July 12, 1966 M. MANN 3,260,193

MARKING DEVICE

Filed Aug. 31, 1964 3 Sheets-Sheet 1

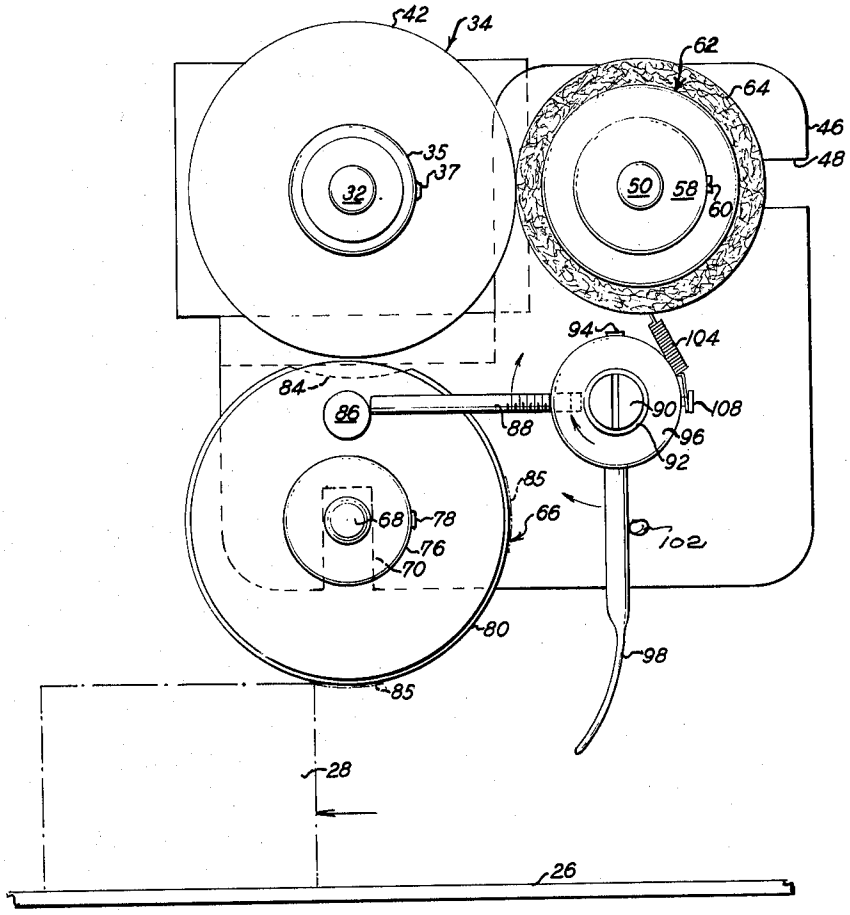


Fig. 1

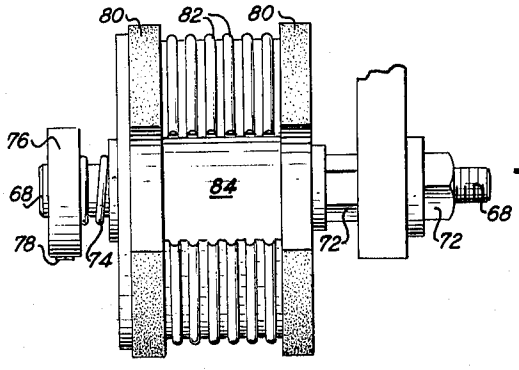


Fig. 4

INVENTOR

MAX MANN

BY Sol B. Wiggs

ATTORNEY

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MARKING DEVICE

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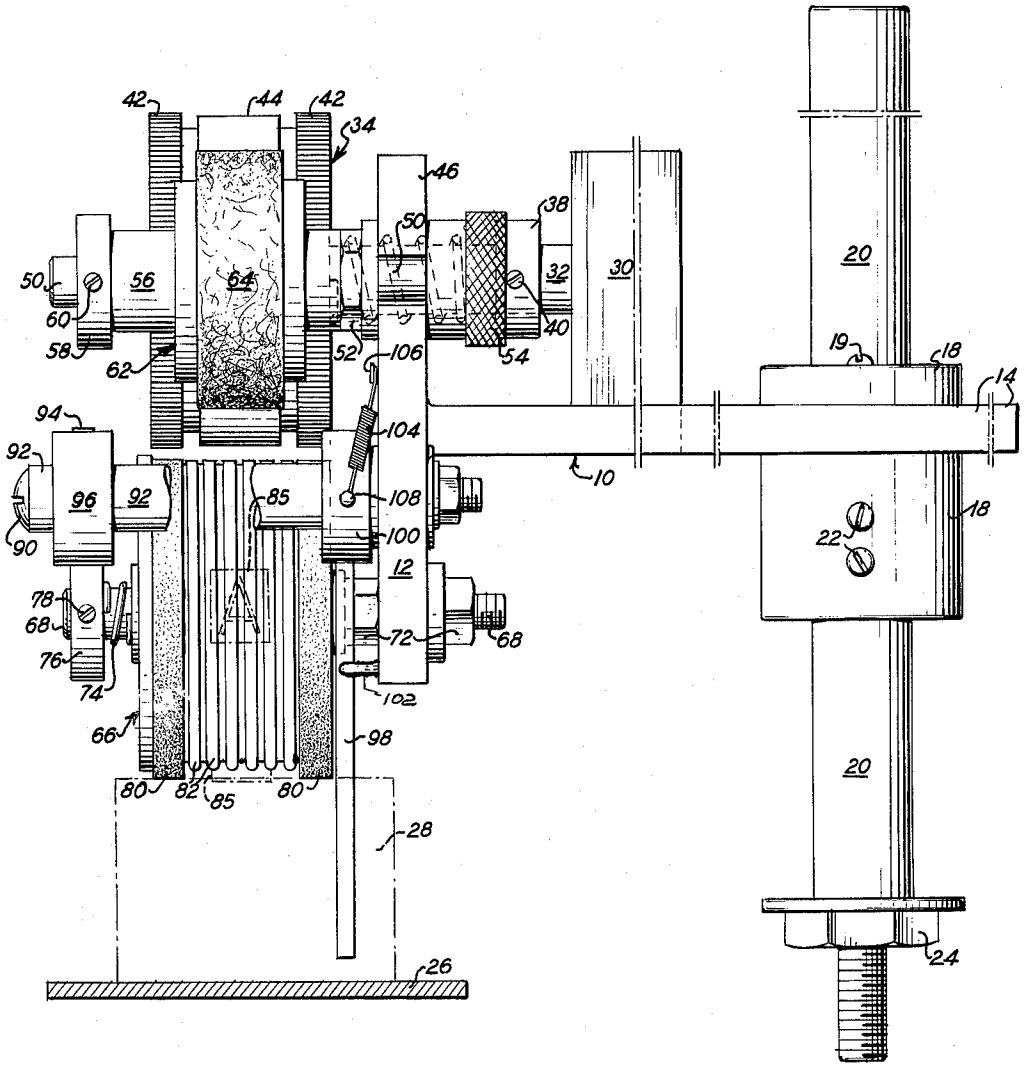


Fig. 2

INVENTOR

MAX MANN

BY Sol B. Wiczyk

ATTORNEY

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MARKING DEVICE

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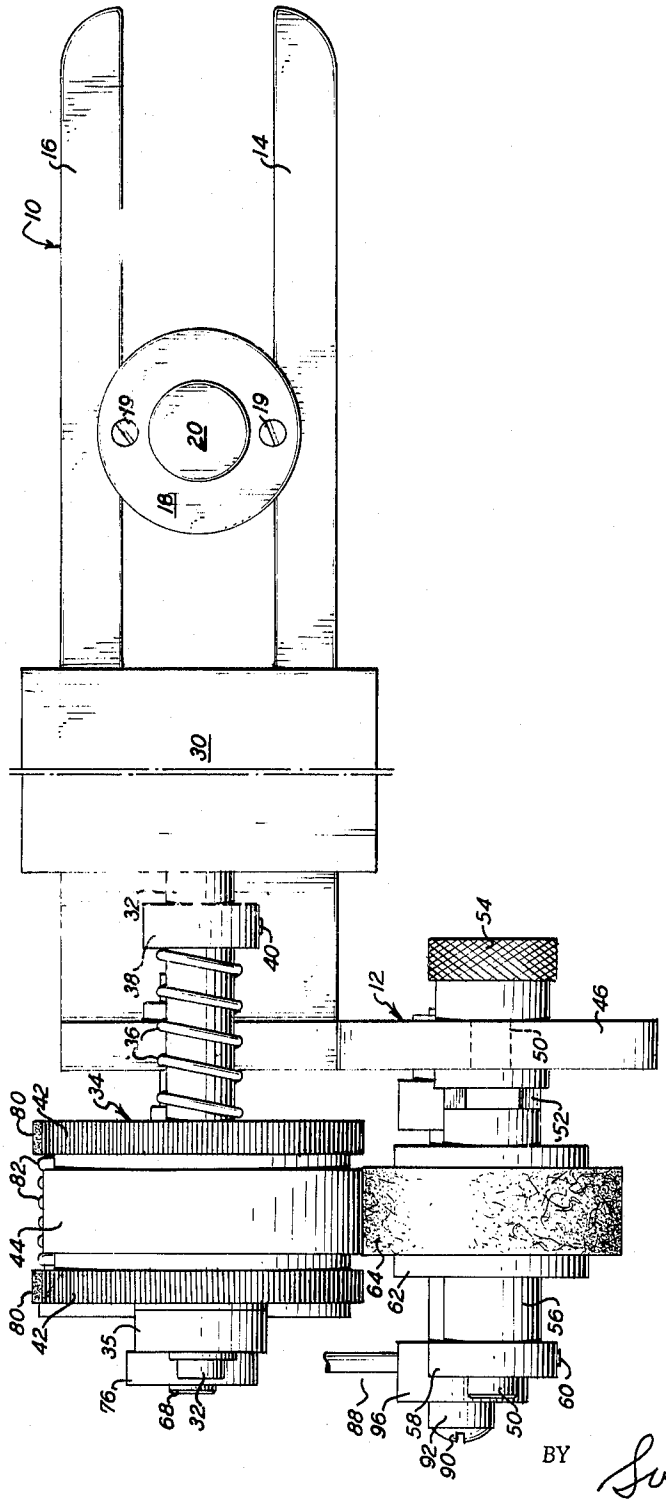


Fig. 2

INVENTOR

MAX MANN

BY Sol B. Wiczk

ATTORNEY

United States Patent Office 3,260,193 Patented July 12, 1966

3,260,193

MARKING DEVICE

Max Mann, 232 Palisade Ave. Garfield, N.J.

Filed Aug. 31, 1964, Ser. No. 393,223
7 Claims. (Cl. 101—35)

This invention relates to marking devices and particularly to a marking device adapted for mounting beside a conveyor, the marker being actuated by intermittent contact with articles moving by on the conveyor.

A primary object is to provide a machine having indicia mounted upon a marking roller aligned for printing upon a package passing by on a conveyor, the marking roller being combined with means for realigning it for marking another package after each print.

A further object is to provide a combined realigning and ink-transfer roller intermittently operative to realign a printing roller for the next printing application while transferring ink to marking indicia thereon with each print.

A further object is to provide a marking roller operative at any rate by frictional rolling contact upon packages to be marked variable with the number and spacing between packages or the rate of movement of a conveyor carrying such packages and presenting their surfaces to the marking roller for marking thereof. These and other objects of the invention will be inherent in the description and drawings illustrating the invention in which:

FIG. 1 is a side elevation of the device illustrating the passage of packages in contact with the marking wheel ot the device for print thereon;

FIG. 2 is an end view in the direction of the movement of packages toward the machine;

FIG. 3 is a top plan view; and

FIG. 4 is a detail illustrating the arcuately cut-away portion of the printing wheel in plan.

The printing, marking and auxiliary alignment and ink supply elements are supported upon a bed plate **10** (FIGS. 2 and 3) which terminates at its inner element mounting end in a vertical supporting plate **12** to which it is integrally attached. The outer ends **14** and **16** are forked into a yoke which fits slidingly about a vertical supporting sleeve or boss **18** in adjusted horizontal position fixed by vertical set screws **19** therein, the boss **18** in turn being adjustable vertically to selected position on a vertical standard **20** fixed by set screws **22**. The standard **20** may be mounted by bolts **24** to any supporting bracket (not shown) for support beside a conveyor belt **26**. However, with the vertical and horizontal adjustments upon the support standard **20** and yoke arms **14** and **16**, the device may be positioned by any conveyor belt **26** carrying packages **28**, printing such packages as rapidly as they pass the marking roller.

The bed plate **10** has mounted thereon a fractional horsepower gear head motor **30** which drives a shaft **32** at a preselected constant speed. A cylindrically shaped inking and realignment roller **34** is mounted through an anti-friction bearing (not shown) on the outer end of shaft **32**, secured thereon by a collar **35** fixed to shaft **32** by a set screw **37**, further secured by a flange nut on the end of shaft **32** to prevent axial movement, the roller **34** being free for rotation through its bearing independently of the shaft **32**. A compression spring **36** fits loosely around the shaft **32** and presses against the roller **34** at its inner face. A collar **38**, adjustable axially on shaft **32**, is fixed by set screw **40** to the shaft **32** for rotation therewith and spaced to bear in compression against the spring **36** frictionally, thus to provide a frictional clutch drive to the roller **34** adjustable with the axial compression of the spring **36** supplied by the spacing of the collar **38** on shaft **32**.

ends of cylindrical roller **34** are roughened or knurled as

a pair of rims for the benefit of supplying tangential frictional rolling contact in realignment of a printing roller, as will appear. The center portion **44** of the roller **34** is smooth, cylindrical surface, usually of metal, adapted to accept a film of ink continuously supplied thereto by an inking felt and transfer the same to printing indicia on a printing wheel, both in rolling contact therewith.

The plate **12** has an upwardly extending shoulder **46** slotted at **48** inward from one side, as shown in FIG. 1, to receive and adjustably support therein, the shaft **50** of an inking roller **62**. Shaft **50** is positioned by an adjusting bolt **52** and a knurled nut **54** bolt threaded on opposite sides of the plate **46** to shaft **50** for secure positioning support of the inking roller felt thereon. The opposite end of the shaft carries a bushing **56** freely rotatable about the shaft **50** and secured thereon to allow free rotation by a collar **58** held by a set screw **60**. The bushing **56** rotatably carries an inking roller **62** upon the center of which is a replacable felt **64** maintained filled with ink and positioned for tangential rolling contact for ink transfer to the center portion **44** of the realignment and inking roller **34**. Thus, as described, the realignment and ink transfer roller **34** is in continuous rolling contact with the felt **64** of the inking wheel **62** for supply of ink thereto driven through a frictional clutch through spring **36** upon shaft **32** of the motor **30**.

A print or marking roller **66** is mounted through an anti-friction bearing, not shown, on a shaft **68**. The shaft **68** is adjustably fitted upon supporting plate **12** mounted in a vertical slot **70**, and fastened in adjusted vertical position therein by nuts **72** fastened on opposite sides of the plate **12**. The outer end of the shaft **68** has a small spring **74** secured under slight compression by a collar **76** bearing in adjusted position fixed by a set screw **78** against spring **74** whereby very light spring pressure is exerted against the print wheel **66** to reduce a tendency to rapid spin, but insufficient to inhibit free rotation on its bearing. The print wheel has a pair of flexible rims **80**, usually of rubber, which co-act both with the knurled rims **42** of the realignment wheel, rolling tangentially thereagainst in most positions, and with a surface **28** of the package to be marked as it moves by the printing wheel **66** on a conveyor **26**, engaging the rims **88** at an opposite tangential portion. The center portion **80** of the printing wheel **66** has several flexible ribs **82** which support indicia frictionally inserted letters or numbers **85** as frictionally held between the ribs **82**. Such indicia **85** impart the print in rolling contact with the package surface.

As shown in FIGS. 1 and 4, an arcuate portion **84** of the printing wheel **66** is cut away forming a discontinuous portion which provides a gap between the rims **42** and ink-transfer surface **44** of the alignment wheel **34** and the printing wheel **66**. In that position as shown in FIG. 1 there is no driving contact between the realignment wheel and the printing wheel.

A stop **86** protrudes axially from the outer surface of the printing wheel **66**, the stop **86** being spaced radially inward from the circumference of the printing roller. A stop triggering mechanism comprising a shaft **90** is journaled in the plate **12** through a rotatable sleeve **92** thereon. A stop arm **88** is carried by a collar **96** radially fixed to the sleeve **92** by a set screw **94** which positions the arm **88** in line with the stop **86**. The stop arm **88** is threaded for longitudinal adjusting of the radial distance between the stop **86** and stop arm for accurate positioning. A stop trigger arm **98** is carried by a second collar **100** on the opposite inner side of the sleeve. A stop abutment **102** for the trigger arm **98** is carried by the plate **12**, allowing pivotal movement of the arm **98**, the stop arm **88** and sleeve **92** all interconnected for rotation on the shaft **90** in the direction of the arrows by pivotal movement to

The outer tangential ends 42 of the upper and lower disengage stop 86 and thus free the print wheel 66 for rotation. A tension spring 104 has one end fastened to a pin 106 in the plate extension 46 and the other end to the outer tangential surface of the collar 96 at the point 108, biasing the trigger 98 against the stop 102, in which position the stop arm 88 is also pivotally aligned to engage the stop 86 of the print wheel 66. In that position the print wheel 66 is stopped from rotation by the arm 88 cooperating with stop 86. In that stop position the arcuate cut-away portion 84 of the print wheel is aligned with the alignment wheel 34 so that there is no driving contact therebetween.

In operation, the motor 30 continuously rotates the realignment and inking wheel 34, through its easily slipping clutch engagement. However, the print wheel is held stationary by stop 86 engaging arm 88. The packages 28 to be marked are disposed at any irregular intervals upon a conveyor 26 aligned only with respect to the printing device to pass in contact with rims 80 and the printing surface 85 of the printing wheel 66 and receive print in rolling contact with indicia 85 therein. Each time the package strikes the stop lever 98 it carries it pivotally arcuately forward and upward, rotating the sleeve 92 and stop arm 88 arcuately up and away from stop 86 to the dotted line position of FIG. 1 and the forward end of the package 28 frictionally engages the printing wheel 66 for printing rotation therewith. After the package passes, the print roller 66 terminates driving contact therewith, the lever 98 and stop 88 are biased by spring 104 to return to normal position against stops 102 and 86, the full line position of FIG. 1. However, after the printing wheel 66 has begun to rotate in contact with the surface of the package 28, the frictional rims 80 have moved into frictional contact with the rims 42 of the ink transfer and realignment wheel 34 and the print roller 34 consequently continues to be rotated by the frictional drive provided by the shaft 32 and spring 36. That rotation of printing roller will be continued until the stop 86 engages the stop arm 88 and arcuate cut-away portion 84 is positioned below the realigning and inking wheel 34; that is, out of direct contact therewith as shown in FIG. 1. In this manner the printing roller is continuously repositioned by the realignment wheel 34 for printing the next package after each printing. The print is thus applied on the same position of each package however irregularly the packages may be spaced upon the conveyor belt. Each package actuates the completely realigned printing wheel by engagment of the trigger arm 98 releasing stop 86 and then rotating print roller in frictional rolling contact with its surface.

It is thus possible to print very rapidly and very accurately with packages moving at quite high speeds along the conveyor belt such as 200 or 500 prints being available per minute. The single rotation of the printing wheel 66, moreover, always brings the indicia or printing elements 85 in inking contact with the ink transfer surface 44 of the wheel 34, whereby a fresh film of ink is supplied thereto with each rotation. No parts of the device, therefore, are under mechanical strain. The power for rotating the print wheel is in the package whose surface engages it frictionally as it passes by. The rotation of the print wheel for realignment is merely lightly frictional tangential contact between the rims 42 and 80, but since the drive of the alignment wheel allows easy frictional slipping through spring 36 bearing against collar 38, anyone near the machine can stop it from rotating by gripping the alignment wheel with the fingers.

The device is readily adjustably mounted beside a conveyor and may print against horizontal surfaces or vertical surfaces depending upon the direction in which the printing device is mounted i.e. the direction of movement of the packages presenting a side or top surface to the marker. Moreover, since it is a rolling contact print the shape of the package is not critical. Even though the

aligning motor drives at a constant moderate speed and the drive connection with the aligning wheel is easily interrupted, nevertheless the print wheel in contact therewith will be realigned for each print, however fast the packages move by on the conveyor.

Certain modifications will occur to those skilled in the art and, accordingly, it is intended that the description given herein be regarded as exemplary and not limiting except as defined in the claims appended hereto.

I claim:

1. A package marking device comprising a cylindrical rotary marking roller mounted for free rotation and having marking indicia on its cylindrical surface and adapted to rotate in frictional tangentially applied driving contact to impart print to the surface of a package in rolling contact therewith, an aligning roller mounted tangentially for frictional rolling contact with said marking roller said aligning roller being mounted out of the path of movement of said package to be marked, a cut-away portion on said marking roller and adapted to interrupt tangential continuity between said roller surfaces and interrupt frictional driving contact therebetween, means for rotating said aligning roller and thereby rotating said marking roller in frictional rolling contact therewith until alignment with the cut-away portion is reached, thereby aligning the print on said marking roller in marking position for a package brought into rolling contact therewith.

2. The marking device as defined in claim 1 wherein said marking roller has stop means fixed to interrupt and stop rotary movement thereof when its cut-away portion coincides with the tangential driving portion of said aligning roller interrupting tangential drive continuity.

3. The marking device as defined in claim 1 wherein said marking roller has stop means fixed to intercept and stop rotary movement thereof when its cut-away portion coincides with the tangential driving portion of said aligning roller and a stop means disengaging arm extending outward into the path of packages to be marked, whereby an approaching package to be marked in rolling contact with said marking roller first engages said stop means disengaging arm, freeing said marking roller for rotary marking contact with the package to be marked.

4. The marking device as defined in claim 1 wherein the center portion of said aligning roller comprises a smooth ink receiving and transfer surface adapted to transfer a film of ink to the marking indicia on said marking roller in rolling tangential contact therewith.

5. The marking device as defined in claim 1 wherein the center portion of said aligning roller comprises a smooth ink receiving and transfer surface adapted to transfer a film of ink therefrom in tangential rolling contact with the indicia on said marking roller, and a rotary mounted cylindrical inking roller having an inking felt about its cylindrical surface, said inking felt being positioned in ink transferring rolling contact with the center portion of said aligning roller.

6. A package marking device comprising a cylindrical rotary marking roller mounted for free rotation and having marking indicia on its cylindrical surface and adapted to rotate in frictional tangentially applied driving contact to impart print to the surface of a package in rolling contact therewith, an aligning roller mounted tangentially for frictional rolling contact with said marking roller said aligning roller being mounted out of the path of movement of said package to be marked, a cut-away portion on said marking roller adapted to interrupt tangential continuity between said roller surfaces and interrupt frictional driving contact therebetween, means for rotating said aligning roller and thereby rotating said marking roller in continuous rolling contact to aligned stop position with the said cut-away portion, thereby aligning the print on said marking roller in marking position for a package brought into rolling contact therewith, stop means on said marking roller, means cooperative with said stop means to intercept and stop rotary movement of

said marking roller when its cut-away portion coincides with the tangential driving portion of said aligning roller and a stop means disengaging arm extending outward from the cylindrical surface of said marking roller into the path of packages to be marked, whereby an approaching package to be marked in rolling contact with said marking roller first engages said stop means disengaging arm, freeing said marking roller for rotary marking contact with the package to be marked.

7. A package marking device comprising a cylindrical rotary marking roller mounted for free rotation and having marking indicia on its cylindrical surface and adapted to rotate in frictional tangentially applied driving contact to impart print to the surface of a package in rolling contact therewith, an aligning roller mounted tangentially for frictional rolling contact with said marking roller said aligning roller being mounted out of the path of movement of said package to be marked, a cut-away portion on said marking roller adapted to interrupt tangential continuity between said roller surfaces and interrupt frictional driving contact therebetween, said aligning roller having a smooth center portion in ink receiving and transferring contact with the indicia on the cylindrical surface of said marking roller, a rotary mounted cylindrical inking roller having a cylindrical inking felt mounted about its cylindrical surface, said inking felt being positioned in rolling contact with the center portion of said aligning roller to impart a film of ink thereto, means for rotating said aligning roller and thereby rotating both said inking felt in ink imparting contact therewith and

said marking roller to impart a film of ink to the marking indicia on said marking roller and to align said marking roller in continuous rolling contact to aligned stop position with the said cut-away portion, thereby aligning the print on said marking roller in marking position for a package brought into rolling contact therewith, stop means on said marking roller, means cooperative with said stop means to intercept and stop rotary movement of said marking roller when its cut-away portion coincides with the tangential driving portion of said aligning roller and a stop means disengaging arm extending outward from the cylindrical surface of said marking roller into the path of packages to be marked, whereby an approaching package to be marked in rolling contact with said marking roller first engages said stop means disengaging arm, freeing said marking roller for rotary marking contact with the package to be marked.

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ROBERT E. PULFREY, *Primary Examiner.*

WILLIAM F. McCARTHY, *Assistant Examiner.*