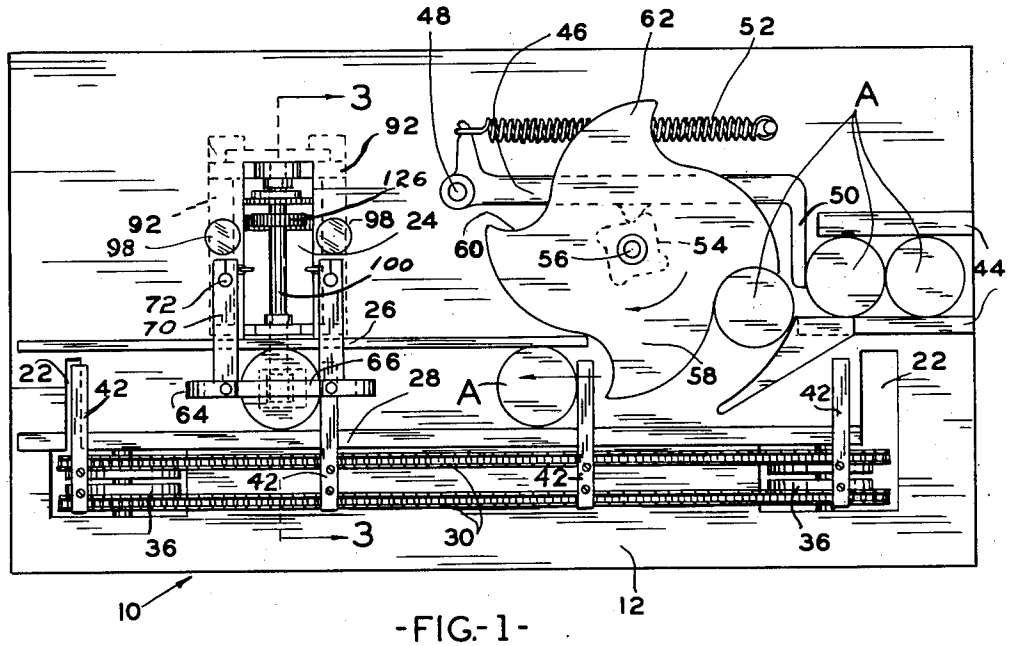
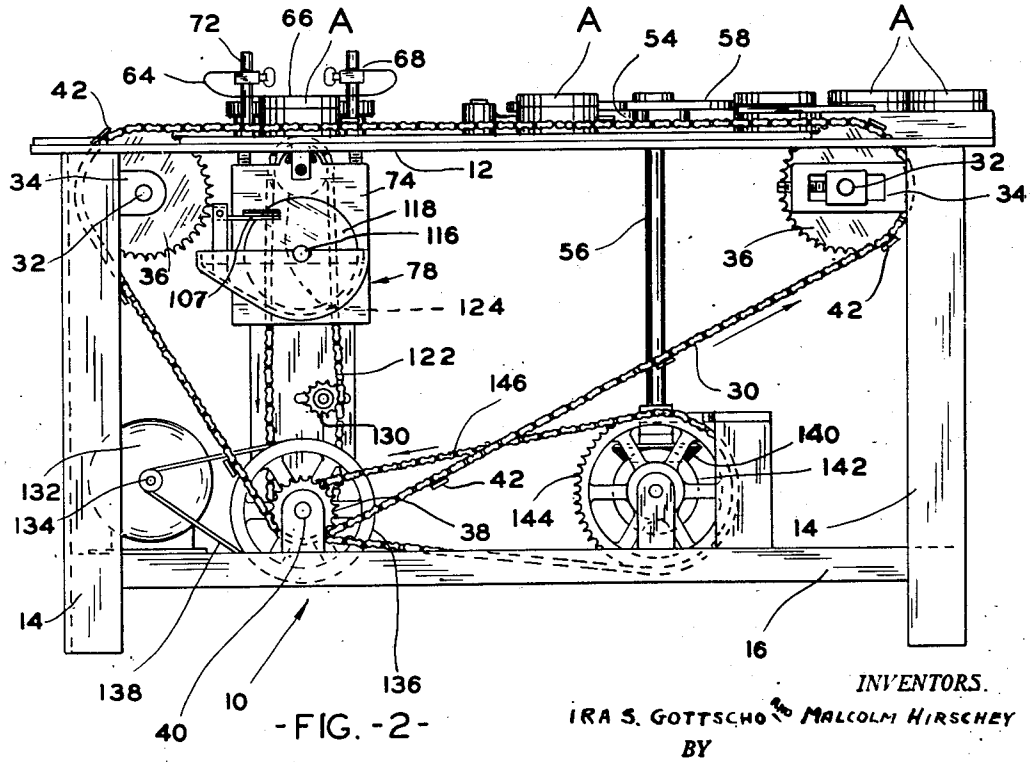
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APPARATUS FOR MARKING CONTINUOUSLY MOVING ARTICLES

Filed Nov. 12, 1948 2 SHEETS—SHEET 1



-FIG.-1-



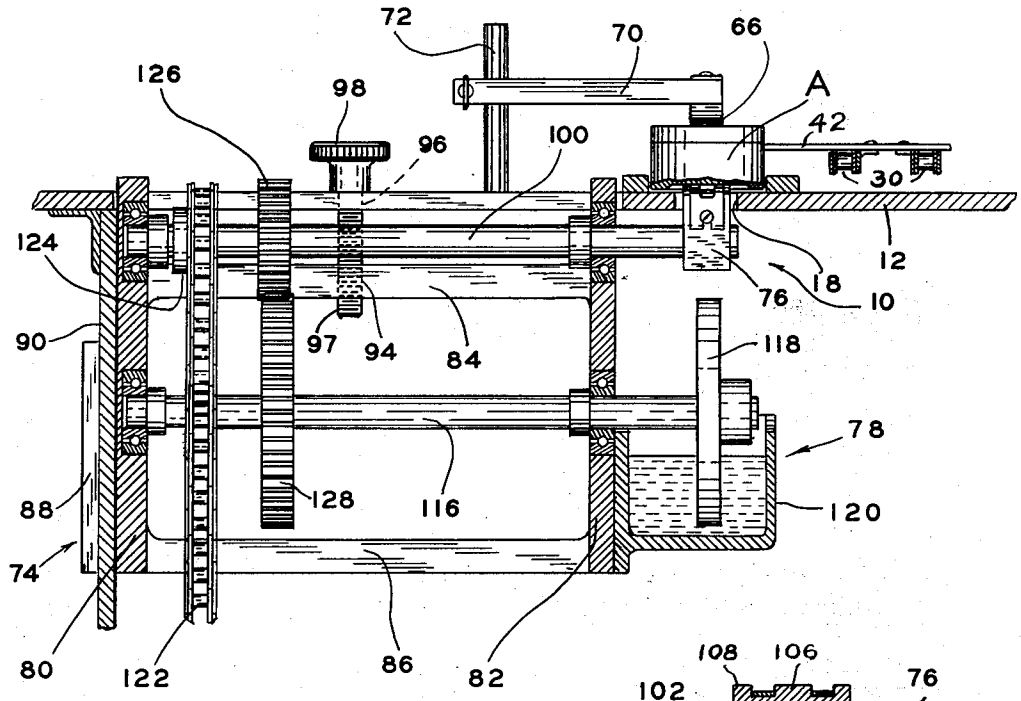
-FIG.-2-

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APPARATUS FOR MARKING CONTINUOUSLY MOVING ARTICLES

Filed Nov. 12, 1948 2 SHEETS—SHEET 2



-FIG.-3-

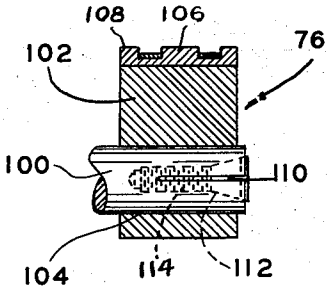


FIG. -5 -

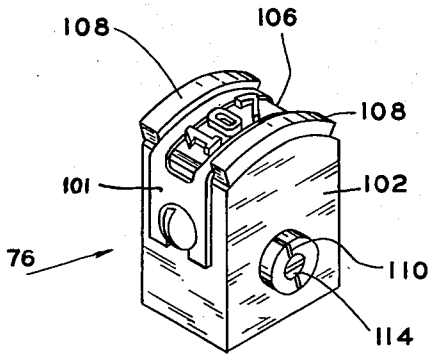


FIG. -4-

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APPARATUS FOR MARKING CONTINUOUSLY MOVING ARTICLES

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Application November 12, 1948, Serial No. 59,626

6 Claims. (Cl. 101—35)

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This invention relates to marking apparatus and is particularly directed to apparatus for applying indicia to continuously moving articles.

More specifically, the invention is directed to apparatus for marking recessed surfaces, such as for example the bottom of jars or any other similar articles which have recessed or upwardly pressed surfaces. Because of the rim around the recessed bottoms of such articles, which interferes with the marking element, difficulty is experienced in applying the marking indicia by standard marking apparatus. Also, in utilizing apparatus as previously employed for applying indicia to the recessed bottoms of such articles, it has been necessary to feed the articles to the apparatus intermittently and apply the marking with the article at rest by moving the marking element into the recessed bottom by means of cam operated mechanism. Moreover, with apparatus of the character indicated as at present employed, improper marking is applied when the depth of the recessed bottom of the articles being marked varies even slightly.

Accordingly, an object of the present invention resides in the provision of apparatus of the character indicated which overcomes the objections and disadvantages of prior apparatus.

Another object resides in the provision of such apparatus which is simple in construction and has a high production rate.

Another object resides in the provision of such apparatus having means for applying indicia to the recessed bottoms of continuously moving articles.

Another object is the provision of such apparatus having means for holding the continuously moving article against lateral movement during the marking operation.

Another object resides in the provision of means associated with the marking element for preventing movement of the article relative to the marking means during the marking operation.

Another object resides in the provision of means for presenting the articles to the marking element in a manner whereby the indicia will be properly applied in all instances even if the depth of the recessed bottom varies.

Another object is the provision of means for operating the marking element in timed relation with the movement of the articles.

Another object resides in the provision of gate mechanism for releasing and supplying the articles individually to the feeding mechanism in timed relation to the operation of the marking element.

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A further object resides in the provision of such apparatus wherein the marking element, article conveying mechanism and article supplying mechanism are driven from the same common drive shaft.

Other and further objects of the invention will be manifest from the following description and the accompanying drawings, in which drawings:

Fig. 1 is a plan view of apparatus in accordance with the present invention;

Fig. 2 is a side elevational view thereof;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the marking element; and

Fig. 5 is a sectional view showing the means for adjustably mounting the marking element on its shaft.

Generally described, the apparatus comprises a table-like structure having an article marking station, a conveyor for moving articles across the marking station, means for supplying articles to the conveyor, a marking element and operating means therefor at the station, and a continuously driven common drive for the conveyor, the supplying means, and the marking element operating means, all elements of the apparatus being associated with the structure to provide a unitary apparatus.

Referring to the drawings in detail and more particularly to Figs. 1, 2 and 3 thereof, there is shown apparatus 10, constructed in accordance with the invention, which has a supporting structure or table comprising a horizontal platform or bed 12, upright corner posts or legs 14 supporting the platform, and horizontal frame members 16 connected to the legs (Fig. 2) adjacent the lower ends thereof providing a support for drive mechanism as described hereinafter.

The platform has an opening 18 therein (Fig. 3) which is at the marking station and over which articles A are moved for the application of indicia to the recessed bottom thereof. The platform also is formed with lateral end slots 22 (Fig. 1) through which portions of the conveyor mechanism are adapted to extend, and has a laterally extending rectangular opening 24 adjacent the marking station through which portions of marking element operating means are adapted to extend.

The platform is further provided with a pair of spaced parallel longitudinally extending tracks or rails 26 and 28 for guiding the articles in centered relation over the marking station opening 18 while preventing lateral movement of the arti-

cles during the application of the marking indicia thereto.

The conveyor, as illustrated herein, preferably comprises a pair of parallel endless chains 30, a shaft 32 at each end of and beneath the platform 12 rotatably mounted by bearing structure 34 secured to the legs 14, a pair of sprockets 36 on each of the shafts 32 over which the chains 30 pass so that the upper leads or strands of the chains extend lengthwise above the platform 12 (Figs. 1 and 2), and a pair of sprockets 38 on a main drive shaft 40 under which the lower leads or strands of the chains 30 pass. If desired, one of the bearing structures 34 may provide construction for adjustment of the position of the shaft supported thereby to adjust the tightness of the chains 30 about the sprockets 36 and 38, such construction being illustrated at the right hand end of the platform as viewed in Fig. 2.

The chains 30 have secured thereto a plurality of evenly spaced lateral arms or flights 42 adapted to enter and exit through the slots 22 and pass over the platform to move the articles lengthwise across the platform between the tracks 26 and 28 and over the marking station opening 18.

In order that only one article is conveyed by each arm 42, a gate mechanism is associated with the conveyor for releasing and supplying a single article to each arm. This gate mechanism comprises a pair of rails 44 on the platform (Fig. 1) through which articles are guided, a gate arm 46 pivotally mounted at 48 on the platform and having a stop finger 50 thereon normally extending across the rails 44 to obstruct the passage of the articles, a spring element 52 for retaining the gate arm in such normal position, a cam 54 on a vertical shaft 56 for operating the gate arm periodically to cause the stop finger to release an article, and a star wheel or feed spider 58 above the platform on the upper end of the shaft 56 having recesses 60 for receiving the sides of the articles and having fingers 62 for positioning the articles on the platform for engagement by the arms 42 of the conveyor.

At the marking station there is provided yieldable means for holding or urging the articles downwardly while being moved across the opening 18. As shown in Fig. 2, such means comprises a yieldable element such as a flat spring 64, having a horizontal portion 66 for engaging the top of the articles while passing thereunder in sliding relation and having U-shaped ends 68 each secured to an arm 70 (Fig. 3) supported by an upright post 72 on the platform 12. Preferably, the arms 70 are removably connected to the posts by clamping means to facilitate adjusting the vertical position thereof to thereby adjust the spring portion 66 to accommodate articles of different height and to adjust the resilient action of the spring on the articles and the yielding thereof in relation to the action of the marking element during the application of marking indicia, as will become apparent hereinafter.

The marking element operating mechanism comprises a generally rectangular frame 74 associated with the platform, a marking element 76 and inking means 78 for the marking element both supported by the frame in the manner about to be described.

The frame 74 has side walls 80 and 82 the upper ends of which extend through the opening 24 and has horizontal upper and lower webs 84 and 86 connecting the side walls. The side wall 80 has spaced vertical ribs 88 thereon forming a groove for receiving a tongue member 90 secured to and depending from the platform for mounting the frame 74 for upward and downward sliding movement. The upper webs 84 have lateral extensions 92 (Fig. 1) which extend beneath the platform at the sides of the opening 24 and which each have a threaded aperture 94 for receiving a screw threaded member 97 extending through an aperture 96 in the platform and having a manually operable supporting head 98 thereon to facilitate rotation thereof whereby the frame may be raised or lowered with respect to the platform.

The side walls 80 and 82 have bearings in the upper portion thereof for rotatably supporting a shaft 100 having a portion extending beneath the marking station opening 18 on which portion the marking element is secured (Fig. 3).

As illustrated more particularly in Figs. 4 and 5, the marking element comprising a body member 102 having an aperture 104 extending therethrough for receiving the shaft 100 and having indicia applying means 106 detachably connected thereto by apertured clip means 101 at one end thereof adapted to extend upwardly through the opening 18 upon rotation of the shaft 100. Adjacent each side of the indicia applying means there is provided an arcuate rib or bearer 108 having a circular surface of substantially the same height as the indicia applying means 106 and adapted to extend through the opening 18 a distance sufficient to contact the recessed underside of the articles and to raise the same off the top surface of the table 12 in opposition to the spring 64 while the indicia is being applied.

In order to adjust the circumferential position of the indicia applying means of the marking element with respect to the center of the depressed portion of the articles and in relation to the position of the conveyor arm 42 which determines the positioning of the articles with respect to the opening 18, the end portion of the shaft 100 is slotted diametrically at 110 and is threaded and countersunk centrally at 112 for the reception of screw 114 adapted to wedge the split portions of the shaft 100 against the aperture walls of the body 102 to secure the body with respect to the shaft.

The side walls 80 and 82 also have bearings in the lower portion thereof for rotatably supporting a shaft 116 having a portion extending beneath the marking element on which an inking roller 118 is mounted for contact with the indicia applying means 106. The inking roller is in the form of a narrow disc having a peripheral surface of a width substantially equal to the width of the indicia applying means, whereby to apply ink to the latter means without contacting the arcuate bearers or ribs 108 on either side of the indicia applying means. Wipers 107 (Fig. 2) are provided on either side of the inking roller 118 for removing ink from the side faces of the roller. An inkwell 120 is secured to the side wall member 82 and receives the lower portion of roller 118.

The shaft 110 is rotated by a chain 122 extending over a sprocket 124 on the shaft 110 and a sprocket (not shown) on the main drive shaft 40, and in turn rotates the shaft 116 by intermeshing gears 126 and 128 on the shafts 100 and 116 respectively. Any slack in chain 122 due to lowering of the frame 74 may be removed by an adjustable idler sprocket 130 (Fig. 2).

The drive mechanism, as shown more par-

ticularly in Fig. 2, comprises an electric motor 132 supported by the frame members 16 which rotates the common drive shaft 40 journalled for rotation on these frame members by means of pulleys 134 and 136 on the motor shaft and the common drive shaft, respectively, and a belt 138.

In addition to operating the conveyor and marking element as previously indicated herein, the main drive shaft 40 also operates the gate mechanism in timed relation. This is accomplished by rotating the shaft 56 through bevel gears 140 and 142 and a sprocket 144 for rotating the gear 142, the sprocket 144 being driven by a chain 146 extending over a sprocket (not shown) on the main drive shaft.

The drive is so constructed and arranged that the gate will supply an article to each conveyor arm or flight, and that the marking element functions each time an article is centered over the marking station opening 18. Such arrangement enables these mechanisms to be operated continuously and uninterruptedly without complicated cams or the like and enables articles to have indicia applied thereto while moving over the opening at a rate whereby a large number of articles can be accurately and effectively marked in a given period of time.

From the foregoing description, it will be seen that the present invention provides novel apparatus for marking articles of the type hereinbefore described in an extremely improved manner and which apparatus is compact and greatly simplified in construction and operation to reduce the cost thereof. The apparatus is adjustable to accommodate articles of various heights and diameter and is adapted to accommodate articles having depressed surfaces varying widely in dimensions beyond the usual permitted tolerances. The apparatus is rugged in construction and can readily withstand such rough usage to which it normally may be subjected over long periods of continuous operation.

While we have illustrated and described one embodiment of our invention, it is to be understood that we do not wish to be limited to that precise structure and arrangement of parts, as obviously various changes and modifications may be made therein without departing from the spirit and scope of our invention.

What we claim is:

1. In marking apparatus including a horizontal platform having an opening therein and continuous conveyor means for moving articles linearly across said platform and over said opening; the combination of a vertically movable frame mounted adjacent said platform, a continuously rotating, horizontal shaft journalled in said frame and extending beneath said opening, a circumferentially adjustable marking element on said shaft adapted to extend through said opening and having impression means for applying indicia to the bottoms of the articles, means for suspending said frame from said platform and for adjusting the vertical position thereof to determine the distance said marking element extends through said opening, an inkwell mounted on said frame, a second shaft on said frame, an inking roller on said second shaft dipping into said inkwell and being aligned with said impression means to transfer ink to the latter, common driving means for said conveyor and for the first mentioned shaft and said second shaft, a bearer member carried by said marking element on each side of said impression means and engageable with the bottom surface of an article over said opening to prevent longitudinal movement of the article relative to said impression means during the marking operation, spaced parallel tracks on the platform at the opposite sides of the opening to guide the articles and prevent lateral movement of the latter during the marking operation, and vertically adjustable spring means mounted on the platform above the opening to engage the tops of the articles during the marking operation.

2. In marking apparatus for marking the recessed bottoms of articles including a platform having an opening therein and continuous conveyor means for moving articles in spaced relation across said platform and over said opening; the combination of a continuously moving marking element mounted beneath said opening and extending therethrough to project above the platform surface and apply indicia to the recessed bottoms of the articles, driving means for moving the conveyor means and marking element in timed relationship so that the latter is operative to apply indicia to each article as it is moved over said opening, yieldable means above said opening for urging the articles downwardly toward the platform surface while the articles move over said opening, and arcuate means carried on either side of the marking element and of substantially the same height as the latter to move with said marking element for engaging the recessed bottom of the article being marked and lifting the same off the surface of the platform against said yieldable means so that marking engagement of the marking element with recessed bottoms of non-uniform depths is assured.

3. In marking aparatus for marking the recessed bottoms of articles including a platform having an opening therein and continuous conveyor means for moving articles in spaced relation across said platform and over said opening; the combination of a continuously moving marking element extending from below through said opening to project above the platform surface and apply indicia to the recessed bottoms of the articles, mounting means for said marking element adjustable vertically for raising and lowering the latter to adjust the distance said marking element projects above said platform surface, driving means for moving the conveyor means and marking element in timed relationship so that the latter is operative to apply indicia to each article as it is moved over said opening, yieldable means above said opening for urging the articles downwardly toward the platform surface while the articles move over said opening, means for adjusting the vertical position of said yieldable means relative to the platform surface to accommodate articles of different heights, and arcuate means carried on either side of the marking element and of substantially the same height as the latter to move with said marking element for engaging the recessed bottom of the article being marked and lifting the same off the platform surface against said yieldable means so that marking engagement of the marking element with recessed bottoms of non-uniform depths is assured.

4. In marking apparatus for marking the recessed bottoms of articles including a platform having an opening therein and a continuously moving conveyor having spaced arms for moving articles across said platform and over said opening; the combination of a frame adjacent said

platform; a shaft rotatably supported by said frame and extending beneath said opening, a marking element on said shaft extending through said opening to project above the platform surface and having impression means for applying indicia to the recessed bottoms of the articles, driving means for said shaft and said conveyor moving the latter in timed relationship with said marking element so that the impression means on the latter is operative to apply indicia to each article as it is moved over the opening, an inkwell and inking roller carried by said frame, means for suspending said frame from said platform and adjusting the vertical position thereof to vary the distance said marking element projects above the platform surface, a spring mounted on the platform above said opening and having a horizontal portion for engaging the tops of the articles and urging the latter downwardly while the articles are positioned over said opening, means for adjusting the vertical position of said spring relative to the platform surface to accommodate articles of different heights therebetween, and an arcuate bearer member carried by said marking element on each side of said impression means and of substantially the same height as the latter to move with the marking element for engaging the recessed bottom of the article being marked and lifting the same off the platform surface against said horizontal portion of the spring so that marking engagement of said impression means with recessed bottoms of non-uniform depths is assured, said impression means being in alignment with said inking roller for receiving ink from the latter, and said bearer members being spaced from each other out of the planes of the sides of said inking roller.

5. In marking apparatus for marking the recessed bottoms of articles and including a horizontal platform having an opening therein; the combination of spaced parallel tracks on said platform adjacent to said opening for guiding articles across said platform and over said opening while preventing lateral movement of the articles, an endless continuously moving conveyor having spaced arms extending laterally across said tracks for moving articles between said tracks and over said opening, a frame adjacent said platform, a shaft rotatable on said frame and extending beneath said opening, a marking element mounted for rotation on said shaft and extending through said opening to project above the platform and apply indicia to the recessed bottoms of the articles, driving means for said conveyor and said shaft operative to move said conveyor and the marking element in timed relationship so that the latter is operative to apply indicia to each article as it is moved over said opening, yieldable means mounted on said platform above said opening for urging the articles downwardly when the latter are positioned over said opening, and arcuate bearers mounted on opposite sides of said marking element and of

substantially the same height as the latter for engaging the recessed bottom of the article being marked and lifting the same off the surface of the platform against said yieldable means so that marking engagement of the marking element with recessed bottoms of non-uniform depth is assured.

6. In marking apparatus for marking the recessed bottoms of articles, the combination of a horizontal platform having an opening therein, spaced parallel tracks on said platform adjacent said opening for guiding articles across said platform and over said opening while preventing lateral movement of the articles, an endless continuously moving conveyor having spaced arms extending laterally across said tracks for moving articles between the latter, a frame adjacent said platform, a shaft rotatably mounted on said frame and extending beneath said opening, a marking element mounted for rotation on said shaft and extending through said opening to project above said platform and apply indicia to the recessed bottoms of the articles, means for circumferentially adjusting the position of said marking element on said shaft in relation to the position of said arms with respect to said opening, driving means for moving said conveyor and shaft in timed relationship so that the latter is operative to apply indicia to each article as it is moved over said opening, means for suspending said frame from said platform to adjust the vertical distance said marking element projects above said platform, yieldable means mounted on said platform above said opening for urging the articles downwardly while the latter are positioned over said opening, means for adjusting the vertical position of said yieldable means with respect to said platform, and arcuate bearers mounted on the opposite sides of said marking element and of substantially the same height as the latter for engaging the recessed bottom of he article being marked and lifting the same off said platform against said yieldable means so that marking engagement of the marking element with recessed bottoms of non-uniform depths is assured.

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