April 2, 1963 LE ROY F. CARKHUFF 3,083,636

EGG CARTON PRICING UNIT

Filed Oct. 18, 1960 2 Sheets-Sheet 1

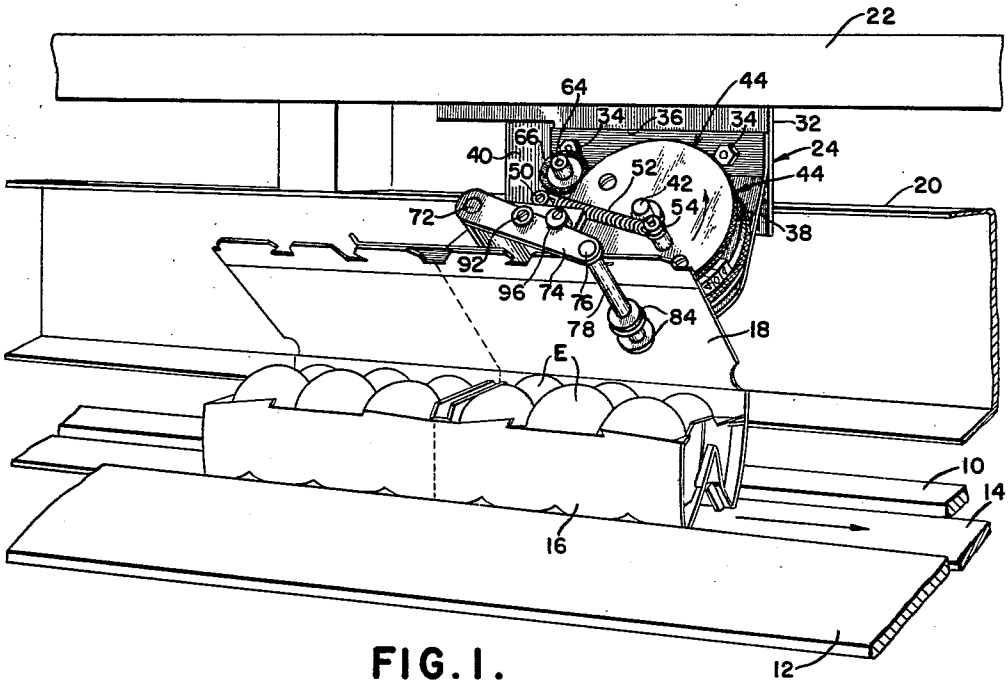


FIG. 1.

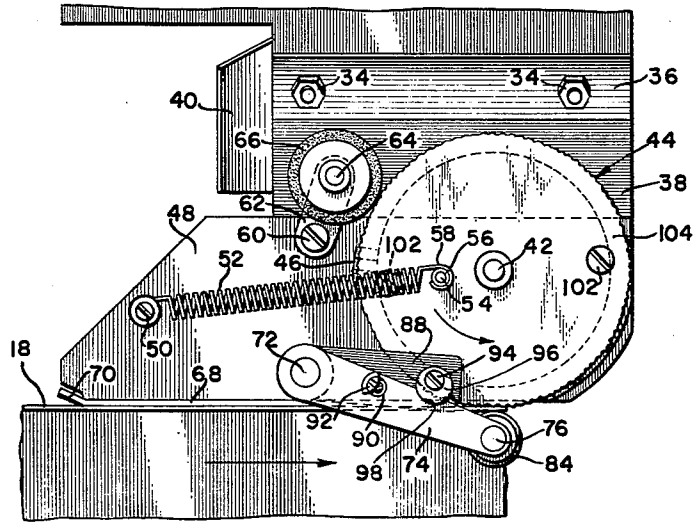


FIG. 2.

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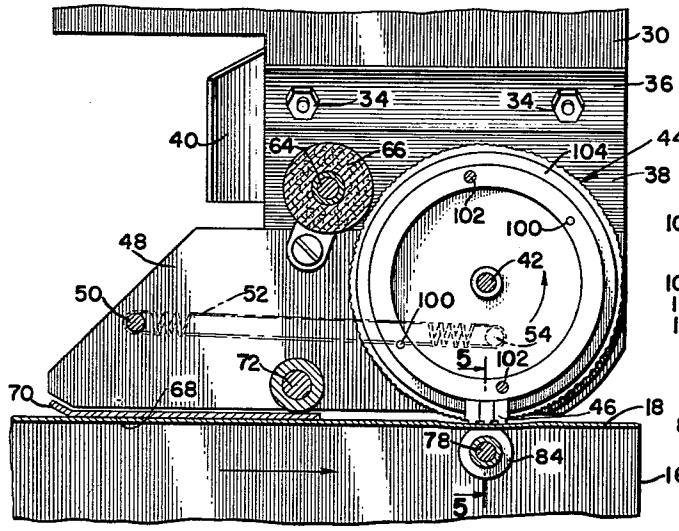


FIG. 3.

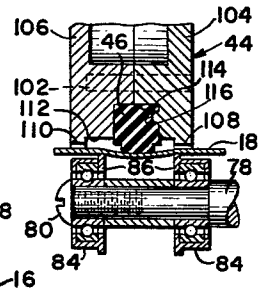


FIG. 5.

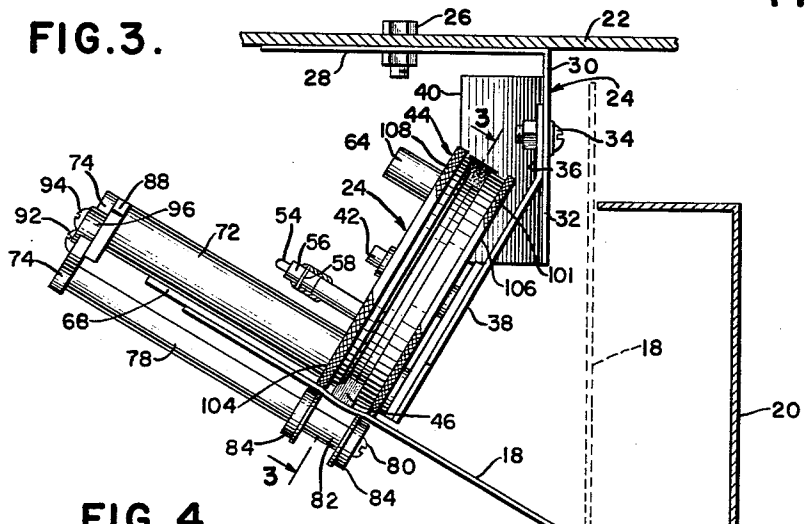
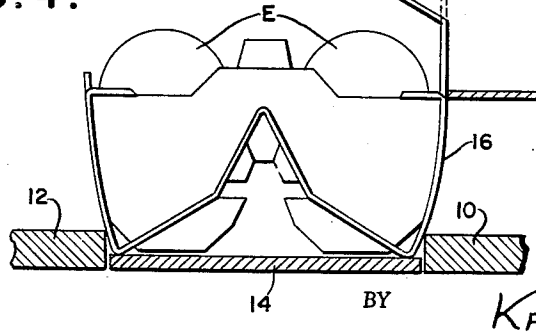


FIG. 4.



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EGG CARTON PRICING UNIT

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Filed Oct. 18, 1960, Ser. No. 63,281
5 Claims. (Cl. 101—37)

The present invention relates to printing apparatus, and more particularly to a relatively simple device in which a printing wheel is caused to be operated by the movement of a work piece passing therebeneath, resulting in an impression being disposed on the work piece.

The subject invention, as will be apparent to those skilled in the art, may be utilized for applying indicia on various flat work pieces, however, it is especially adapted for applying indicia on the outer surface of the lid of a paperboard egg carton. When an erected egg carton is filled with sorted or candled eggs, it is relatively difficult to apply on the outer surface of the lid price indicia, or identifying marks to indicate the operator who has packed the carton.

The primary object of the present invention is to provide a simple and inexpensive printing apparatus which may be readily used for the purpose of applying indicia on the outer surface of the lid of an egg carton or the like with a minimum amount of effort and loss of time.

Another object of the invention is to provide printing apparatus which may be readily adjusted for accommodating various thicknesses of material, and additionally, includes means whereby the indicia to be applied on a work piece may be varied over the length of the work piece.

Another object of the invention is to provide printing apparatus wherein erected cartons may have indicia applied to the outer surfaces of the lids thereof as they are successively moved past the printing apparatus, the apparatus including means whereby certain cartons may be moved past the printing apparatus without having printing indicia applied thereto.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a fragmentary perspective view showing the novel printing apparatus of the invention in relation to a carton onto which printing indicia is being applied;

FIG. 2 is an elevational view looking directly into the printing wheel of the apparatus, and being shown on a slightly enlarged scale;

FIG. 3 is a view similar to FIG. 2, taken substantially on line 3—3 of FIG. 4;

FIG. 4 is an end elevation looking from right to left of FIG. 1; and

FIG. 5 is an enlarged section taken substantially on line 5—5 of FIG. 3, showing details of construction of the printing wheel and abutment wheel cooperating with the printing element of the printing wheel.

Referring to the drawings in detail, there is shown a horizontally disposed support platform comprising spaced parallel members 10 and 12, see FIGS. 1 and 4, having extending therebetween a suitable conveyor 14 which may comprise an endless belt, for example. Disposed on the conveyor 14 is an erected carton 16 containing eggs

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E and including a substantially planar lid 18. The lid 18 will have on the outer surface suitable advertising material, however, the price will generally be applied as the cartons are being packed inasmuch as the price may vary from day to day. Further, it is desirable to have identifying indicia on the carton to determine which operator packed the eggs or which operator candled the eggs.

It will be noted that the conveyor 14 defines a linear path of travel. Disposed in parallel relationship behind the conveyor means 14 and above the platform 10 is a guide channel 20. Extending above the guide channel 20, and parallel to the path of travel defined by the conveyor 14, is a support means or member 22 from which is supported printing apparatus indicated generally at 24.

The support member 22 has secured thereto, by means of nut and bolt assemblies 26, a leg 28 of an L-shaped support bracket 30. The bracket 30 includes a vertical leg 32 to which is secured, by means of nut and bolt assemblies 34, the upper end 36 of an angularly extending base or support plate 38. The angular disposition of support plate 38 is clearly seen in FIG. 4, this plate being in angular relationship to the vertical plane in which leg 32 of bracket 30 is disposed. The leg 32 includes at its left vertical edge a laterally projecting guide portion 40 which will guide the lid 18, see the dotted lines in FIG. 4, behind the printing apparatus 24, i.e. between the channel member 20 and leg 32 of the bracket 30, and the lids 18 passing behind the printing apparatus will accordingly not have printing indicia applied thereto.

The plate 38 has projecting therefrom a support shaft 42 upon which is journaled for free rotation a printing wheel member indicated generally at 44. Details of the construction of the printing wheel member 44 will subsequently be described, however, the printing wheel member will generally have a circumference equal to the length of the lid 18 of a carton and will include removable or replaceable printing elements 46 which may be adjustably positioned about the circumference of the printing wheel member to accordingly permit printing indicia to be imposed on a lid 18 at various locations along the length thereof.

The base 38 includes a forwardly projecting portion 48 which has mounted thereon and extending laterally therefrom an anchor pin 50 upon which one end of an elongated tension spring 52 is mounted. The wheel 44 has extending laterally therefrom, in eccentric relationship to the support shaft 42, a mounting pin 54 having mounted thereon a cylindrical bearing element 56 to which is secured the end 58 of the tension spring 52. The spring 52 will maintain the printing wheel 44 in the position disclosed in FIGS. 1 and 2, for example, and as the carton 16 is moved from the position shown in FIG. 2, see the direction arrow, to that of FIG. 3, the wheel 44 will rotate causing the spring 52 to be placed under tension, and accordingly, the printing element 46 will ultimately engage the lid 18 in the manner shown in FIG. 3. The plate portion 48 has mounted thereon, by means of a screw 60, an upwardly extending lever 62 from which projects a laterally extending support shaft 64 parallel to the shaft 42. Journalled on the shaft 64 is a suitable ink wheel 66 which is tangentially engageable with the outer surface of the printing element 46 and accordingly deposits ink on the same during each

rotation of the printing wheel **44** as it is moved due to the passage of a carton **16**, therebeneath. The plate portion **48** has projecting at right angles therefrom an elongated guide plate **68** having an upwardly turned forward nose **70** which receives the leading edge of the carton lid **18** therebeneath. The guide plate **68** is in substantial tangential alignment with the lower periphery of the printing wheel member **44**, and accordingly, as a lid **18** engages the lip **70** and passes beneath the plate **68**, it will be guided toward the lower periphery of the printing wheel member **44**.

The plate portion **48** has projecting laterally therefrom a support shaft **72** which is parallel to the axis of rotation **42** of the printing wheel member **44**. Journalled on the terminal end of the shaft **72** is a support arm **74** which has fixed at **76** an inwardly projecting support shaft **78** which extends below the printing wheel member **44** in parallel relationship to the shaft **42**.

The shaft **78** has affixed thereon, by means of a screw **80** and spacer sleeve **82**, a pair of abutment wheels **84**. The wheels **84** will engage the under surface of the lid **18**, as clearly seen in FIGS. 3–5. It will be noted that the wheels **84** include internal bearings **86** to facilitate ready rotation of the wheels as the lid passes thereover.

The shaft **72** has a support strap **88** which will be disposed in parallel relationship to the support arm **74**. The support arm **74** includes an enlarged transverse opening **90**, see FIG. 2, and the strap **88** will include a suitable tapped aperture in alignment therewith. Received in the opening **90** and screwed into the aperture of the strap **88** is a retaining screw **92**. Thus, it will be seen that the arm **74** has some relative movement about the shaft **72** within the limits of the aperture **90** in the arm. This will permit the wheels **84** to be adjusted toward and away from the lower surface of the printing wheel member **44** to accordingly accommodate for various thicknesses of material being printed upon.

Rotatably mounted on the strap **88** by means of a screw **94** is an eccentric cam **96** which engages in an upwardly opening notch **98** in the upper edge of the arm **74**. The cam **96** will adjust the proper spacing between the wheels **84** in the lower periphery of the printing wheel member **44**.

The printing wheel member **44** comprises two mating halves having cooperating orienting pins **100** being retained together by means of suitable screws **102**. The halves of the printing wheel member **44** are indicated at **104** and **106** and include, inwardly of the outer surface thereof, about the circumference, knurled ribs **108** and **110**, respectively, which comprise friction increasing means to insure rotation of the printing wheel member **44** as the lid **18** passes between the printing wheel member and the wheels **84**, see FIG. 5. Also as seen in FIG. 5, the halves **104** and **106** are undercut about their circumference as indicated at **112** and provide a circumferential groove portion **114** for receiving the radially projecting printing elements **46** therein. It will be noted that the half **104** has projecting laterally into the groove **114** a continuous rib **116** received within a cooperating groove on the side of the printing element **46**. This expedient prevents accidental radial dislodgement of the printing element **46** out of the printing wheel member. Additionally, the screws **102** may be loosened and the printing element may be adjustably positioned anywhere around the circumference of the printing wheel member to accordingly determine where along the length of the lid certain indicia will be printed or imposed.

Operation

The space between the wheels **84** comprising abutment members and the printing wheel member **44** will be adjusted by means of the cam **96**. The printing wheel member **44** will have the printing element **46** disposed in the proper position whereby the indicia **46** will engage the lid of a carton **18** in the position at which indicia is to be printed thereon.

The carton **16** will be filled with selected or candled eggs and an operator will move the carton toward the printing apparatus **24** with the lids disposed in the angular position shown by solid lines in FIG. 4, or in the dotted line position of the same figure. The lids **18** moving in the dotted line position will not have indicia disposed thereon as the cartons pass past the printing apparatus and would probably include undersized or oversized eggs which will require special markings, etc.

Those cartons moving beneath the guide lip **70** and plate **68** will be directed between the wheels **84** and printing wheel member **44**. This results in engagement with the knurled outer periphery of the printing wheel member causing the printing wheel member to rotate in a counterclockwise direction, as indicated in FIG. 3. This results in the printing element **46** engaging the inking wheel **66** and ultimately coming into engagement with the lid **18** in a preselected area as seen in FIG. 3. Continued movement of the lid **18** results in the printing wheel member **44** ultimately being disposed or reoriented to the original position shown in FIG. 2.

Thus it will be observed that cartons already filled with eggs may be readily printed upon, this expedient obviating the heretofore present danger of egg breakage which resulted due to carelessness, etc. when people packing egg cartons attempted to stamp marks on the outer surface of the cartons after the cartons had been packed with eggs and the lids closed.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. Apparatus for successively printing indicia on vertically hinged, planar carton lids comprising conveyor means defining a horizontal path of travel, support means spaced above said horizontal path of travel of said conveyor means, a printing assembly depending from said support means, said printing assembly including a printing wheel and abutment roller spaced above and in alignment with said conveyor means for receiving a carton lid therebetween to imprint indicia thereon, said printing assembly including a depending guide plate on one side of said printing wheel, and a guide channel spaced from said guide plate and defining a through passage opening in the direction of said horizontal path of travel for receiving carton lids upon which no printing indicia will be printed as the cartons are conveyed past said printing assembly.

2. Apparatus for successively printing indicia on vertically pivotal, planar carton lids comprising conveyor means defining a horizontal path of travel, support means spaced above the horizontal path of travel of said conveyor means, and a printing assembly suspended from said support means intermediately of the horizontal path of travel of said conveyor means, said printing assembly comprising a wheel member on an axis of rotation extending upwardly in angular relation to and above the horizontal path of travel of said conveyor means, a guide portion overlying the horizontal path of travel of said conveyor means and disposed in substantially tangential alignment with the lower edge of said wheel member, said wheel member including a radially extending printing element, said printing assembly including an abutment member fixed in spaced relation beneath said wheel member and above the horizontal path of travel of said conveyor means whereby a carton on said conveyor means will have the angularly disposed lid thereof directed from said guide portion, between said wheel and abutment member and have indicia imprinted thereon due to rota-

tion of said wheel member by engagement with the carton lid.

3. The structure of claim 2, said abutment member being radially adjustable relative to the outer periphery of said wheel member to accommodate for different thicknesses of carton lids upon which printing is to be imposed.

4. The structure of claim 2, said abutment member comprising a support shaft extending parallel to the axis of rotation of said wheel member and above the path of travel of said conveyor means, a support arm extending radially from said support shaft, a second shaft projecting from said support arm and disposed beneath and parallel to the axis of rotation of said wheel member, said abutment member comprising spaced roller elements disposed beneath said wheel member on said second shaft for receiving said printing element therebetween.

5. The structure of claim 4, said support shaft including a radially projecting strap disposed adjacent said support arm, a cam element rotatably mounted on said strap and engageable with said arm for rotating the arm about said support shaft, and lock means engageable between said strap and support arm to retain the same in a relative position of adjustment.

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