuring the full feeding stroke of the feeding-member **93**.

A pivot-supporting member **145** is pivotally mounted to the right frame member **1**, by means of the shouldered pivot-screw **146** whose larger-diametered journal portion extends through the pivot-opening **147** and whose smaller-diametered threaded portion **148** extends through the frame plate **1** and is secured thereto by the nut **149**. By this means, the pivot-carrying or pivot-supporting member **145** is journaled about a fixed axis at a right angle to the vertical frame plate **1**. A feed-link **150** is operatively interposed between the pivot-carrying member **145** and the driving slider **141**, the latter is moved leftwardly each by suitable shouldered pivot-screws **151** and **152**, as indicated in FIGURES 7 and 13. By means of this interlinking between the pivot-supporting member **145** and the driving slider **141** the latter is moved leftwardly through its ticket-advancing stroke during the downward motion of the printer-arms **38** and **39** and of the press-platen **48**, and is moved in its rightward retracting direction during the upward or printing stroke of said printer-arms and press-platen; thereby to advance the ticket-tape **25** the length of one ticket-portion **110** during each retracting or downward swing of the printer-arms.

The inker designated generally by the numeral **155** comprises a lower bed-plate **156** whose forward portion **157** is at a suitable angle in relation to its rearward portion and carries the downwardly-extending pivot-flanges or pivot-portions **158**, preferably formed integral therewith. The front edge of the portion **157** of the inker is offset in three steps (as indicated in FIGURE 9) corresponding to the offsetting of the three printing positions **81**, **82** and **83** and the similar offsetting of the selected type-faces in the three channels **11**, **12** and **13**. The lower inker plate **156** has upwardly extending marginal flanges **160** along outer periphery thereof. Along its front edges these flanges are of a height slightly less than the height of the inking pads **26***a*, **26***b* and **26***c*. The front portions of the flanges **160** confine the inking pads **26** horizontally and yet permitting them to be pressed upwardly against the selected type-faces of the aforementioned type-bars when the inker is in its inking position, without interference from said flanges **160**.

The inker **155** further includes an upper cover-plate **166**, which is generally parallel with the lower plate **156**, has has its front edges offset similar to the front edges of the lower plate **156**, but is shorter than the latter by an amount approximately equal to the fore-and-aft dimension of the inking pads **26**; whose fore-and-aft dimension is just sufficiently greater than the fore-and-aft dimension of the type-faces to assure adequate type coverage.

The upper cover-plate **166** resets on (or between) the upturned marginal flanges **160** of the lower plate **156**, and may have a rear flange **167** bent downwardly and forwardly so as to engage beneath the rear end of the lower plate **156**, as indicated in FIGURE 7. Ink-supply holes **168** are provided in the upper cover-plate **166**. Ink-conducting wicks **169** are disposed between the lower and upper plates **156** and **166** and extend from the holes **169** to the pads **26**. The pads **26** may rest on the front ends of or abut the wicks **169**. Longitudinally extending rib-like partitions or separators **165** are provided between the wicks, so as to keep the ink contents thereof from mixing.

The lower ends of similar inker-suspension links **170** are pivoted to the pivot flanges or members **158** of the inker **155**, by means of the opposite ends of the pivot-rod **171** which extends through the pivot-flanges **158** and on the ends of which the links **170** are retained by split retainer-rings mounted in ring-receiving grooves in the ends of said pivot-rod, as indicated in FIGURES 5, 6, 7 and 9. The upper ends of the inker-suspension links **170** are pivoted to the vertical side-frame plates **1** and **2** by the shouldered pivot-screws **172**.

The rear end of the inker **155** rests on the inker roller-shaft or pivot-rod **175** or on a spacer-tube **174** on surrounding such pivot-rod **175**, as indicated in FIGURES 6, 7 and 9, or the pivot-rod **175** may extend through eyelets or pivot-holes **161** in the lower flanges **162** of the inker **155**, as indicated in FIGURES 25 to 32. Cam-rollers **176** are rotatably mounted on the rod **175** and ride in the cam-slots **178** in the vertical side-frame plates **1** and **2**, as indicated in FIGURES 5 and 6. The lower inker-plate **156** may be provided with a downwardly bent flat spring-finger **180**, having a slight forward bend, which is adapted resiliently to interlock with spacer-tube **174** on the inker-roller shaft **175**, so as to keep the rear end of the inker **155** against said spacer-tube **174**, or the pivot-rod **175** passes through holes in the downwardly extending flanges of the inker.

The rear ends of similar inker-driving links **182** are pivoted on the opposite ends of the inker-roller shaft **175**, adjacent the opposite sides of the inker **155** and adjacent the cam-rollers **176**, as indicated in FIGURES 7 and 9. The front-ends of the inker-driving links **182** are pivoted on similar eccentrics **184** carried by similar inker-adjustment levers **185** which are rigidly but adjustably secured to the rear ends of the printer-arms **38** and **39** by means of set-screws **186** which pass through clearance-holes in the eccentric-and-lever members **184** and **185** and are screw-threaded into the rear ends of the printer-arms **38** and **39** so that by loosening the screws **186** the eccentrics **184** may be rotated so as to dispose their centers in the desired position of adjustment which will bring the inking pads **26** into appropriate contact with the selected type-faces of the type-bars; whereupon the screws **186** may be tightened so as to fix the eccentrics **184** in their so adjusted positions.

By means of this interlinking of the pivot-shaft **175** (carrying the cam-follower rollers **176**) and the rear ends of the printer-arms **38** and **39**, the inker **155** is moved rearwardly as the printer-arms are swung upwardly, so that the inking pads **26** are swung downwardly and rearwardly, out of the path and clear of the press-platen **48**, and so that upon the downward swinging of the printer-arms the inker **155** is moved forwardly so that the inking pads **26** thereof will be swung forwardly and upwardly into inking contact with the selected type-faces in the three printing positions in the channels **11**, **12** and **13**, as such selected type-faces are exposed through the gap between the facing ends **7** and **8** of the type-bar bed-plates **5** and **6**.

The cam-slots **178** are so shaped as to cause the rear end of the inker **155** to travel in a path which will bring the inking pads **26** parallel with the type-bars as the inking pads come into close proximity of the type-faces thereof and so as to cause the inking pads to move in a path generally normal to the type-bars during the terminal portion of their inking stroke.

A cutter blade **188** is secured to the left end-face of the press-platen **48**, with its cutting-edge **189** generally at the level of the press-pads **68**, by means of the screws **190**. A stationary cutter blade or member **191** is adjustably secured to the left vertical frame plate **2**, by the screw **192**, in operative juxtaposition to the lower cutter blade **188** (as indicated in FIGURE 6), so that as the press-platen **48** reaches its uppermost or printing position, the juxtaposed cutting edges of the two cutters **188** and **191** will have passed each other just sufficiently to cut off the terminal ticket-portion **110** which projects outwardly beyond the press-platen as a result of the last previous ticket-advancement effected by the ticket-feeding member **93** during the last previous downward motion of the printer-arms **38** and **39**, in the manner hereinabove indicated.

Any suitable counter **194**, having a trip-lever **195**, may be mounted on the side frame plate **1**, as indicated in

FIGURES 5 and 9, by means of any suitable supporting bracket **196**, with its trip-lever **195** in operative alignment with the inker-roller-shaft **175** or an extension thereof, so that with each upward printing stroke of the printer-arms and the consequent rearward travel of the inking-roller-shaft **175**, the latter will engage and move the trip-lever **195** rearwardly and thus cause the counter to advance its counting wheels by one.

The motor **198**, suitably mounted upon the rear bracket **4**, has a pulley **199** in operative alignment with the belt-receiving or pulley portion **200** of the drive wheel **54**. A belt **201**, which may be of round cross-section or of any other suitable cross-section, extends over the driving pulley **199** of the motor and over the pulley portion **200** of the drive wheel **54**, and may be tensioned by an idler pulley **202** suitably mounted in alignment with the pulleys **199** and **200**.

The tape-roll bracket **203** is detachably secured to the right vertical frame plate **1**, and has a base portion or foot **204** adapted to rest on the table or other supporting surface upon which the machine is rested, and also has an inclined roll-mounting plate **205** carrying a pivot **206** upon which a roll-spindle **207** is rotatably mounted. The tape-roll is placed over the spindle **207**.

Having shown and described an embodiment of my invention I claim the following:

1. A ticket printing and dispensing machine for alternately printing a ticket-length portion of a tape and advancing the tape to deliver an imprinted ticket-length thereof, including

(a) a stationary type-support arranged stationarily to support type-bearing members during successive inkings thereof and during printing impressions therefrom,

(b) a plurality of multi-face type-bearing members stationarily supported by said type-support for the successive inkings thereof and printing impressions therefrom, and said type-bearing members being movable in relation to said type-support to permit the selected one of the type-faces thereof to be presented facing downwardly in the printing zone of the machine while the other type-faces thereof are out of such printing zone,

(c) an upwardly-facing oscillatably mounted press-platen in operative juxtaposition to the selected type-faces of said type-bearing members in the printing zone, said press-platen being arranged to oscillate to and fro between an upper printing position thereof in which it presses the below-mentioned tape against the selected type-faces of said type-bearing members and a lower retracted position in which the press-platen is withdrawn from such tape-pressing position thereof,

(d) a tape-guide for guiding tape across said press-platen and arranged to oscillate to and fro in unison therewith,

(e) a support for rotatably supporting a roll of ticket-tape about a stationary axis of rotation and arranged to have the tape from such roll extend to and through the oscillatable tape-guide,

(f) a tape-feeder in operative juxtaposition to said press-platen and tape-guide and arranged to oscillate to and fro in unison therewith, said tape-feeder being arranged intermittently to advance the tape through said tape-guide by a ticket-length during the retracting motion of the press-platen and simultaneously to move a ticket-length of the tape into a ticket-dispensing position beyond the press-platen,

(g) an oscillatably mounted inker having an ink-pad and arranged to oscillate to and fro between an inking position thereof in which the ink-pad thereof in contact with the type-faces in the printing zone and a retracted position thereof in which the ink-pad is withdrawn from such inking position to a position clear of the oscillating path of the press-platen.

(h) means operatively interposed between the press-platen and the inker for causing the latter to oscillate in timed relation to the oscillations of the press-platen so that the inker will be in its retracted position when the press-platen is in its printing position and vice versa.

2. A machine according to claim **1** including a link having one end thereof pivoted about a stationary pivot-axis and having the other end thereof pivoted to one end of the inker and arranged to support and guide said end of the inker, and including a stationary cam, and including a cam-follower carried by the other end of said inker and disposed in operative juxaposition to said cam, said cam and cam-follower being arranged to support and guide the last-mentioned end of said inker.

3. A machine according to claim **1** including a press-platen-arm pivoted about a stationary axis of pivotation and carrying the press-platen at an end thereof, a drive-shaft, an arm-oscillator operated by said drive-shaft and connected with said press-platen-arm and arranged to oscillate the latter to and fro about its aforementioned axis of pivotation with each revolution of the drive-shaft, and an inker-oscillator operatively connected with the press-platen-arm and with the inker for operatively oscillating the latter in synchronism with the former and arranged to oscillate the inker through its inking motion during the retracting motion of the press-platen-arm and to oscillate the inker through its retracting motion during the printing motion of the press-platen-arm.

4. A machine according to claim **1** including a stationary cutter, and movable cutter in the operative juxtaposition thereto, and means for moving the latter through its cutting motion during the terminal portion of the printing motion of the press-platen.

5. A machine according to claim **1** in which the press-platen and the inker are pivotally mounted.

6. A machine according to claim **1**, in which the motion of the ink-pad portion of the inker is generally normal to the plane of the type-faces in the printing zone when the ink-pad contacts said type-faces.

7. A machine according to claim **1**, in which the stationary type-support includes channels and in which the type-bearing members are bars slidably mounted in said channels for changing the type-faces thereof presented in the printing-zone.

8. A machine according to claim **1**, in which the tape-guide comprises a fenestrated panel spaced from the press-platen in close proximity to the face thereof, with a clearance therebetween for the passage of the tape between the face of the platen to the tape-guide panel, and in which a thin print-barring sheet is disposed between said tape-guide panel and the platen-face.

9. A machine according to claim **1**, in which the tape-feeder is carried by the press-platen and oscillates to and fro therewith, and including linkage having one end thereof stationarily supported and the other end thereof connected to said tape-feeder and arranged to oscillate said tape-feeder in synchronism with the oscillation of the press-platen.

10. A machine according to claim **1**, in which the tape-guide includes a plate having a plurality of printing windows and plurality of type-clearance windows, and including a print-barring sheet adjacent the inner face of said tape-guide plate having printing windows in registration with the printing windows of the tape-guide plate and being imperforate in the areas thereof in registration with the type-clearance windows of said tape-guide plate.

11. A machine according to claim **1**, including a stationary tape-cutter, a movable tape-cutter carried by the press-platen in operative juxtaposition to said stationary tape-cutter, said cutters being disposed in operative juxtaposition to the tape-dispensing position and arranged to cut from the tape the ticket-length thereof which is in the ticket-dispensing position beyond the press-platen.

(References on following page)

13

References Cited

UNITED STATES PATENTS

1,159,037	11/1915	Jacobus	101—293
1,340,380	5/1920	Davis	101—288
1,602,874	10/1926	Baillie	101—19
1,897,201	2/1933	Laencher	101—292
1,919,219	7/1933	Hoffman	101—109
1,955,798	4/1934	Fassmann	101—288
2,121,864	6/1938	Flood	101—288
2,168,446	8/1939	Paris	101—368

14

2,271,840	2/1942	Kohnle	101—292
2,402,651	6/1946	Manwaring	101—368
2,438,118	3/1948	Flood	101—288
2,553,709	5/1951	Henry	101—288
2,708,873	5/1955	Braun	101—19
2,890,650	6/1959	Bone et al.	101—19
3,096,712	7/1963	Filsinger	101—288
3,151,544	10/1964	Taylor et al.	101—288

WILLIAM B. PENN, *Primary Examiner.*