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CODE MARKING DEVICE FOR WRAPPING SHEETS

Jake M. Stephenson, Houston, Tex., assignor to
J. C. Koetting, Houston, Tex.

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This invention relates to marking devices and more particularly to a marking device for applying code markings to article wrapping sheets without the use of ink or other extraneous marking materials.

In the food manufacturing and distributing industry, many food articles are usually enclosed in various types of wrappings, such as waxed paper, cellophane, and the like. Where such articles are of a perishable nature, it is the general practice to apply suitable code markings to the wrappers to indicate when the article was originally placed on sale. This is particularly true in the baking industry where it is desired that bakery goods such as bread, cakes and the like should not be left in the retailer's stocks for more than a day or two, and where it is the usual practice for the bakery distributor to remove from the retailer's stocks any bakery goods which has been on the shelf longer than the minimum desired time. For this reason it is generally desired that the wrappers bear suitable code markings indicating the particular day of the week when the goods was baked or prepared. It is also desirable that such markings be in such form as to be readily recognized and interpreted by the food processor or distributor.

The usual manner in which such code markings have heretofore been applied to such food articles, has been to apply the appropriate code symbols to the wrapper with colored ink or other obviously visible materials, or by making perforations in the wrapper in accordance with some predetermined code pattern. Marking with ink or the like is undesirable in that it requires the use of special inks and of special equipment for applying the ink and for protecting the food materials from contamination by the ink materials. Perforated symbols are undesirable because, particularly in the case of food articles, the perforations in the wrappings will necessarily expose the articles to air and impurities carried by the air which will enter the wrappings through such perforations and result in contamination or spoilage of the food articles.

Accordingly, it is a primary object of the present invention to provide an improved code marking device for article wrappings which will avoid the disadvantages of existing code marking systems; which requires no extraneous inks or coloring matter; which is fully automatic in operation; which is simple in construction and operation; and which applies to article wrappings code markings of a form which, while readily recognizable and identifiable by the food processor and handler, are not clearly obvious or readily interpreted by the usual purchaser.

A principal object is to provide an ink-less marking device which employs the application of heat to the exterior of the wrapping to develop in the wrapping material the desired code markings.

An important object is to provide a marking device which employs heated marking dies shaped to the form of the desired symbol, and when applied to the surface of the wrapping, to develop in the surface of the wrap-

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ping material markings corresponding in shape to said symbols.

Other and more specific objects and advantages of this invention will become more readily apparent from the following detailed description when read in conjunction with the accompanying drawings which illustrate one useful embodiment in accordance with this invention.

In the drawings:

Fig. 1 is a side view, in section, showing a device in accordance with one embodiment of this invention in marking position relative to a wrapped article, such as a loaf of bread;

Fig. 2 is an end elevational view, partly in section, taken along line 2—2 of Fig. 1, showing one of the marking members in marking position after being swung away from the normal vertical position on contact with the moving article;

Fig. 3 is a side elevational view of the device; and Fig. 4 is a fragmentary view in perspective showing the markings as made by the device of Fig. 1 and as they appear on the bread wrapping.

In the embodiment illustrated in the drawings the device is shown as applied to marking wrapped loaves of bread, although it will be understood that the device in accordance with this invention is of wide application and, in general, may be employed in applying suitable markings to other pre-wrapped articles or to the wrappings themselves.

In the particular illustrative embodiment, the marking device, designated generally by the numeral 10, is shown as positioned over a conveyor belt 11 forming a part of a conventional continuous conveyor system such as that commonly used in modern bakeries to continuously transport the loaves of bread, indicated at 12, from the usual wrapping machines (not shown) and thence to packing or other handling stations. The marking device will ordinarily be disposed at a suitable point along such a conveyor system following the wrapping machines and will usually be mounted on a suitable supporting base which may be a part of the conveyor frame 13. The marking device is supported in any suitable or convenient manner in marking relation to the wrapped bread loaves. As shown in the drawings, this may be an inverted L-shaped bracket comprised of a vertical leg 14 and a horizontal leg 15 extending over conveyor 11. The lower end of leg 14 is secured in upright position to the side of frame 13 by means of a bolt 16 and wing nut 17, leg 14 being provided with an elongated slot 18 through which bolt 16 is inserted so that the bracket, including horizontal leg 15, may be adjusted vertically relatively to the article moving on the conveyor.

Marking device 10 includes a tubular shaft 19 non-rotatably suspended from horizontal leg 15 in any suitable manner, as by means of hanger bolts 20—20 connected to the end portions of shaft 19 and extending upwardly therefrom through suitable openings 21—21 in leg 15. Wing nuts 22—22 are screwed on the ends of bolts 20—20 projecting above leg 15 and serve to support shaft 19 from the latter. By adjusting the positions of wing nuts 22—22 on the ends of bolts 20—20, the portion of shaft 19 relative to the work may be varied as may be desired, this adjustment being additional to that provided for the bracket as a whole by means of slot 18 and wing nut 16.

A plurality of die members 23 are rockably mounted on shaft 19. In the illustrative embodiment die members 23 are in the form of elongated generally rectangular plates having transverse journals 24 near one end thereof for rotatively mounting the plates on shaft 19. The opposite end portions of die members 23 are formed to have an arcuate shape and the sides of these end por-

tions are tapered toward the ends of the plates to form relative sharp edges 25. By placing journals 24 near one end of the die members, the center of gravity of the die members will be below the center of rotation of the die members about shaft 19, so that the die members, when free, will always hang in the vertical position on shaft 19 with edges 25 directed downwardly, and when swung to one side or the other from the vertical center position will return to the vertical position when released. It will be understood that the diameter of journals 24 will be made slightly larger than the external diameter of shaft 19 so that the die members will swing freely on the shaft.

The group of die members 23 are held in adjacent side-by-side relation by means of a pair of locking collars 26—26 surrounding shaft 19 on opposite sides of the group of die members and releasably secured to shaft 19 by means of set screws 27—27. An arm 28 extends from bracket leg 14 generally parallel to shaft 19 and laterally spaced therefrom and serves as a rest or support for any of the die members 23 which it may be desired to remove from service at any time. Such die members may be positioned on arm 28 by swinging them in the clockwise direction (Fig. 2) about shaft 19 until their outer ends rest on the upper edge of arm 28, as best seen in Figs. 2 and 3. It will be obvious that numerous other arrangements may be employed for holding one or more of the die plates out of operative marking position.

A heating means, designated by the numeral 29, is inserted in the bore of shaft 19 to transmit heat to shaft 19 and die members 23. Heating means 29 may be of any suitable and generally conventional form. As illustrated more or less schematically, heating means 29 may be a conventional electric heating element of cylindrical form adapted to fit closely within the bore of shaft 19 so that the surface of heating element 29 will be in close contact with the inner wall of shaft 19.

Shaft 19 and die members 23 are preferably constructed of metal having good heat conducting properties. Shaft 19, for example, may be constructed of a suitable metal, such as aluminum, magnesium, copper, brass, or steel, although aluminum will usually be preferable because of its good heat conducting qualities and relatively low cost. Die members 23 may also be constructed of any of the metals mentioned, although brass will usually be preferred because, in addition to its reasonably good heat-conducting qualities, it is relatively heavy and has good heat-retaining qualities, all of which are desirable for reasons which will appear hereinafter. It will be understood that heat supplied by heating element 29 will be conducted through the walls of shaft 19 to the die members 23 which may thus be heated to any desired temperature.

The above-described marking device operates in the following manner: With the marking device positioned, as shown, over conveyor belt 11, that is, with the plane of rotation of the die members parallel to the direction of movement of the conveyor belt, the loaves of bread being transported in the position shown on the conveyor will be caused to pass beneath edges 25 of the die members. It will be understood that the loaves of bread 12 will be enclosed by the wrapping sheets 30 which may be of any conventional type, such as the usual paraffin coated or impregnated paper or plastic films, such as cellophane or the like.

The elevation of the marking device will be adjusted relative to the top of the bread loaves, which are ordinarily quite uniform in shape and dimensions, so that as a loaf passes beneath the edges 25, the latter will be caused to press lightly against the surface of the wrapping, and will slide transversely over the surface of the wrapping from one side of the loaf to the other, as the loaf completes its passage beneath the marking edges. The friction resulting from the engagement of the edges

25 with the wrapping surface will cause the die members to swing slightly in the counter-clockwise direction away from the center position, as may be best seen in Fig. 2, the weight of the die members serve, however, to keep edges 25 in continuous contact with the wrapping surface. As soon as one loaf has completely passed under the edges of the die members, the latter will be released and, during the brief interval required for the conveyor to present the next loaf, as provided by the spacing of the loaves, will swing back to the center position in readiness for engagement by the next loaf of bread.

Edges 25, being heated, as described, will act on the surface of each wrapping to trace lines 31 (Fig. 4) thereon corresponding to the paths of engagement of edges 25 with the surface of wrapping 30. The effect of the heat will be to melt or otherwise change the character of the paraffin or wax in papers coated or impregnated by these materials, so that a visible but generally unobtrusive line will appear on the wrapping, as indicated in Fig. 4, in which the weight of the lines has been somewhat exaggerated for purpose of illustration. In the case of plastic wrappings such as cellophane, the heat thus applied will produce a slight scorching or other change in the properties of the wrapping sufficient to produce the desired marking. It will be understood that edges 25 may be heated by means of heating element 29 to any temperature necessary to produce the desired marking on the wrapping material.

With the described arrangement, it will be evident that the marking of the wrappings will be effected automatically and continuously as the loaves of bread are presented to and pass successively beneath the marking device.

With the illustrative embodiment it will also be evident that by employing one or more of the marking members 23, or any desired grouping thereof, a code determined by different numbers of lines may be marked on the bread wrappings. The tapered form of edges 25 provides convenient means for spacing the marking lines, so that the number employed for a particular code will be readily interpretable by one familiar with the code.

By using relatively thick plates of metal, particularly brass or copper, for the die members, as in the form shown, the die members will effectively retain the heat supplied thereto for relatively long periods, thereby reducing the heat requirements for the device.

It will be obvious that die members 23, and particularly edges 25, may be made in any suitable shape or form to produce correspondingly shaped markings on the wrappings. It will also be evident that the marking device in accordance with the present invention may be employed to mark the wrapping sheets themselves, if desired, before such sheets are applied to articles to be enclosed thereby. The device may also be used to mark any wrapping materials of the fibrous or film type, whether coated or not, it being only necessary to heat the marking dies to whatever temperature may be required to produce a discernible change in the appearance of the surface of the wrapping material along the line of contact with the die member.

It will be understood that numerous other alterations and changes may be made in the details of the illustrative embodiment within the scope of the appended claims but without departing from the spirit of this invention.

What I claim and desire to secure by Letters Patent is:

1. In combination with means for moving a plurality of articles enclosed in wrapping sheets successively past a marking station, a marking device for applying code markings to said wrapping sheets, comprising, a shaft constructed of heat-conducting material positioned transversely above the path of movement of said articles, an elongated die member constructed of heat-conducting material and journaled near one end thereof to be eccentrically mounted for free swinging movement on said shaft

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and depending therefrom with its center of gravity below its center of rotation to a position wherein said die member is successively engaged by the surfaces of the wrapping sheets enclosing successive ones of said articles as the latter are presented to said die member, and whereby the die member is caused automatically to return by gravity to marking position after passage of each article, and means for heating said shaft whereby to transmit heat by conduction therefrom to said die member.

2. A device according to claim 1 wherein said heating means comprises a heating element disposed in conductive heating contact with said shaft.

3. A device according to claim 1, wherein said shaft is tubular and said means for heating comprises an electric heating element inserted in the bore of said shaft in heat conducting contact therewith.

4. A device according to claim 1, wherein said die

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member comprises a plurality of flat elongated plate members arranged in side-to-side relation on said shaft.

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