Jan. 5, 1954 W. GIBSON 2,664,816

CASE MARKING DEVICE

Filed July 9, 1949 4 Sheets-Sheet 1

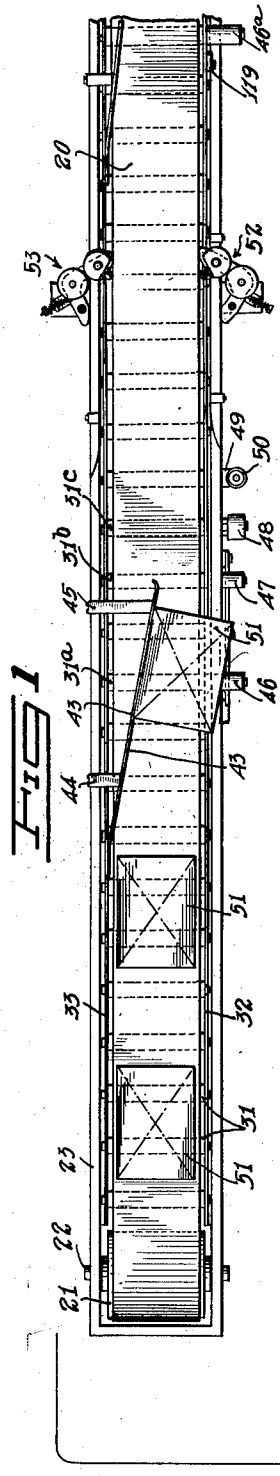
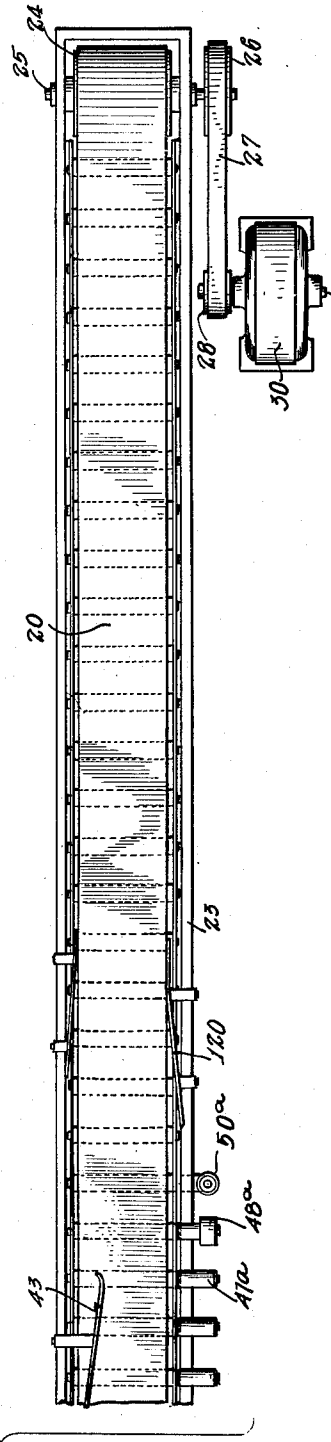


Fig 1



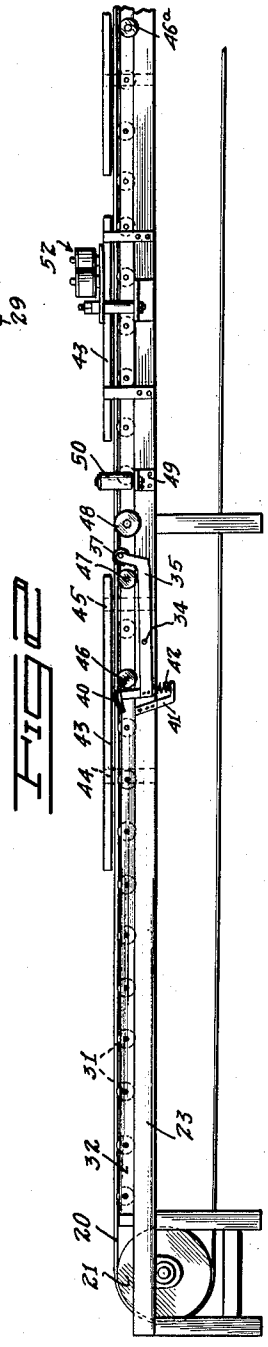


Fig 2

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CASE MARKING DEVICE

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FIG 3

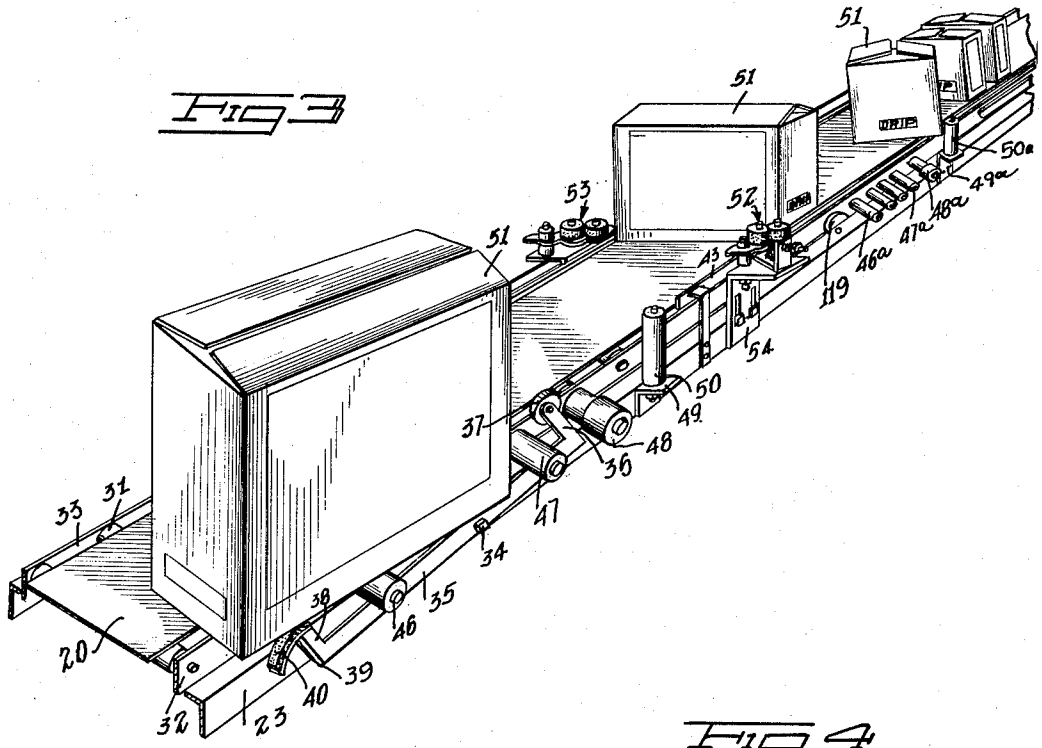
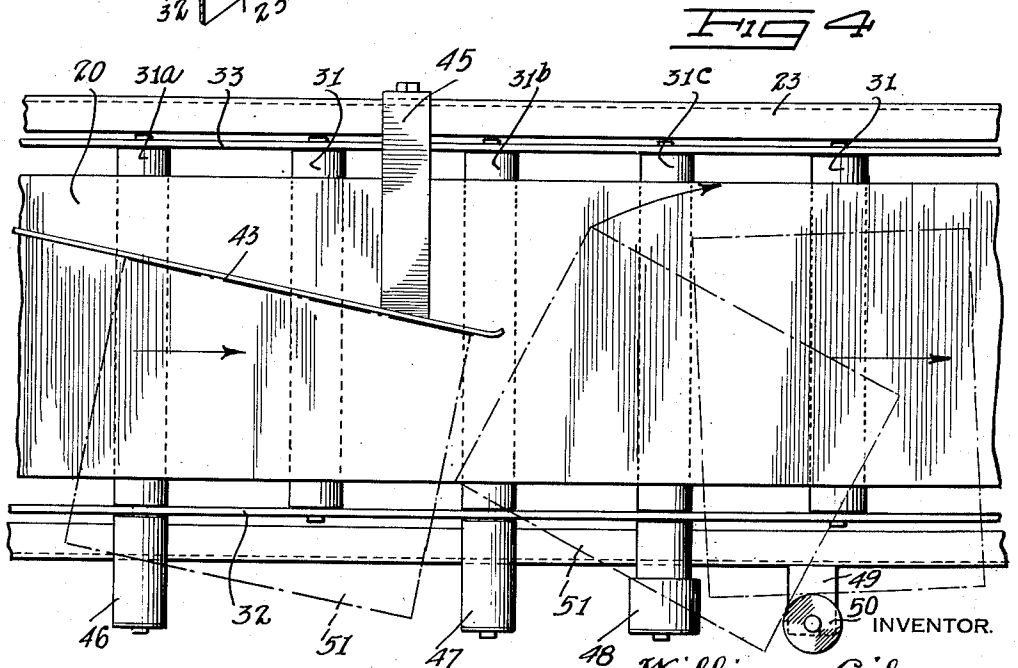


FIG 4



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CASE MARKING DEVICE

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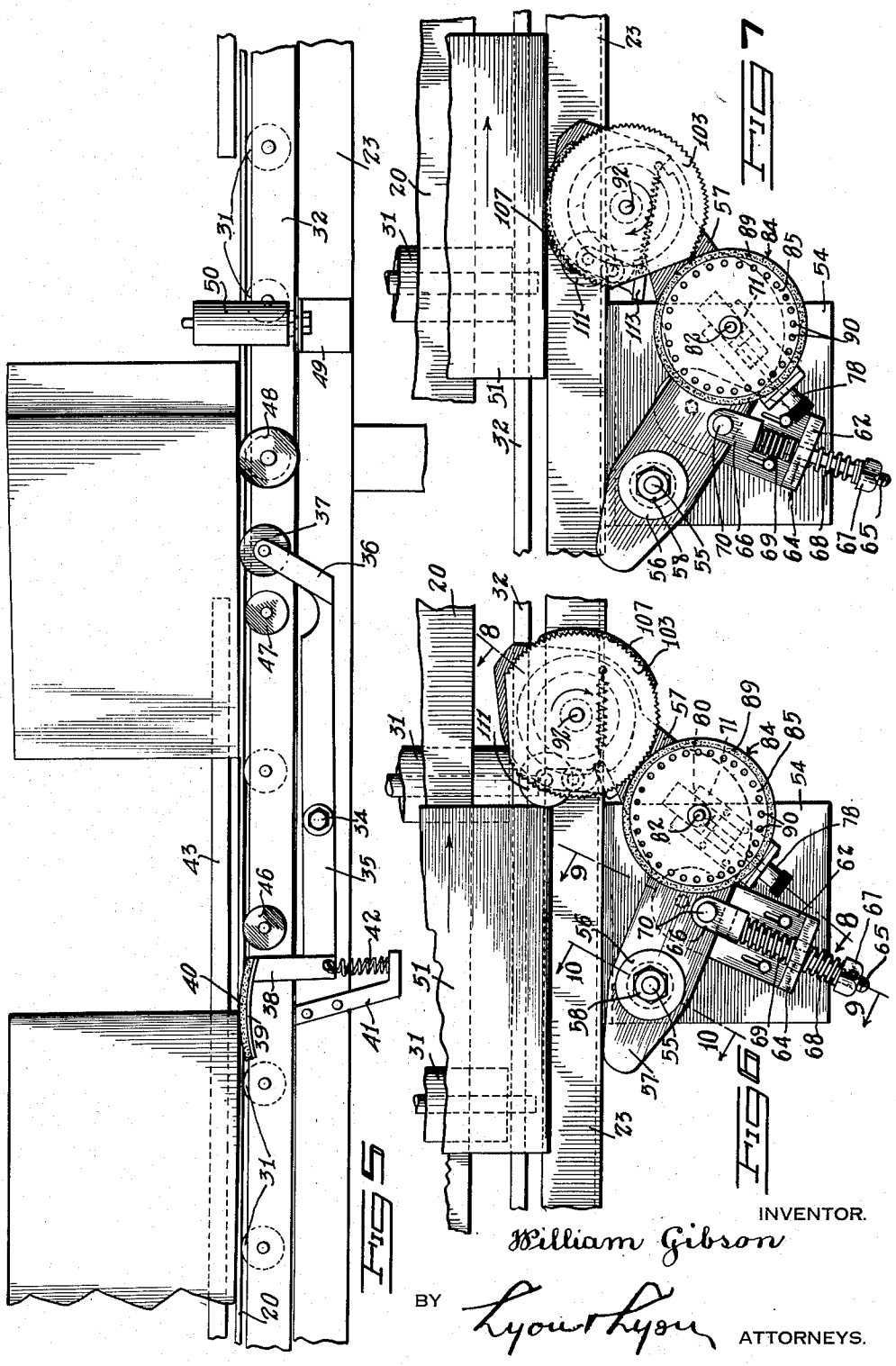

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CASE MARKING DEVICE

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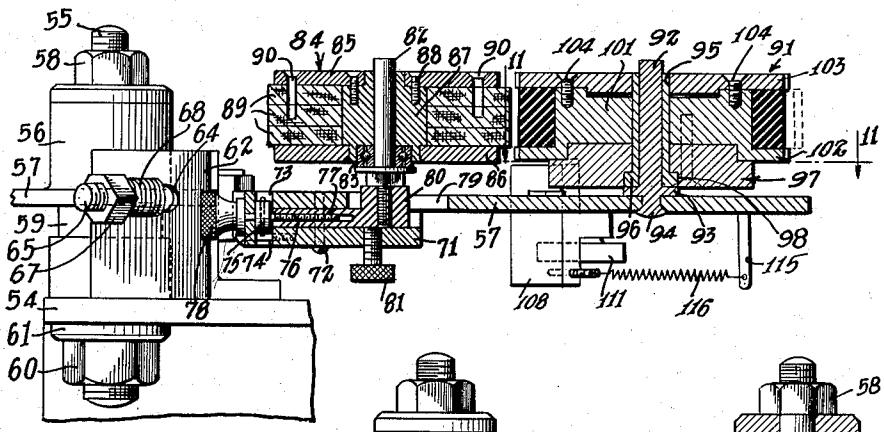
FIG 8



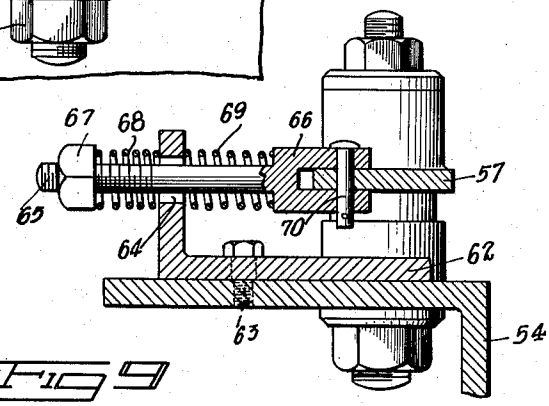


FIG 9

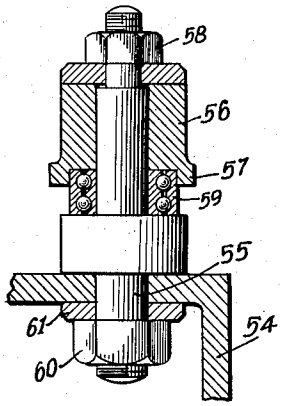


FIG 10

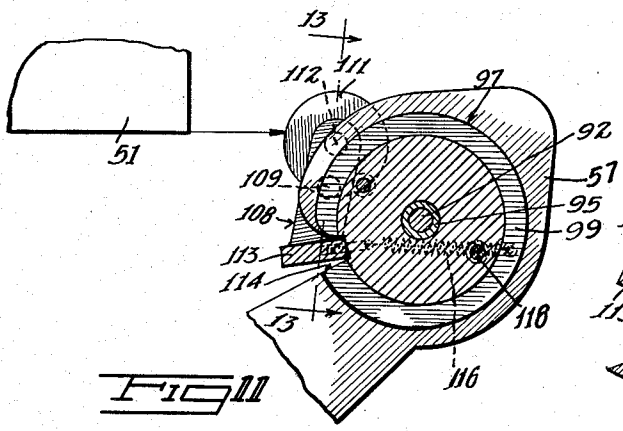


FIG 11

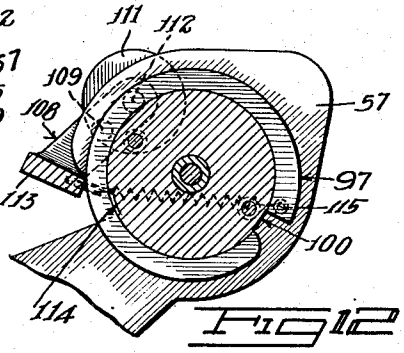


FIG 12

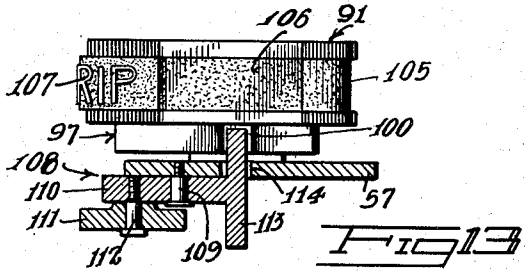


FIG 13

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UNITED STATES PATENT OFFICE

2,664,816

CASE MARKING DEVICE

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Application July 9, 1949, Serial No. 103,931

7 Claims. (Cl. 101—37)

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This invention relates to case positioning and marking devices and more particularly to a device in which suitable oriented and spaced packing cases are intermittently stamped by a roller having letters or other indicia formed thereon, which stamping action is automatically in response to the passage of the packing case past the stamping mechanism.

The device of this invention contemplates the continuous marking of a plurality of packing cases by the intermittent action of the stamping device and includes proper conveying, orienting, stamping and discharging of the packing cases. It is accordingly, one object of this invention to provide a case marking device of the type described, in which the cases to be marked are conveyed in proper spaced and oriented relationship to a marking station marked and discharged therefrom continuously.

It is a further object of this invention to provide such a case marking device in which the marking mechanism is actuated by the movement of the cases through the marking station.

It is a further object of this invention to provide a case marking device of the type described, in which the marking mechanism operates intermittently in response to the passage of a case to be marked through the marking station rather than continuously.

These and other features, objects and advantages of the invention will be apparent from the annexed specification in which:

Figure 1 is a plan view of a case orienting conveying and marking device embodying the present invention.

Figure 2 is a fragmentary side elevation of the device shown in Figure 1.

Figure 3 is an isometric view of a portion of the device shown in Figure 1.

Figure 4 is an enlarged plan view of the first case turning or orienting station, shown in Figure 1.

Figure 5 is an enlarged side elevation of the device shown in Figure 4.

Figure 6 is an enlarged plan view of one of the case marking devices in its original condition.

Figure 7 is a view similar to Figure 6 showing the marking device in marking position.

Figure 8 is a section taken along the line 8—8 of Figure 6.

Figure 9 is a section taken along the line 9—9 of Figure 6.

Figure 10 is a section taken along the line 10—10 of Figure 6.

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Figure 11 is a section taken along the line 11—11 of Figure 8.

Figure 12 is a view similar to Figure 11 showing the device in a different position; and

Figure 13 is a section taken along the line 13—13 of Figure 11.

Referring now more particularly to the drawings, there is shown a continuous conveyor belt 20 mounted at one end upon a drum 21, having an axle 22 suitably journaled in bearings in a frame 23. The conveyor belt 20 is mounted at its other end upon a drum 24 having an axle 25 journaled in bearings in the frame 23, which axle carries a pulley 26 upon its extended end engaging a belt 27, which also engages a pulley 28 mounted on a shaft 29 of electromotor 30. It will be appreciated, that by means of the electric motor 30, the belt 27, the pulleys 26 and 28, the shaft 25 and consequently the drum 24 is driven, thus continuously advancing the belt 20 within the framework 23. Mounted within the framework 23, is a continuous series of idler rolls 31 which serve to support the belt 20. The idler rolls 31 are journaled in bars 32 and 33 carried by the framework 23. Pivoted upon one side of the frame member 23, as at 34, is a bar 35 having at one end an arm 36 carrying a pivoted roller 37. The other end of the bar 35 carries an arm 38 on the upper end of which is affixed a plate 39 carrying a stop pad 40. A bracket 41 is mounted upon the frame 23 adjacent the rear end of the arm 35 and upon a forwardly extending leg of the bracket there is mounted a coil spring 42 having its other end affixed to the end of the arm 35. The coil spring normally biases the arm 35 in a counterclockwise direction, as shown in Figure 2, and thus tends to pivot the arm so as to project the roller 37 into the path of a box traveling along the belt 20 but having its edge projected beyond the belt, as hereinafter described, in a position to engage the roller 37. When a box does engage the roller 37, it will roll over the roller 37 and depress the same, thus pivoting the arm 35 in a clockwise direction and projecting the plate 39 and curved stop pad 40 into the path and then under the bottom of a succeeding box, and the pad brakes the motion of that box, as is clearly illustrated in Figure 5. The succeeding box cannot continue its travel along the belt 20 until the proceeding box has fully cleared the roller 37. In this manner, the boxes traveling upon the belt 20 are suitably spaced with respect to each other.

A deflecting plate 43 is mounted in the path

of the oncoming boxes by suitable supports 44 and 45, in such a manner that the plate forms an obtuse angle with the belt 20 and thus causes the boxes riding upon the belt 20 to be propelled to one side of the belt with their edges extending beyond the belt, as shown in Figure 1.

The shafts carrying the rollers 31*a* and 31*b* are extended and provided upon their extended ends with rollers 46 and 47, which are provided to engage underneath the portion of the boxes thus projected beyond the belt and prevent the same from falling from the belt.

Further towards the forward end of the mechanism, there is provided a roller 48 having a greater diameter than the rollers 46 and 47, which also is mounted upon an extension of a shaft carrying the roller 31*c* and this roller 48 serves to raise the outer edge of the boxes to throw an increased portion of the weight of such boxes upon the belt 20 to insure proper traction of the belt during the turning operation. Just beyond the roller 48, there is provided a bracket 49 on which is mounted an upstanding roller 50, which roller 50 extends into the path of the boxes as most clearly shown in Figure 3. A box traveling along the belt and having been shifted into an angular position upon the belt with its edge extending over the belt, as shown in Figure 3, such as the box numbered 51, will have its forward righthand corner, as shown in Figure 4, engaged by the roller 50 and the traction of the belt will swing the box in a clockwise movement until the box is realigned at a position 90 degrees, with respect to its initial position upon the conveyor belt 20.

The box is then in condition to pass through the marking mechanism proper. Such marking mechanisms, one for the righthand and one for the lefthand are indicated, labeled respectively 52 and 53, each of which, except for being reversed from left to right is identical in structure and one only will be described.

Referring now particularly to Figures 6 through 13, a plate or bracket 54 is now carried by the frame 23 and on this plate there is mounted a shaft 55 which carries a hub 56 having welded thereto an arm 57. The hub is retained upon the shaft 55 by a nut 58 and the hub is counter-bored to receive a three-part thrust bearing 59 to insure easy swinging movement of the hub 56 and arm 57 about the shaft 55. The lower end of the shaft 55 is secured by a nut 60 and a washer 61. Also mounted upon the bracket or plate 54 is an angle piece 62 secured thereto as by means of a stud 63. The upstanding arm of the angle 62 is bored as at 64 and a shaft 65, having a bifurcated end 66, extends through the bore 64. Nut 67 is carried on the outer end of the shaft 65 and a coil spring 68 is interposed between the nut and the upstanding arm of the angle 62 and disposed about the shaft 65. A second coil spring 69 is disposed about the shaft and positioned between the upstanding arm and the shoulders of the bifurcated end 66, all as clearly shown in Figure 9. The bifurcated end 66 fits over the plate 57 and it is pivotally secured thereto by a pin 70.

The plate 57 is also provided with a U-shaped guide 71, secured on its under side as by bolts 72. The plate 57 is slotted at 73 and the guide is similarly slotted at 74 to receive a collar 75, pinned to a screw shaft 76. A slide 77 is carried in the guide 71 and is internally threaded to receive the threads of the screws 76. The outer end of the screw 76 carries a thumb nut 78, the

inner edge of which abuts the edges of the plate 77 and the guide 71 remote from the slots 73 and 74. The plate 57 is again slotted as at 79 to receive an upstanding post 80, formed upon the slide 77. A set screw 81 is provided in the bottom of the guide adapted to engage the slide and lock it in selected position. The post 80 is tapped to receive the lower end of a shaft 82 and a thrust bearing 83 is carried by the shaft 82.

An ink roller, indicated generally at 84, is pivotally mounted upon the shaft 82 and comprises an upper plate 85 and a lower plate 86 and a hub 87. The lower plate 86 is affixed to the hub 87 and the upper plate 85 is removably secured thereto by the screws 88. The plates receive between them a multiple layer of felt pads 89, forming the ink roller proper.

The upper plate 85 is bored in a number of places adjacent its periphery as at 90 and similar bores are formed in the upper felt pad, the purpose of which is to receive and evenly distribute the ink throughout the ink roll and to prevent the ink from settling to the bottom of the roll too quickly. It will be apparent from the foregoing description, that the ink roll is easily removable from the shaft 82, simply by lifting the entire assembly just described, from the shaft.

The plate 57 also carries a marking roll indicated generally at 91. A post 92 having a collar 93 is riveted in the plate 57 as at 94 and a bushing 95 is carried about the post 92. The bushing carries at its lower end a collar 96 and thus serves as a thrust bearing for the mechanism hereinafter described.

A cam 97 is carried by the bushing and is recessed, as at 98, to receive the collar 96. The cam 97 is flanged as at 99 and this flange is notched as at 100 (see Figures 11 and 12). A hub 101, having a flange 102 is mounted on the bushing 95 and the flange 99 of the cam 97 and a plate 103 is secured to the hub as by means of screws 104. The rubber marking roll 105 is flattened at one side as at 106 and provided with type facings, such as 107. The flattened portion 106 of the marking roll parallels the side of a box. After the inking opeartion is completed, the plate 57, in the region of the flattened portion, extends ¼ inch beyond the flattened portion of the roll so that after the marker has completed its cycle, the plate 57 takes over and prevents the roll from touching the balance of the case. This marking roll is clamped between the flange 102 and the plate 103, as indicated in Figure 8. From the foregoing description, it will again be apparent that the marking roll can be removed as an assembly simply by lifting the same off of the post 92, which greatly facilitates changing rolls in the event a different marking is desired.

The plate 57 also carries a T-shaped dogging mechanism 108 pivotally secured to the under side of the plate 57 by means of the stud 109. The dog 108 has an extension 110 on the under side of which is pivoted a roller 111 by means of a stud 112. The upper arm of the head of the T 113 is adapted to removably fit in the slot or notch 100 formed in the cam 97 and into a similar notch 114 in the plate 57. The plate 57 also carries a post 115 on the under side thereof to which is affixed one end of a coil spring 116; the other end of the coil spring is affixed to the lower arm of the head 113 of the T 108.

The operation of the last described mechanism

is as follows. Assuming a box 51 is approaching the marking station, it will first engage the roller 111 (see Figure 6). By reason of the pivotal mounting of the roller 111 and associated T 103 upon the stud 109, further movement of the box under the traction of the conveyor belt 20 will swing the roller 111 and T 103 in a clockwise direction (see Figures 11 and 12), thus removing the upper arm of the head 113 from the notches 100 and 114, freeing the cam 97 for rotation. As the cam 97 is secured to the hub 101 by means of the screws 118, the hub and consequently the marking roller are also freed for rotation. The marking roll will thus be rotated by engagement with the box 51. As the position of the inking roll, with respect to the periphery of the marking roll, is adjustable by means of the adjustment of the slide 77 hereinbefore described, so that the marking roll will engage the type facings 107, the type facings 107 is inked on rotation of the marking roll. Further rotation of the marking roll causes the type facings 107 to engage the sides of the box 51 and imprint the marking thereon.

When one revolution of the marking roll is thus completed, the cam 97 is again positioned so that the notch 109 is aligned with the notch 114. In this position the coil spring 116 is free to force the T 103 and roller 111 to pivot in a counter-clockwise position and re-engage the upper arm of the head 113 in the notches 100 and 114 and the device is thus locked and placed in condition to be actuated by the passage of a succeeding box.

It will be appreciated that as the roller 111 is initially engaged by the edge of the box 51, the plate 57 is pivoted about the post 55 and the entire marking mechanism swung initially from the position shown in Figure 6 to that shown in Figure 7. As this is done, the coil spring 69 is placed under compression, the force of which compression serves to insure the firm contact of the marking roll with the side of the box. The coil spring 68 serves, however, to prevent slap when the marking roll rides off the box 51.

By means of the thumb nut 78, a delicate adjustment of the slide 77 and hence of the post or shaft 82, and the inking roller 84 is possible. After such adjustment is made, it is retained by the set screw 81. A similar adjustment in the force with which the marking roll pressed against the side of the box is possible by means of the nut 67 on the shaft 65. The nut 67 also illustrates the normal position of the plate 57 and hence the positioning of the inking device when originally contacted by the box to be marked; thus regulation of the position of the plate 57, by means of the nut 67, also serves to center the printing upon the box as desired. On passing from the marking station as described, the boxes are then presented to another turning station in all respects similar to the turning station comprising the plate 43, rollers 46, 47, 48 and 50 above described, with the exception that a small cam or roller 119 is provided to lift the outer edge of the boxes to be presented to the rollers 46*a*, 47*a* and 48*a*. It will be appreciated that the box again is contacted by the upstanding rollers 50*a* and again swung through 90° so as to complete a turning of 180° from its initial position on the conveyor belt 20. In the stations where such turning is performed, guard rails 120 may be employed mounted upon the frame 23, as shown in Figure 3.

While there has been described what is at present considered a preferred embodiment of the invention, it will be appreciated by those skilled in the art that various changes and modifications be made therein without departing from the essence of the invention and it is intended to cover therein all such changes and modifications as come within the true spirit and scope of the appended claims.

What is claimed is:

1. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a pivoted supporting plate; a printing roll journaled on said plate; an inking roll journaled on said plate and engageable with said printing roll; a bracket mounted adjacent said plate; an arm having one end thereof engaging said plate and the other end thereof passing through said bracket, an adjusting nut threaded on said other end; spring means on said arm acting between said bracket and said plate and normally biasing said plate to engage said printing roll with said objects and second spring means acting between said bracket and said adjusting nut and opposing the bias of said first spring means to prevent slapping of said plate said nut being adjustable on said other end to adjust the positioning of the printing on said objects.

2. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a pivoted supporting plate; a post carried by said plate; a printing roll removably journaled on said post; a guide mounted on said plate; a slide mounted in said guide; a second post mounted on said slide; an inking roll removably journaled on said second post; adjusting means for said slide to adjust said inking roll with respect to said printing roll a bracket, an arm having one end thereof pivoted on said plate and the other end thereof passing through said bracket, an adjusting nut threaded on said other end, a first spring acting between said bracket and said supporting plate, a second spring acting between said nut and said bracket, said nut being adjustable to adjust the positioning of the printing on said objects.

3. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a supporting frame; a plate pivoted on said frame; a rigid bracket on said frame; a rod having one end thereof attached to said plate and having the other end thereof passing through an aperture in said bracket; an adjusting nut on said other end, a coil spring on said rod acting between said bracket and said plate; a second coil spring on said rod between said nut and said bracket; a printing roll journaled on said plate; a guide mounted on said plate; a slide mounted in said guide; an inking roll journalled on said slide; adjusting means for said slide to adjust said inking roll with respect to said printing roll said nut being adjustable on said other end to adjust the positioning of the printing on said objects.

4. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a supporting frame; a plate pivoted on said frame; a rigid bracket on said frame; a rod attached to said plate and passing through an aperture in said bracket; a coil spring on said rod between said bracket and said plate; a nut on the free end of said rod; a second coil spring on said rod between said nut and said bracket; a printing roll journaled on said plate; a guide mounted on said plate; a slide mounted in said guide; an inking roll journalled on said

slide; adjusting means for said slide to adjust said inking roll with respect to said printing roll; said nut being adjustable on said rod to center said marking roll with respect to said objects.

5. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a supporting frame, a plate pivoted on said frame, a rigid bracket on said frame, a rod having one end thereof attached to said plate and having the other end thereof passing through an aperture in said bracket, a coil spring on said rod between said bracket and said plate, an adjusting nut on said other end of said rod, a second coil spring on said rod between said nut and said bracket, a printing roll journaled on said plate, a guide mounted on said plate, a slide mounted in said guide, an inking roll journaled on said slide, adjusting means for said slide to adjust said inking roll with respect to said printing roll, said nut being adjustable on said rod to center said rolls on said objects, means normally locking said printing roll against rotation, said locking means incorporating an element normally positioned in the path of movement of said objects for movement thereby to permit rotation of said printing roll.

6. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a frame, a supporting plate pivotally mounted on said frame, a post carried by said plate, a printing roll removably journaled on said post, a guide mounted on said plate, a slide mounted in said guide, a second post mounted on said slide, an inking roll removably journaled on said second post, adjusting means for said slide to adjust said inking roll with respect to said printing roll, a bracket mounted on said frame, an arm having one end thereof pivotally connected to said plate and passing through an aperture in said bracket, first spring means between said bracket and said plate, an adjusting nut on said other end of said arm, a second spring between said bracket and said adjusting nut to permit adjustment of the position of the printing on said objects, means normally locking said printing roll against rotation, said locking means including an element positioned in the path of movement of said objects and moved thereby to permit unlocking of said locking means.

7. A printing mechanism for printing objects supported for rectilinear movement past said mechanism comprising: a frame, a supporting plate pivotally mounted on said frame, a post carried by said plate, a printing roll removably journaled on said post, a guide mounted on said plate, a slide mounted in said guide, a second post mounted on said slide, an inking roll removably journaled on said second post, adjusting means for said slide to adjust said inking roll with respect to said printing roll, a bracket on said frame, an arm having one end thereof pivotally attached to said plate and passing through an aperture in said bracket, first spring means between said bracket and said plate, an adjusting nut mounted on the other end of said arm, second spring means acting between said nut and said bracket, said nut being adjustable to permit adjustment of the position of the printing on said objects, said printing roll being rotatable and having a part of the surface thereof flatter than the printing surface, means for discontinuing rotation of said type member when the flatter surface reaches a position opposite said objects, means effective to lock said printing roll against rotation when said flatter surface reaches a position opposite the objects, said locking means comprising an element positioned in the path of movement of said objects and moved thereby to permit unlocking of said printing roll.

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