Dec. 24, 1968 C. A. BRETHEN 3,417,689

LABEL IMPRINTER

Original Filed Aug. 24, 1965 2 Sheets-Sheet 1

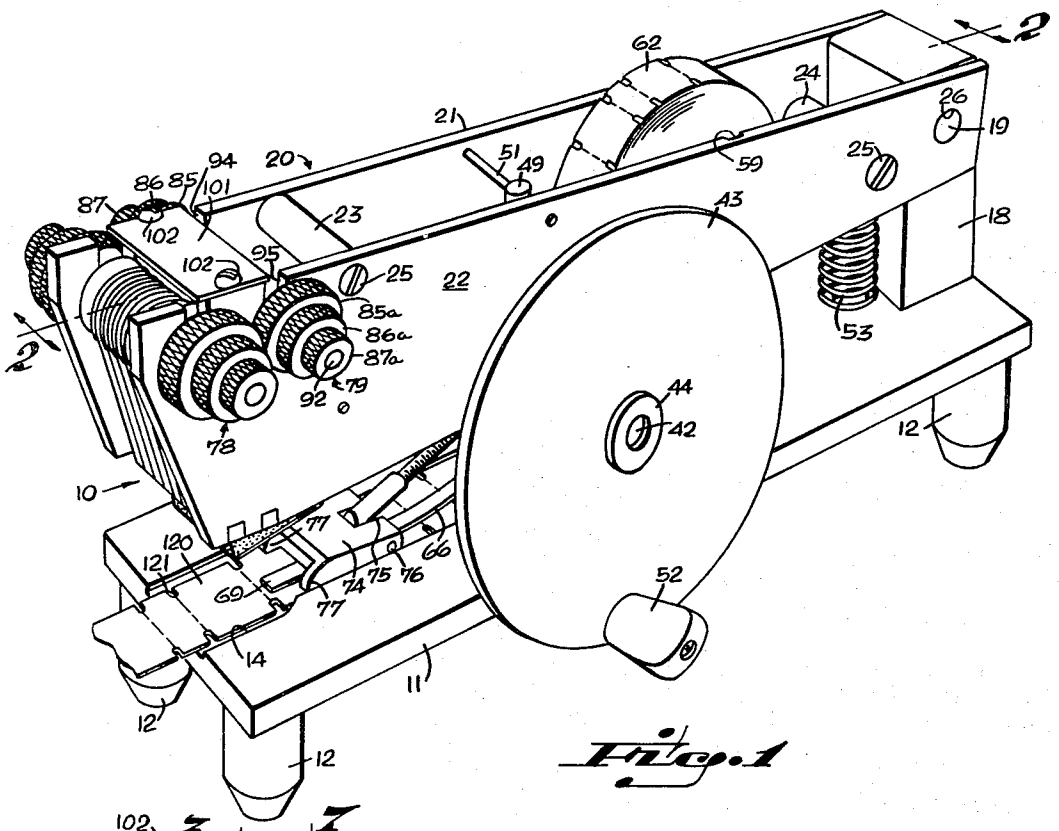


Fig. 1

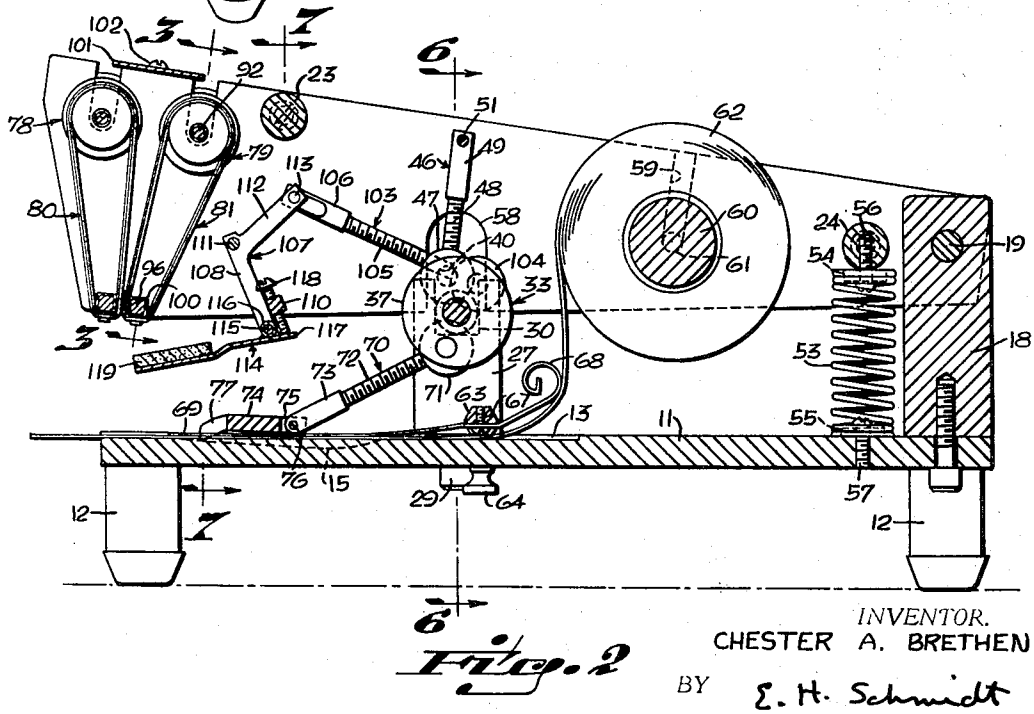


Fig. 2

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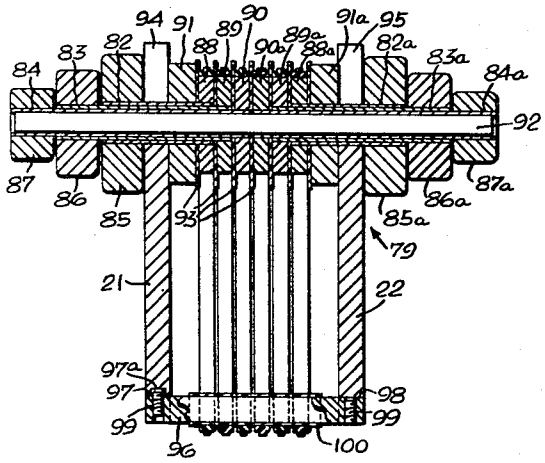


Fig. 3

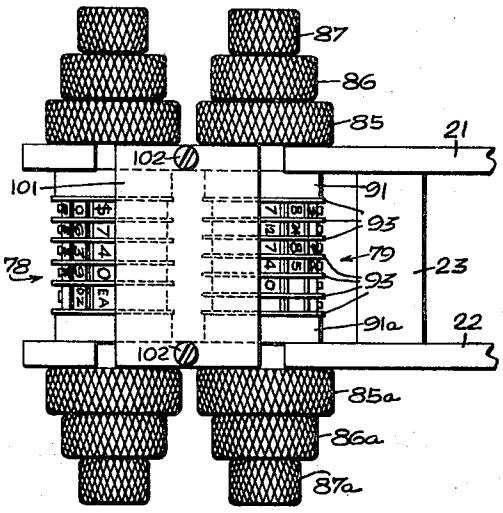


Fig. 4

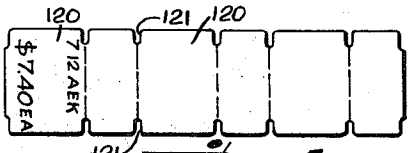


Fig. 5

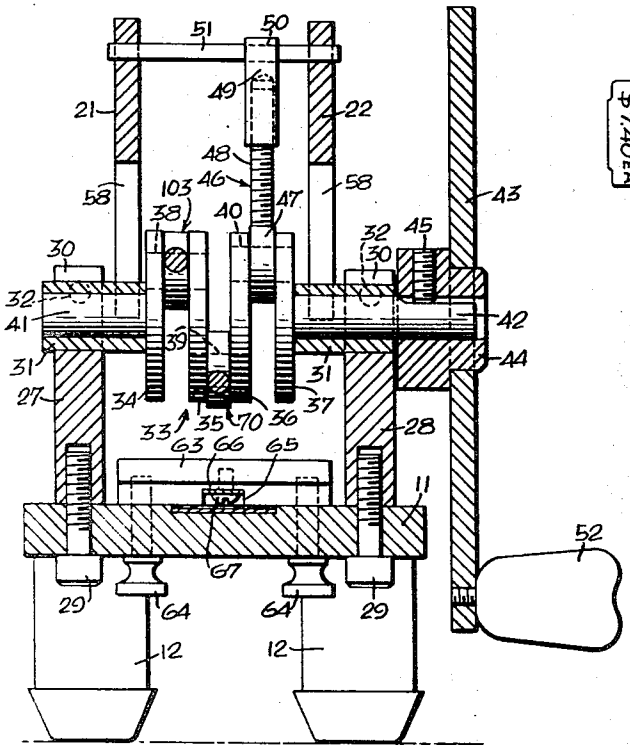


Fig. 6

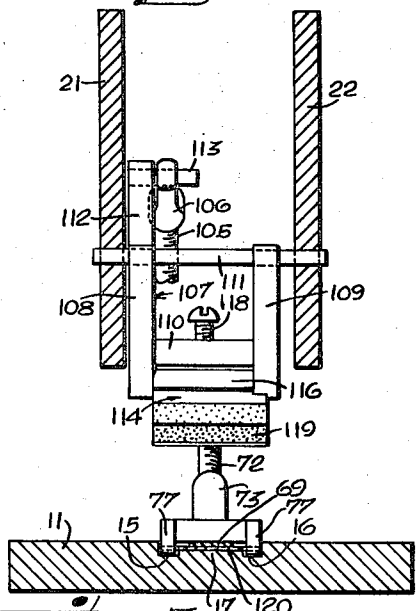


Fig. 7

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3,417,689

LABEL IMPRINTER

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Continuation of application Ser. No. 482,804, Aug. 24, 1965. This application Oct. 30, 1967, Ser. No. 679,263
8 Claims. (Cl. 101—69)

ABSTRACT OF THE DISCLOSURE

A label imprinter having a base for supporting a strip of labels to be imprinted, a carriage pivotally mounted to the base and crank means for reciprocating the carriage to move imprinting means carried on the carriage toward and from the base for imprinting the labels as an incident of the pivotal reciprocation of the carriage. The imprinter further includes means for steppedly advancing the labels for seriatim imprinting thereof and inking means for adjustably inking the imprinting means. The imprinter includes independent adjusting means for permitting control of the printing pressure independently of the inking pressure and for adjusting the advance of the labels.

This application is a continuation of application Ser. No. 482,804 filed Aug. 24, 1965, now abandoned.

This invention relates to printing mechanisms and is directed particularly to improvements in label imprinters of the type operative to automatically print successive labels fed from a rolled strip with predetermined price, inventory control and the like information for marking merchandise for retail sale. Label imprinters of this type necessarily have four basic mechanical movements or submechanisms namely; the label advancing and indexing mechanism, the imprinting type mechanism, the type inking mechanism and the print stamping mechanism, all of which must be perfectly coordinated and synchronized in their sequential operation if continuous and dependable automatic imprinting of the labels as they are fed from the device is to be achieved. Such mechanisms as have heretofore been devised for merchandising label imprinting have been complicated, bulky, difficult to operate and expensive, for which reasons they have not been accepted as a price marking and inventory aid by the great majority of small retailers.

It is accordingly the principal object of this invention to provide a label imprinter that will be simple in structure, compact, easy to use, dependable and durable in operation, and inexpensive to manufacture, thereby obviating the deficiencies of prior label imprinters while at the same time fulfilling the needs of the small retailers as well as those of large department stores and the like.

Still another object is to provide in a label imprinter of the above nature, an improved imprinting type mechanism utilizing two sets of rubber type bands, each set being trained over rotatively adjustable type setting drive discs at one end and over a printing anvil at the other end, the printing anvils of each set being of such size and so closely spaced as to permit the printing of two lines of copy in an extraordinarily small label area, and including simple mechanism for manually adjusting the type setting discs to set the type for the desired copy to be printed.

Yet another object is to provide a label imprinter wherein the separate activation of the label advancing and indexing mechanism, the type inking mechanism and the print stamping mechanism is accomplished through the use of a simple crank shaft having three crank pins and corresponding crank arms, one set for each mechanism,

the crank pins being so angularly disposed with respect to one another as to effect the sequential actuation of said mechanisms with the required coordination and with utmost simplicity.

Still another object is to provide a label imprinter of the character described which will be light in weight, attractive in appearance, easy to reset for copy to be printed, and which will be unusually well suited to its use and purposes of customer cost and inventory control label imprinting in retail establishments.

Other objects, features and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawings. In the drawings, wherein like reference numerals denote corresponding parts throughout the several views:

FIG. 1 is a perspective view of a label imprinter embodying the invention, viewed from its operating handle side;

FIG. 2 is a vertical cross-sectional view of the device, taken along the line 2—2 of FIG. 1 in the direction of the arrows;

FIG. 3 is a transverse cross-sectional view taken along the line 3—3 of FIG. 2 in the direction of the arrows and illustrating details of one of the rubber type band assemblies;

FIG. 4 is a partial top view of the label imprinter illustrating details of the rubber type band assemblies;

FIG. 5 illustrates a short section of a strip of labels of the type fed through the device for imprinting;

FIG. 6 is a transverse cross-sectional view taken along the line 6—6 of FIG. 2 in the direction of the arrows and illustrating details of the crank mechanism; and

FIG. 7 is a transverse cross-sectional view taken along the broken line 7—7 of FIG. 2 and illustrating details of the tape advancing and type inking mechanism.

Referring now in detail to the drawings, 10 in FIG. 1 designates, generally, a label imprinter embodying the invention, the mechanism of which is supported above a rectangular base plate 11 having corner feet 12 the ends of which are preferably rubber tipped to inhibit sliding. A shallow, central, longitudinal slot 13 is formed in the upper surface of the base plate 11, extending approximately from mid-position along said base plate to the front end thereof (see FIG. 2). The front end of the slot 13 is of increased width, as best indicated at 14 in FIG. 1. As illustrated in FIG. 2, the slot 13 is provided at each side along a front portion thereof with a pair of opposed, rectangular grooves 15, 16 defining a central land 17. The grooves 15, 16 are of gradually increasing and decreasing depth in their extent from back to front and at their front end merge gradually into the flat bottom surface of the increased width portion 14 of the central slot 13.

Fixed to the rear end of the base plate 11 at a central position thereupon is an upstanding rectangular block or stanchion 18 provided near its upper end with a bore fitted within which is a pivot pin 19 swingably supporting a rubber type band assembly carriage, indicated generally by reference numeral 20 in FIG. 1. The carriage 20 comprises a pair of elongated, trapezium-shaped side plates 21, 22 held in spaced relation by cylindrical spacers 23, 24 affixed by machine screws 25. The back ends of side plates 21, 22 are provided with opposed openings 26 (only one visible in FIG. 1) journalled on the protruding ends of the pivot pin 19 in the stanchion 18.

Means is provided for manually reciprocating the front end of the rubber type band assembly carriage 20 about the stanchion pivot pin 19 at the rear end of the base plate 11. To this end, a pair of main bearing blocks 27, 28 are fixed in transversely-opposed upstanding position upon the base plate 11 as by machine screws 29. The

bearing support blocks 27, 28 are positioned slightly to the outside of the side plates 21, 22, respectively, at a substantially central position along the base plate 11. Rectangular recesses 30 in the upper ends of the support blocks 27, 28 each have seated therein a self-lubricating cylindrical bronze bushing 31, which may be secured in place as by opposed set screws 32 extending sidewardly into the rectangular recesses 30, as illustrated in FIG. 6. Journalled between the bronze bushings 31, 31 is a crank shaft assembly 33 formed with equidistantly spaced discs 34, 35, 36 and 37. The discs 34, 35 are interconnected with an eccentric crank pin 38, the discs 35, 36 are interconnected with an eccentric crank pin 39; and the discs 36, 37 are interconnected with an eccentric crank pin 40. The crank shaft assembly has a short journal pin 41 at one end received in one of the bushings 31, and a long journal pin 42 at the other end which extends substantially beyond the outer face of the main bearing support block 28. A circular flywheel 43 having a central hub 44 is secured to the outwardly-projecting journal pin 42 as by a set screw 45.

As best illustrated in FIGS. 2 and 6 a crank arm, indicated generally at 46 has a head portion 47 journalled on crank pin 40, from which extends a threaded rod portion 48. Threadingly received on the outer end of the threaded rod portion 48 is a crank arm end member 50 having a transverse bore journalled within which is a pin 51 transversely secured between the side plates 21, 22 at a central, upper position therealong (see FIGS. 1 and 2). It will be apparent that when the crank flywheel 43 is manually turned (clockwisely) by means of the finger grip or handle 52 pivotally affixed against the outside of said flywheel, the crank arm 46 will be reciprocated to set the rubber type band assembly carriage 20 into coordinated reciprocatory swinging motion about the stanchion pivot pin 19. To facilitate this motion by counteracting the weight of the rubber type band assembly carriage, a helical compression spring 53 is provided, said spring being constrained at its opposite ends between washer-like anchors 54, 55 secured in vertically-aligned relation to the underside of the spacer 24, near the rear end of the side plates 21, 22, and upon the base plate 11, respectively, by machine screws 56, 57. The side plates 21, 22 are formed with transversely-opposed, upwardly-extending recesses 58, 58 to permit clearance with respect to the bushings 31, 31 in their downward movement.

As is best illustrated in FIG. 2, the insides of the side plates 21, 22, about one-third the distance from their back ends, are formed with downwardly-extending, transversely-opposed slots 59 for removably receiving a cylindrical roller 60 having axially-projecting roller pins 61 receivable in said slots. The roller 60 is adapted to carry a roll of strip labels 62, hereinbelow more fully described.

Means is provided for guiding the free end of the label strip unidirectionally into and along the central slot 13 of the base plate 11. To this end, there is transversely affixed upon the base plate 11, in straddling relation over the central slot 13 thereof as by thumb screws 64, a hexagonal spring support bar 63. The spring support bar 63 is formed in its underside with a central slot 65 within which is seated a leaf spring 66 affixed as by a machine screw 67. The leaf spring 66 is formed with a diagonally upwardly-extending back-end portion 68, the terminal end of which is forwardly coiled to provide a smooth and resilient guide surface for the label strip leaving the roll 62. The leaf spring 66 is also formed with a flat, forwardly projecting front end portion 69 which bears resiliently over a central portion of the base plate slot 13 and the central land 17 thereof, preventing back-feed of the label strip.

Means is provided for advancing the individual labels of the label strip one at a time in timed relation with the reciprocal movement of the rubber type band assembly carriage 20 as the crank handle 52 is turned. To this end, a second crank arm 70 is provided, having a head portion 71 journalled on the crank pin 39 of the crank shaft assembly 33, and an outwardly-extending threaded rod portion 72. Adjustably threaded on the outer end of the threaded rod portion 72 is a crank arm end member 73 the outer end of which is pivotally linked to a substantially rectangular claw member 74, said claw member being formed with a rearwardly-extending rectangular recess 75 within which said end member is loosely journalled by a transverse pin 76 (see FIG. 2). The claw member 74 is of slightly less width than the slot 13 in the base plate 11, so as to be guided therein in its reciprocative movement in feeding labels, and is formed at each side of its front end with a pair of opposed, forwardly and slightly downwardly-extending fingers 77, 77, said fingers having a width substantially less than the width of the grooves 15, 16 at each side of the central slot 13. As illustrated in FIGS. 2 and 7, shortly after the claw member begins to move forward in its reciprocative movement, its fingers 77, 77 will engage the leading edges of the opposed index notches 121, 121 of successive ones of the tape labels 120 (see FIG. 5) to push them forwardly into printing position at the increased width portion 14 at the front of the base plate 11. The weight of the claw member 74 is such that its downwardly-inclined fingers 77, 77 will slightly distort marginal side portions of the labels into the grooves 15, 16 at each side of the central slot 13, while central portions of the label strip are held seated against the central land 17 by the flat, forwardly-projecting end 69 of the leaf spring 66, to effect positive abutting engagement of the notches 121 between the labels. This action, coupled with the action of the leaf spring 66 in preventing back-feed of the label strip, insures positive and precise successive advancing and indexing of the individual strip labels, even under high speed operation.

The imprinting type mechanism for the labels comprises, generally, front and rear rubber type band assemblies 78, 79 (see FIGS. 1 through 4) each having a plurality of type bands, indicated at 80 and 81, respectively, in FIG. *a*. Since the assemblies 78, 79 are substantially the same, differing one from the other only in that the assembly 78 has five type bands, whereas the assembly 79 has six, the assembly 79 only will be described in detail.

Referring now in detail to FIG. 3, the assembly 79 will be seen to comprise at one side a first set of three, interfitted and circumjacent, mutually rotatable sleeve shafts 82, 83 and 84 of decreasing diameter and increasing length in that order. The outer ends of the sleeve shafts 82, 83 and 84 (as seen in FIG. 3) carry fixed thereon respective knurled cylindrical adjusting knobs 85, 86 and 87 of decreasing diameter, respectively. The inner ends of the sleeve shafts 82, 83 and 84 have fixed thereon cylindrical rubber type band drive discs 88, 89, 90 of equal diameter. A cylindrical spacer disc 91 is rotatably journalled on the outer sleeve shaft 82 between its adjusting knob 85 and drive disc 88. The rubber type band assembly also comprises a second set of three sleeve shafts 82*a*, 83*a* and 84*a* having respective knobs 85*a*, 86*a* and 87*a*, drive discs 88*a*, 89*a* and 90*a*, and a spacer disc 91*a* journalled at the inner end of the outer sleeve shaft 82*a*. The second set of sleeve shafts is held in coaxial relation with respect to the first set by means of a rod 92 fixed within the inner sleeve shaft 84 of the first set and rotatably journalled within the inner sleeve shaft 84*a* of said second set. Thin spacer washers 93 separate the drive discs 88, 89, 90, 90*a*, 89*a* and 88*a* from each other and from the spacer discs 91, 91*a*, said spacer washers being of somewhat greater diameter than that of said drive discs to keep the type bands trained thereon. The side plates 21, 22 are provided with transversely opposed slots 94, 95 within which the rubber type band assembly 79 is received with the adjusting knobs 85, 86, 87 and 85*a*, 86*a*, 87*a* extending outwardly of each side of said side plates and the drive discs 88, 89, 90 and 88*a*, 89*a*, 90*a* and the spacer discs 91 and 91*a* being received between said side plates.

As illustrated in FIGS. 2 and 3 the rubber type bands **81** are trained over individual ones of the drive discs **88, 89, 90, 88***a*, **89***a* and **90***a* at the top and under a substantially square bar anvil **96** received in opposed rectangular recesses **97, 98** extending inwardly from the lower edges of the side plates **21, 22** near the front ends thereof. In and out adjustment of the ends of the anvil **96** is effected by adjustable set screws **99, 99** threaded in openings extending upwardly from the underside at each end of said anvil. This adjustment allows for the cocking of the anvils slightly, thus giving an extremely fine control over printing impression and quality. The recess **97** is provided with a round bottom opening **97***a* within which the end of the pertaining set screw **99** seats to constrain the anvil **96** against lateral movement. The anvil **96** is also fitted with a closely embracing sleeve **100**, preferably of a tough, smooth, synthetic plastic material such as "Teflon," to provide a long-wearing, sliding surface for the rubber type bands in their rotative adjustment. A rectangular index plate **101** is attached transversely between upper edge portions of the side plates **21, 22**, as by machine screws **102**, the transverse edges of which extend in spaced relation above central top portions of the rubber type band sets **80, 81**, respectively, to act as indexing guides in setting type copy, as best illustrated in FIGS. 1, 2 and 4.

Means is provided for inking the type to be printed just prior to the imprinting of a label in the operation of the device. To this end, a third crank arm **103** is provided, having a head portion **104** journalled on the crank arm **38** of the crank shaft assembly **33**. The crank arm **103** has a threaded rod portion **105** adjustably received upon which is a crank arm end member **106**. The inking means further comprises a platen carriage **107** having side frame bars **108, 109** held in spaced parallel relation by a transverse bar **110** affixed against said side frame bars near the lower ends thereof (see FIGS. 2 and 7). The upper ends of the side frame bars **108, 109** are journalled on a transverse pivot pin **111**, the outer ends of which are journalled in opposed openings in the side plates **21, 22** at positions downward and to the rear with respect to the opposed rubber type band assembly slots **94, 95** in said side plates. The upper end of the side frame bar **108** is integrally formed with an upwardly and rearwardly-extending arm portion **112**, forming a bell crank therewith. The outer end of the arm portion **112** is fitted with a sidewardly-extending stud shaft **113** pivotally journalled in a transverse opening in the crank arm end member **106** adjustably received on the third crank arm **103**. A rectangular inking platen **114** is swingingly journalled with respect to the lower ends of the side frame bars **108, 109** of the platen carriage **107** by means of a pin **115** journalled between said side frame bars extending through a sleeve **116** affixed across the top of said inking platen near the back end thereof. A platen portion **117** projects somewhat behind the sleeve **116**, being in abutment with the lower end of a screw **118** adjustably received in a threaded opening in the platen carriage frame transverse bar **110**. A rectangular ink pad **119** of porous rubber or the like is affixed upon the front end of the platen **114**. Operation is such that when the rubber type band assembly carriage **20** just begins to move downwardly in its reciprocative movement as the handle **52** is turned clockwisely, the inking platen **114** will be moved outwardly and upwardly to press ink against the type face copy set at the underside of the anvils **96**. As the type band assembly carriage continues in its downward movement, the inking platen withdraws downwardly, finally to abut, pivot upwardly about pivot pin **115** and slide backwardly along the upper surface of the base plate **11** in front of the claw block **74**, which also moves backwardly at this time for engagement with the next label to be advanced, leaving room for the now inked type to imprint upon the previously indexed front label. It will be apparent that the timing in the sequence of operation of the label advancing and indexing mechanism, the type inking mechanism and the print stamping mechanism is controlled by the mutually, angularly spaced positions of the eccentric crank pins **39, 38** and **40**, respectively, of the common crank shaft assembly **33**. Since the relative positions of the crank pins are mutually fixed, precise sequential operation is assured. Fine control is accomplished by adjustment of the crank arm end members **49, 73** and **106** on their respective crank arms.

An important advantage of the invention resides in the simplicity of the rubber type band assemblies, the ease with which the type can be set by means of the adjusting knobs of graduated size, and the compactness of the imprinting anvils over which the rubber type bands are trained to permit imprinting two lines of copy in a small area for cost-code and inventory control marking along with regular price marking (see FIG. 5). Preferably, each of the rubber type bands is formed along its length with two consecutive duplicate sets of numerals or characters, so that type setting can readily be accomplished by indexing the characters of one set of each of the type bands against the adjacent edge of the index plate **101**, the corresponding characters of the other set then being in position for printing.

While there is illustrated and described herein only one form in which the invention may conveniently be embodied in practice, it is to be understood that this form is presented by way of example only, and not in a limiting sense. The invention, in brief, comprises all the embodiments and modifications coming within the scope and spirit of the following claims.

I claim:

1. A label imprinter comprising: support means including means for movably supporting a strip of labels; a carriage; means for mounting said carriage on said support means to extend superjacent said supporting means and to pivot about an axis fixed substantially parallel to said label supporting means; rotary drive means carried on said support means; means driven by said drive means for rotatively reciprocating said carriage about said axis; imprinting means carried on said carriage spaced from said axis to move toward and from said label supporting means for imprinting said labels as an incident of the pivotal reciprocating of said carriage; means driven by said rotary drive means for steppedly advancing said labels on said label supporting means; inking means movably carried by said carriage; and means adjustably driven by said rotary drive means for adjustably moving said inking means seriatim into inking engagement with said imprinting means when said imprinting means is spaced from said label supporting means and into spaced retracted relationship to said imprinting means when said imprinting means is in an imprinting position wherein said imprinting means engages a subjacent one of said labels for imprinting the same.

2. A label imprinter as defined in claim **1** wherein said imprinting means comprises a rubber type band assembly having a plurality of rubber type bands, an imprinting anvil, and mechanism for adjustably and individually positioning said type bands over and upon said anvil, said adjustably positioning mechanism including a first plurality of circumjacent, mutually rotatable sleeve members of increasing length from the inner to the outer ones thereof, a second plurality of circumjacent, mutually rotatable sleeve members of increasing length from the inner to the outer ones thereof, a common central rod holding said first and second pluralities of sleeve members in coaxial alignment, drive discs of equal diameter fixed one each upon the inner ends of said pluralities of sleeve members, and turning knobs affixed one each at the outer ends of said pluralities of sleeve members for individually turning said drive discs.

3. The label imprinter of claim **1** wherein said imprinting means comprises a pair of spaced imprinters arranged to concurrently imprint the label at positions thereon spaced apart in the direction of advance of the strip.

4. The label imprinter of claim **1** further including

means biasing said carriage away from said supporting means.

5. The label imprinter of claim 1 wherein said means for reciprocating said carriage, means for advancing said labels, and means for moving said inking means comprise a plurality of cranks concurrently rotatable about a fixed axis parallel to said carriage pivot axis.

6. The label imprinter of claim 5 wherein at least one of said cranks includes means for adjusting the throw thereof independently of the others.

7. The label imprinter of claim 1 wherein said reciprocating means comprises adjustable means.

8. The label imprinter of claim 1 wherein said means for moving said inking means comprises adjustable means.

References Cited

UNITED STATES PATENTS

474,724	5/1892	Dolan	101—301
782,923	2/1905	Robertson	101—111
809,188	1/1906	King	101—111
1,420,905	6/1922	Bailey	74—597
1,808,812	6/1931	Glass	101—301 XR
2,125,626	8/1938	Flood	101—288
2,313,347	3/1943	Kohnle	226—167
2,756,674	7/1956	Rieger et al.	101—301
3,119,328	1/1964	Pittman et al.	101—288
3,101,049	8/1963	Huppert	101—318 XR
3,120,178	2/1964	Lamers	101—90
3,157,116	11/1964	Reiner	101—110
3,276,357	10/1966	McKay	101—111

FOREIGN PATENTS

1,348,461	12/1963	France.

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U.S. Cl. X.R.

101—98, 291, 301