

1

3,003,241

CODE MARKER

Eldon L. Asher, Charles E. Folwell, and Jerome A. Meldgaard, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jan. 20, 1956, Ser. No. 560,464

4 Claims. (Cl. 33—32)

This invention relates to a marking apparatus and more particularly, it relates to an apparatus for dating, batch numbering, or otherwise marking the surfaces of articles by means of small scratches inscribed thereon.

Currently it is the practice in the manufacture of many different articles to mark the articles at some time during their manufacture with suitable indicia in order that their date of preparation, the materials employed in their preparation, or similar information can be ascertained by visually inspecting the articles at some future date. Various methods have been used for this purpose including inking mechanisms and embossing mechanisms, or if labels are employed, label notching devices, label inscribing devices, etc. These marking devices may actually impart a number or date to the surface marked, but in many instances they impose a series of marks spaced at intervals or of different configuration which may then be deciphered to indicate a particular month, day, year, batch, etc.

Marking devices used prevalently today have not been entirely satisfactory. Inking mechanisms which have been proposed are generally quite intricate, and, therefore, have been subject to recurring breakdown. In addition, they must be tendered closely to insure that the ink conduits are free, and smudging difficulties are encountered particularly when curved surfaces are being marked. Embossing machines have proved successful, particularly in many canning operations, however, they cannot be used successfully with certain articles such as style "F" cans since the mark should be imposed before the can is assembled. Embossing machines are also not practical in the canning of corrosive materials such as high acid foods, or foods subject to acquiring a metal flavor, as the enamel on the inner surface of the can will fracture during the embossing with the exposing of the metal surface beneath the enamel. Label marking devices require that a label be employed and are inconvenient in that a number of labels usually must be marked an advance prior to their being affixed to the article to be identified.

Generally, it is an object of this invention to provide an extremely simple but effective apparatus for applying code marking to a surface which takes care of the heretofore outlined difficulties in a highly satisfactory and practical manner.

More specifically, it is an object of this invention to provide a novel code marking apparatus which will apply identification marks directly to the outer surface of an article without affecting its inner surface.

Another object of this invention is to provide a novel marking device for articles which imparts identification marks by means of light scratches applied to the outer surface of the articles.

Another object of this invention is to provide a simple and effective marking apparatus of the type described which may be readily adjusted to impart selectively a large number of interdistinguishable identification marks.

Still another object of this invention is to provide a novel marking device which will scratch scorable surfaces such as metal surfaces with a mark which is readily identifiable, but which is highly inconspicuous.

Another object of this invention is to provide a mechanism of the hereinbefore described character which is extremely sturdy, simple, and economically constructed.

2

These and other objects and advantages are obtained by the present invention, various novel features of which will become apparent as the following specification is read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a side view in section of a code marking mechanism showing the mechanism installed in a can conveyor line;

FIG. 2 is an enlarged view in section along the line II—II of FIG. 1 showing the cutting blades employed in the marking mechanism; and

FIG. 3 is an enlarged view in section taken along the line III—III of FIG. 1.

Referring to FIG. 1, the marking mechanism, generally indicated at 11 is shown installed in a typical can conveyor line comprised of conveyor belts 12 and 13 rotating on rollers 14 and 16, respectively. These belts rotate in a clockwise direction so that articles represented by can 17 travel from left to right as viewed in FIG. 1 from belt 12 over the marking mechanism 11, to belt 13. A front support rail (not shown) and a rear support rail 20 are provided to direct can 17 along the conveyor line, and the marking mechanism 11 is held in position between belts 12 and 13 by suitable means such as well housing 18 having side walls 19 and bottom wall 21.

The marking mechanism 11 comprises in general a block 22 or mounting means which may be made of a metal or plastic, and an inscribing means comprised of a series of cutting members or blades 23 through 37. Each cutting blade is pivotally mounted at one of its ends to block 22 and is provided beneath the other of its ends with a suitable compression spring together with associated mechanism whereby one end of the blade may be selectively raised above block 11 into the path of articles such as a can 17 traveling over the marking mechanism.

More specifically, referring to FIGS. 1 and 2, extending between a pair of shoulders 38 and 39 at the upper end of block 22 are a pair of pins 41 and 42. Cutting blades 23—37 are mounted for pivotal movement on pin 42 from a lower limit position, represented by blade 27 wherein the lower surface of the rear or free end of the blade rests on block 22, to an upper limit position wherein the forward surface of the front of the blade abuts pin 41. In the embodiment shown in the drawings, 15 blades have been included in the inscribing means since it has been found that combinations of such a number of blades can be conveniently used to indicate the day, month and year an article was manufactured although it is obvious that the number of blades may be varied depending upon the coding system employed.

Extending through block 22 are a series of vertical bores 43 spaced in block 22 so that a bore extends downwardly in block 22 beneath the free end of each cutting blade. Each bore is internally threaded at its lower end as at 44, and has at the upper end a constricted portion 46. A plunger 47 is slideably mounted within each bore, each plunger 47 having an expanded central portion 48 intermediate its ends. Encircling the lower end of each plunger 47 is a compression spring 49, and a screw 51 is inserted in the threaded portion 44 of each bore with its upper end serving as a spring seat for the lower end of each compression spring 49. The upper end of central portion 48 of each plunger, in cooperation with the shoulder presented by the constricted portion 47 of each bore, serves as an abutment means limiting the outward extension of the plunger from the block 22, and the lower end of central portion 48 serves as a spring seat for the upper end of compression spring 49.

By adjusting each screw 51, the upward thrust exerted on each plunger 47 by its associated compression spring 49 may be regulated between a position where a maximum force is exerted by the plunger upwardly on the free end of the blade positioned above the plunger, and

a position where the thrust entered upwardly is insufficient to raise the free end of the blade from block 22. A cut out portion 52 in bottom wall 21 permits each screw 51 to be adjusted without removing the code marking mechanism from well housing 18.

The blades or cutting members may be of any suitable design. As shown in FIG. 2, blade 23 has been beveled so that its cutting edge lies on the right face of the blade, whereas each of the remaining blades has been beveled so that its cutting edge lies intermediate the left and right faces of the blade. Any marks inscribed by blades 23 and 24 will for this reason lie closer together than those marks inscribed by the remaining blades, and the marks inscribed by these two blades may conveniently serve as a datum line for de-coding any combination of marks inscribed by the remaining blades of the code marking apparatus.

In operation, the embodiment of the invention described performs in the following manner. The code marking apparatus is first adjusted so that a predetermined number of blades are pivoted about pin 42 with the upper edges of their free ends raised by spring pressure above shoulders 38 and 39 of block 22. The number of blades so regulated will depend upon the information that is to be recorded. For instance, if it is desired to date can 17, blades 23 and 24 may be used to establish a datum line, blades 25 through 29 may be used alone or in combination to indicate the day, blades 30 through 33 may be used alone or in combination to indicate the month, and blades 34 through 37 may be used alone or in combination to indicate the year. When the can conveyor line is started, succeeding cans moving along conveyor belt 12 will slide can 17 past the mounting means over block 22 on shoulders 38 and 39, these shoulders constituting guide portions presenting a support plane for articles moved past the mounting means or block 22. As can 17 is moved past block 22, the lower surface of the can will be marked with a series of scratches corresponding to the number of blades coming in contact with the can. The pressure exerted on these blades by the biasing means, comprised of springes 49 and plungers 47, should be great enough for the blades to impart discernible scratches, but not so great as to make the surface marked susceptible to appreciable corrosion. The optimum amount of pressure exerted on the blades by the biasing means will depend, of course, upon the type of article marked, that is, whether it is constructed of tin plate, plastic, or other material.

In those instances where it is desired to mark articles which are relatively light, suitable structure may be provided to hold the articles downwardly on shoulders 38 and 39 as they pass over the marking mechanism. This may be necessary in those instances where a sufficient pressure could not otherwise be exerted on the blades to produce identifiable scratch marks. It should also be understood that with suitable modification, the mechanism could be installed to mark other surfaces than the bottom surface of an article. For instance, the marking mechanism could be adapted to inscribe the sides of a container as well.

It should be apparent that the invention herein described is particularly advantageous in marking metal or plastic cans or bottles, since it may be used to apply identification marks after the containers have been finally filled and sealed, and may be applied to the container without the necessity of using a label.

While there has been described herein a particular embodiment of the invention, it should be understood that it is not intended to be restricted thereto, and it is desired to cover all modifications of the invention which would be apparent to one skilled in the art and which come within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A code marking device for scoring an end of each of a plurality of upright articles with a series of substan-

tially parallel marks of such number and spacing as to indicate the data to be recorded comprising support means for said articles, a scribing assembly, and means supporting said scribing assembly in operable engagement on said support means; said support means being a conveyor which is substantially straight immediately adjacent to said scribing assembly for moving said articles past said assembly in a substantially straight line, said scribing assembly comprising a plurality of contiguous scoring members disposed transversely to the direction in which said articles are moved by said conveyor, a pin for pivotally attaching said scoring members at one end thereof to said scribing assembly, and an adjustable biasing means associated with each of said scoring members for independently actuating the same by urging the free end thereof into a position to contact said articles as the same are moved past said scribing assembly, whereby actuation of selected scoring members causes the same to inscribe lightly said articles with the desired indicia in the form of parallel marks which do not cut through the surfaces of said articles.

2. A code marking device for scoring an end of each of a plurality of upright articles with a series of substantially parallel marks of such number and spacing as to indicate the data to be recorded comprising support means for said articles, a scribing assembly, and means supporting said scribing assembly in operable engagement on said support means; said support means being a conveyor which is substantially straight immediately adjacent to said scribing assembly for moving said articles past said assembly in a substantially straight line, said scribing assembly comprising a block having a recess therein, a plurality of contiguous knives pivotally mounted in the recess of said block, a pin for pivotally mounting said knives at one end thereof in the recess of said block, spring biasing means in said block in openings communicating said said recess, one of said spring biasing means being associated with each of the said knives for independently outwardly urging the free end thereof to an operative position beyond the recess of said block to contact said articles as the same are moved past said scribing assembly, means for limiting the outward movement of said knives, and means for compressing each of said spring biasing means to engage each of said knives, whereby actuation of selected knives by compressing the corresponding spring biasing means causes said selected knives to inscribe lightly said articles with the desired indicia in the form of parallel marks which do not cut through the surfaces of said articles.

3. A code marking device for scoring an end of each of a plurality of articles with a series of substantially parallel marks of such number and spacing as to indicate the data to be recorded comprising a scribing assembly including a block having a recess therein, a plurality of contiguous knives pivotally mounted in the recess of said block, a pin for pivotally mounting said knives at one end thereof in the recess of said block, spring biasing means in said block in openings communicating with said recess, one of said spring biasing means being associated with each of said knives for independently outwardly urging the free end thereof beyond the recess of said block, means for limiting the outward movement of said knives, and means for compressing each of said spring biasing means to engage each of said knives.

4. A code marking device for scoring an end of each of a plurality of articles with a series of substantially parallel marks of such number and spacing as to indicate the data to be recorded comprising support means for said articles, a scribing assembly, and means supporting said scribing assembly in operable engagement on said support means; said support means being a conveyor which is substantially straight immediately adjacent to said scribing assembly for moving said articles past said assembly in a substantially straight line, said

5

scribing assembly comprising a block having a recess therein, a plurality of contiguous knives pivotally mounted in the recess of said block, a pin for pivotally mounting said knives at one end thereof in the recess of said block, spring biasing means in said block in openings communicating with said recess, one of said spring biasing means being associated with each of the said knives for independently outwardly urging the free end thereof to an operative position beyond the recess of said block to contact said articles as the same are moved past said scribing assembly, means for limiting the outward movement of said knives, and means for selecting certain combinations of said knives, whereby actuation of said selected knives by compression of the corresponding spring biasing means causes said selected knives to inscribe lightly said articles with the marks which do not cut through the surface of the article.

5

10

15

320,628
345,873
1,000,664
1,232,344
1,538,079
1,764,966
1,889,246
2,089,774
2,360,363
2,391,721
2,623,586
2,710,060

6

References Cited in the file of this patent

UNITED STATES PATENTS

Clark ----- June 23, 1885
Ames ----- July 20, 1886
Brownrigg ----- Aug. 15, 1911
Loiselle ----- July 3, 1917
Albertoli ----- May 19, 1925
Mazer ----- June 17, 1930
Hoffman ----- Nov. 29, 1932
Wachstein ----- Aug. 10, 1937
Pope ----- Oct. 17, 1944
Lundeen ----- Dec. 25, 1945
Volpi ----- Dec. 30, 1952
Birkman ----- June 7, 1955