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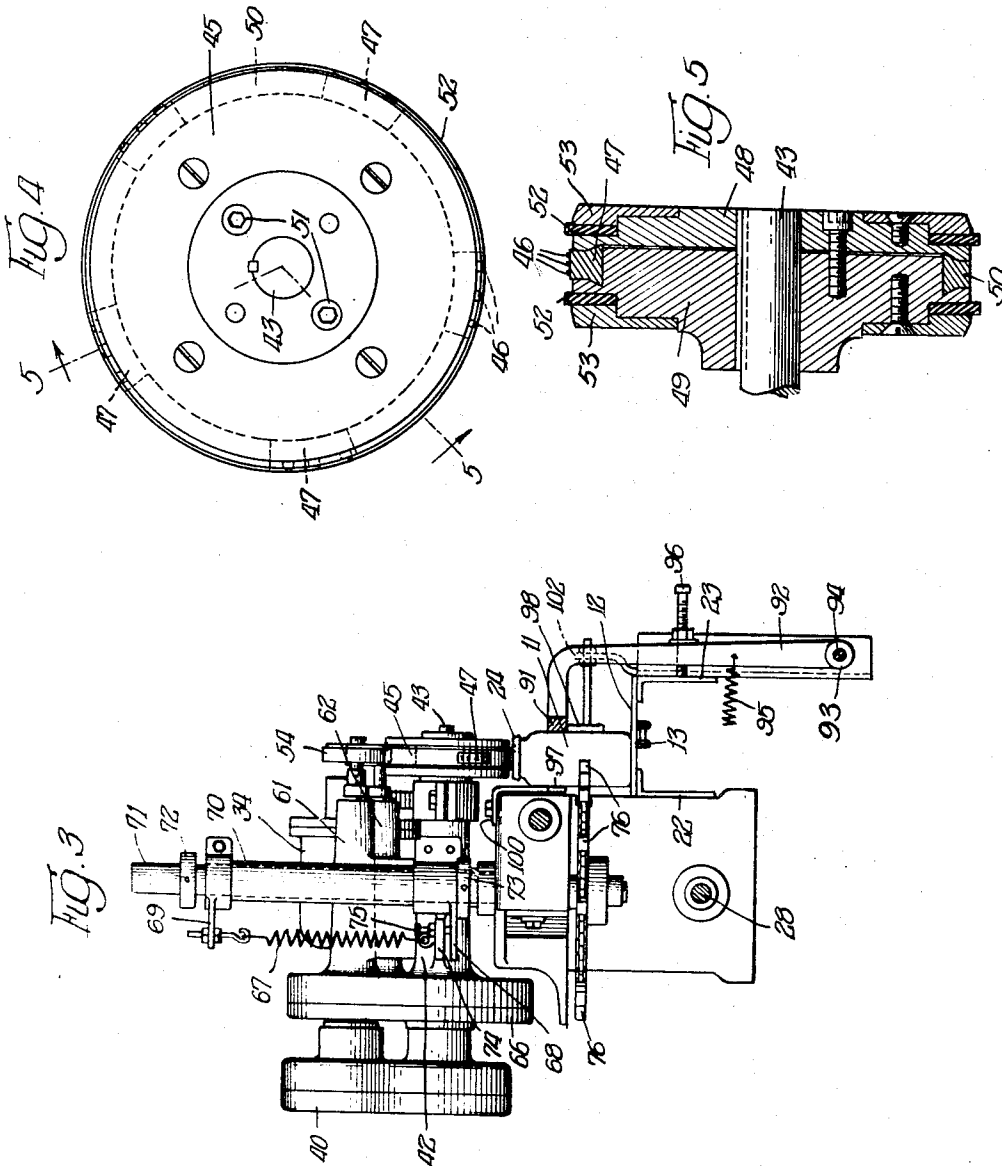
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ROTARY MARKING MEANS FOR CONTAINERS

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ROTARY MARKING MEANS FOR CONTAINERS

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This invention has to do with the application of codes or other identifying marks to the covers of containers.

The purpose of the invention is to provide a new and useful coding machine which will automatically mark the covers of closed containers while the containers are moving along in a canning or other line.

The new machine operates rapidly and accurately, is simple in construction, requires but little attention, is easy to adjust to different heights of containers, and is inexpensive to manufacture.

While the foregoing statements are indicative in a general way of the nature of the invention other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction, arrangement and operation of the machine.

A preferred embodiment of the invention is presented herein by way of exemplification but it will of course be appreciated that the invention is susceptible of embodiment in various other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings,

Fig. 1 is a plan view of a machine constructed in accordance with the invention;

Fig. 2 is a side view of the machine, with portions broken away to expose certain otherwise concealed portions;

Fig. 3 is a vertical transverse section through the machine taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a side view of the printing wheel; and

Fig. 5 is a section through the wheel, taken on the irregular line 5—5 of Fig. 4.

As will be observed in the drawings, the machine includes a horizontally disposed conveyor, indicated generally at 10, on which the containers 11 are adapted to be placed. The conveyor consists of a plurality of transversely extending slats 12 which are secured intermediate their ends to an endless chain 13. The chain 13 is trained at the in-feeding end of the conveyor over an idler sprocket 14 which is secured to a shaft 15, and is trained at the out-feeding end over a driving sprocket 16 which is secured to a shaft 17. The shaft 17 is driven through a reduction gear mechanism 18 from an electric motor 19 by means of a belt and pulley connection 20. The upper stretch 21 of the conveyor is slidably supported on spaced horizontally extending rails 22 and 23, which rails engage the under sides of the ends of the slats 12. The containers 11, with

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their covers 24 in closed position thereon, are adapted to be supported and moved lengthwise of the conveyor on the upper stretch 21 of the latter.

The machine includes, in addition to the conveyor 10, means indicated generally at 25 for printing the desired code on the covers of the containers as the latter pass beneath the same on the conveyors; means indicated at 26 for positioning the containers in correctly timed relation to the printing means during the printing operation; and means indicated at 27 for feeding the containers in uniformly spaced relation to the positioning means. The printing, positioning and feeding means are all mounted above the upper stretch 21 of the conveyor and are all driven from a horizontal longitudinally extending shaft 28.

The shaft 28 is operatively connected at 29 to the shaft 15 to which the idler sprocket 14 is secured, and leads to a housing 30 which is located at one side of the upper stretch 21 of the conveyor. The shaft 28 is coupled to a second horizontal longitudinally extending shaft 31 which is journaled in the housing 30, and the shaft 31 is in turn connected with an upright shaft 32 by means of bevel gears 33. The lower end of the shaft 32 is journaled in the housing 30, while the upper end of the same is journaled in a relatively small elevated casing 34. The casing 34 is rigidly but removably supported above the top of the housing 30 by an upright post 35, which post is secured to the housing. A horizontal transversely extending shaft 36 is journaled in the casing 34 and is connected to the shaft 32 by means of bevel gears 37. The casing 34 is provided at opposite sides with hub-like extensions 38 and 39 which enclose the ends of the shaft 36. The extension 38 forms a trunnion-like support for pivotally mounting the rear end of an elongated casing 40, while the extension 39 forms a trunnion-like support for pivotally mounting the rear end of an arm 41. The casing 40 and the arm 41 are rigidly connected together by means of a tubular portion 42 of the casing which extends transversely from the front end of the casing into engagement with the front end of the arm. The front end of the casing 40 and the front end of the arm 41 are designed to oscillate up and down as a unit about the axis of the shaft 36. A horizontal transversely extending shaft 43 is journaled in the tubular portion 42 of the casing 40 and is driven from the shaft 36 by means of a chain and sprocket connection 44.

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A printing wheel 45 is secured to one end of the shaft 43 in a position directly above the path which the containers 11 are caused to follow in traveling along on the upper stretch 21 of the conveyor. The wheel 45 holds printing type 46 in a plurality of units 47 which are spaced at regular intervals about the periphery of the wheel. The wheel is constructed in two laterally separable sections 48 and 49, and both the type 46 and intervening spacer blocks 50 are removably clamped between the sections. The type 46 can be easily changed by releasing screws 51 which hold the sections 48 and 49 together. The type 46 projects slightly beyond the periphery of the wheel 45, while the intervening blocks 50 are preferably disposed flush with the periphery. The wheel 45 is provided with two rubber rings 52 which project a little beyond the periphery of the wheel at opposite sides of the type and are held in place by detachable retaining rims 53. The rings 52 are adapted to engage frictionally with the covers 24 on the containers during the printing operation, whereby to steady the containers and prevent any relative linear movement between the type and the covers.

The type 46 is inked from an inking roll 54 which rotates in contact with the type. The roll 54, which is preferably made of rubber, receives its ink from a transfer roll 55, which is preferably made of metal. The roll 55 is adapted to be partially submerged in a body of ink contained in an underlying ink receptacle 56. The ink is supplied to and maintained at a constant level in the receptacle 56 by a fountain type feeding device 57, and any excess ink picked up on the surface of the transfer roll 55 is removed from the same by a wiper 58 which is positioned in the receptacle. The rolls 54 and 55 are secured to two horizontal transversely extending shafts 59 and 60 which are enclosed in other tubular portions 61 and 62 of the casing 40, and are rotated from the printing wheel shaft 43 by means of gears 63, 64 and 65 enclosed within another portion 66 of the casing 40.

The entire printing unit, including the printing and inking mechanisms and the drive for the same, is floatingly supported in its up and down oscillatory movement by a tensioned coil spring 67, which spring counterbalances in large measure the weight of the unit while at the same time allowing the unit to descend gently under its own weight into engagement with a lower limit stop 68. Upon engagement of the printing wheel 45 with each of the covers 24 on the containers, the printing unit is lifted slightly by the height of the cover from the stop 68, which upwardly yielding movement of the wheel serves to insure a good impression being obtained from the type on the cover. The spring 67 is adjustably secured at its upper end to a bracket 69 which projects laterally from the upper end of a normally stationary but vertically adjustable tube 70. The tube 70 is sleeved over an upright post 71, between adjustably positioned stop collars 72 and 73 on the post. The post 71 is rigidly secured to the top of the housing 30. The lower end of the spring 67 is connected under a predetermined amount of tension to a projection 74 on the casing 40. The stop 68 which limits downward movement of the printing wheel 45 is secured to the lower end of the tube 70 in a position directly beneath the projection 74, and is adapted to be engaged in the lowermost position of the wheel by a set screw 75 which is adjustably

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mounted in and extends downwardly from the projection 74.

The means 26 for effecting a positive movement of the containers beneath the printing wheel 45 in timed relation to the operation of the latter, comprises a plurality of container engaging dogs 76 which are attached at regular intervals to an endless chain 77 and project at right angles therefrom. The chain 77 is trained in a horizontal plane about a drive sprocket 78 and an idler sprocket 79. The drive sprocket 78 is secured to the upright shaft 32, while the idler sprocket 79 is journaled in a bracket 80 which is adjustably secured to a forwardly extending portion 81 of the housing 30. The dogs 76 are adapted to engage with the sides of the containers intermediate the upper and lower ends of the latter. The spacing of the dogs 76 on the chain corresponds to the circumferential spacing of the type units 47 on the printing wheel 45. The chain 77 is so timed with respect to the type units 47 on the printing wheel as to cause each dog 76 to center each container directly under the type unit during the rolling impression of the unit upon the cover.

The means 27 for feeding the containers one at a time to the dogs 76, irrespective of any congestion of containers which may have taken place on the in-feeding end of the upper stretch 21 of the conveyor, consists of a horizontal longitudinally extending feed worm 82 which is arranged with its helical flight 83 projecting across the path of movement of the containers. The flight 83 permits the entry of but a single container between adjacent turns of the same, and rotation of the worm causes the flight to positively advance the containers independently of the simultaneous advancing movement of the upper stretch 21 of the conveyor. The pitch of the flight 83 increases in the direction in which it moves the containers in order to handle containers of widely varying sizes. The closeness of the turns of the flight at the in-feeding end thereof accommodates either a large container or a small one, but not more than one. While the flight at the in-feeding end tends to slow up the containers a little relative to the conveyor the increase in pitch permits the containers to thereafter gradually resume the speed of the conveyor. A flight of uniform pitch could of course be used. The worm 82 is secured to a shaft 84 which is journaled in the forwardly extending portion 81 of the housing 30, and the shaft 84 is provided within the housing with a gear 85 which is driven from a gear 86 on the shaft 31 through an intermediate idler gear 87 journaled in the housing.

As the containers on the in-feeding end of the upper stretch 21 of the conveyor approach the worm 82 they are engaged by a series of resiliently yieldable gates 88, 89 and 90. These gates serve to push the containers sidewise into the path of movement of the flight 83 on the worm, between the loops of the flight, and serve to maintain them in that position as they are carried along toward the printing unit. The gates consist of short horizontal longitudinally extending guide rail sections 91 which are located at about the level of the axis of the worm 82 and are mounted on the upper ends of arms 92 which are hinged at 93 to a supporting rod 94. The gates are yieldable away from the worm but are urged toward the latter by springs 95, being adjustably limited in their movement toward the worm by set screws 96 which abut

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against the adjacent supporting rail 23 of the conveyor.

Upon leaving the worm 82 the then properly spaced containers are engaged by the dogs 76 and carried by the dogs and the conveyor between two longitudinally extending guide rails 97 and 98. The rail 97 is adjustably secured to one side of the housing 30 by attaching brackets 99 and 100, while the rail 98 is adjustably secured to the supporting rail 23 of the conveyor by attaching brackets 101 and 102.

The timing of the dogs 76 relative to the printing wheel 45 is such as to cause the dogs and the type units 47 on the printing wheel to move at the same linear speed during the printing operation on the covers. The speed of the dogs 76 is preferably a little faster than the speed of the conveyor in order to insure the dogs catching up with and positively advancing the containers just prior to the printing operation whereby to effect accurate centering. The speed of the worm 82 however is preferably just a little slower than the speed of the conveyor, at least at the infeeding end of the worm, in order to insure the containers being fed in properly spaced single file order to the dogs 76.

The operation of the several parts of the machine will be understood from the foregoing detailed description. To adjust the machine to containers of different heights it is merely necessary to raise or lower the tube 70 on the post 71 and reset the lower collar 73. After this has been done a still finer adjustment can be obtained by turning the set screw 75 in one direction or the other. The tension exerted by the coil spring 67 can be regulated by adjusting the connection at the upper end of the same. To adjust the machine to containers of different dimensions, the set screws 96 limiting the inward movement of the gates can be turned in or out, and the brackets supporting the side rails 97 and 98 can be correspondingly shifted. The printing unit is preferably positioned with the lower edge of the printing wheel 45 just below the plane of the tops of the covers 24, whereby to cause the printing wheel to ride up a little over the covers with sufficient downward pressure to effect a good impression. The resiliently yieldable rings 52 which project from the periphery of the printing wheel 45 not only prevent any relative linear movement between the type units 47 and the covers 24 but serve in addition to control the amount of pressure used in obtaining the printing impression.

I claim:

1. A machine for automatically applying identifying marks to substantially flat container covers positioned on the tops of flat bottomed containers in a canning or other line, comprising an endless conveyor having a flat horizontal upper stretch on which the bottoms of the containers are adapted to rest with the containers in upright positions, means for moving the conveyor to cause the containers to advance from the infeeding end of said upper stretch toward the outfeeding end, a marking device above the upper stretch of the conveyor provided with a wheel having one or more impression units on its periphery which are adapted to contact with and mark the covers on the containers as the latter pass beneath the same, said wheel being rotatable on a horizontal axis arranged at right angles to the direction of movement of the upper stretch of the conveyor, means for positioning and positively moving the containers in uniformly spaced

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single file order in longitudinal alignment with the plane of rotation of the wheel during the marking operation, means on the wheel separate from the impression units for frictionally engaging the covers to prevent relative movement between the impression units and the covers, and means operating in timed relation to said positioning and moving means for rotating the wheel to move the impression units in the same direction and at the same linear speed as the covers on the containers.

2. A machine for automatically applying identifying marks to substantially flat container covers positioned on the tops of flat bottomed containers in a canning or other line, comprising an endless conveyor having a flat horizontal upper stretch on which the bottoms of the containers are adapted to rest with the containers in upright positions, means for moving the conveyor to cause the containers to advance from the infeeding end of said upper stretch toward the outfeeding end, a marking device above the upper stretch of the conveyor provided with a wheel having one or more impression units on its periphery which are adapted to contact with and mark the covers on the containers as the latter pass beneath the same, said wheel being rotatable on a horizontal axis arranged at right angles to the direction of movement of the upper stretch of the conveyor, means for positioning and positively moving the containers in uniformly spaced single file order in longitudinal alignment with the plane of rotation of the wheel during the marking operation, means on the wheel separate from the impression units for frictionally engaging the covers to prevent relative movement between the impression units and the covers, said frictional engaging means comprising one or more resiliently yieldable rubber rims on the wheel, and means operating in timed relation to said positioning and moving means for rotating the wheel to move the impression units in the same direction and at the same linear speed as the covers on the containers.

3. A machine for automatically applying identifying marks to substantially flat container covers positioned on the tops of flat bottomed containers in a canning or other line, comprising an endless conveyor having a flat horizontal upper stretch on which the bottoms of the containers are adapted to rest with the containers in upright positions, means for moving the conveyor to cause the containers to advance from the infeeding end of said upper stretch toward the outfeeding end, a marking device above the upper stretch of the conveyor provided with a wheel having one or more impression units on its periphery which are adapted to contact with and mark the covers on the containers as the latter pass beneath the same, said wheel being rotatable on a horizontal axis arranged at right angles to the direction of movement of the upper stretch of the conveyor, means for positioning and positively moving the containers in uniformly spaced single file order in longitudinal alignment with the plane of rotation of the wheel during the marking operation, means on the wheel separate from the impression units for frictionally engaging the covers to prevent relative movement between the impression units and the covers, said frictional engaging means comprising one or more resiliently yieldable rubber rims on the wheel in axially offset relation to the impression units, and means operating in timed relation to said positioning and moving means for rotating

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the wheel to move the impression units in the same direction and at the same linear speed as the covers on the containers.

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