

May 19, 1970

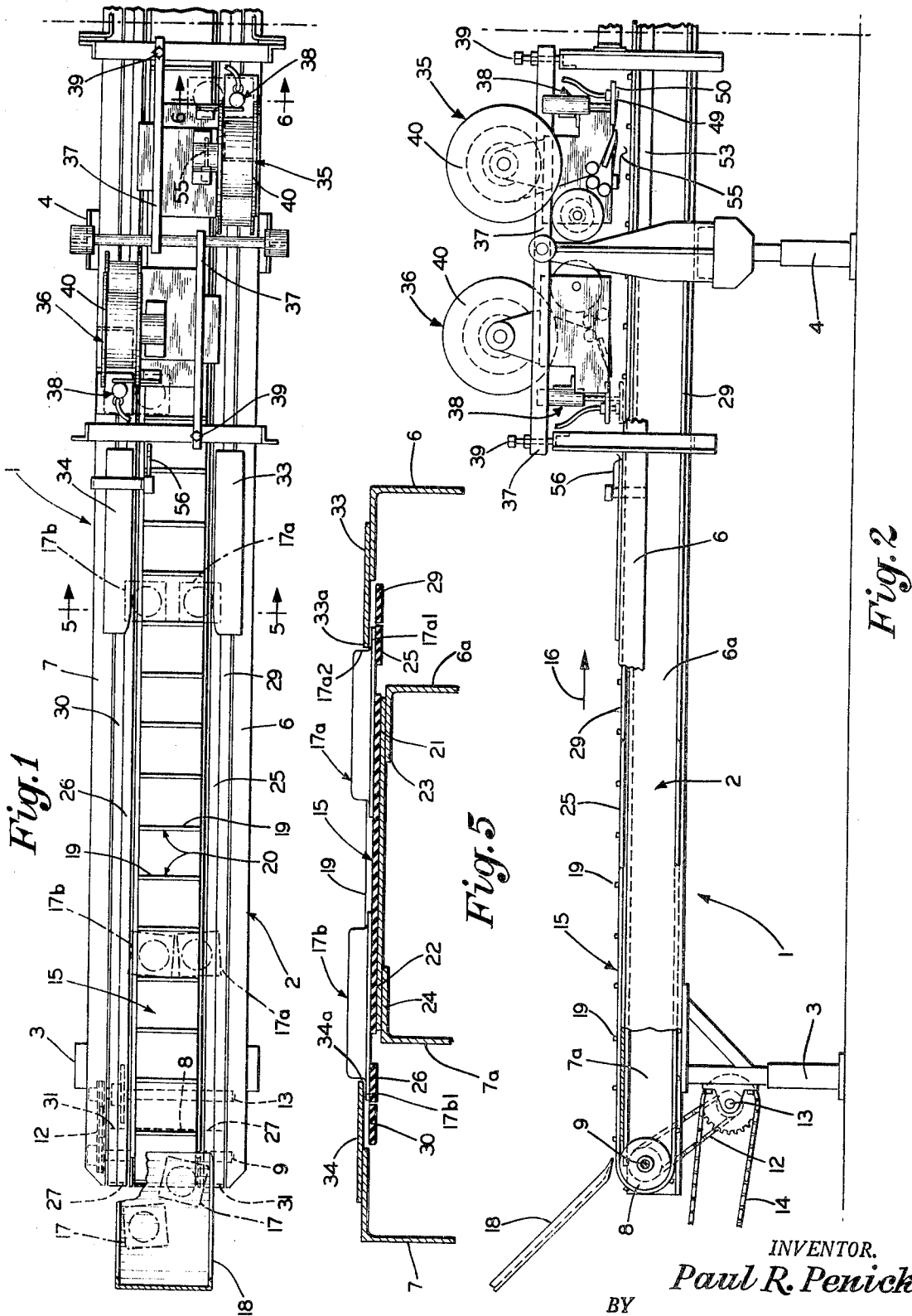
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3,513,058

CONTINUOUS EQUIPMENT FOR LABELING MEAT PACKAGES

Filed Nov. 16, 1966

3 Sheets-Sheet 1



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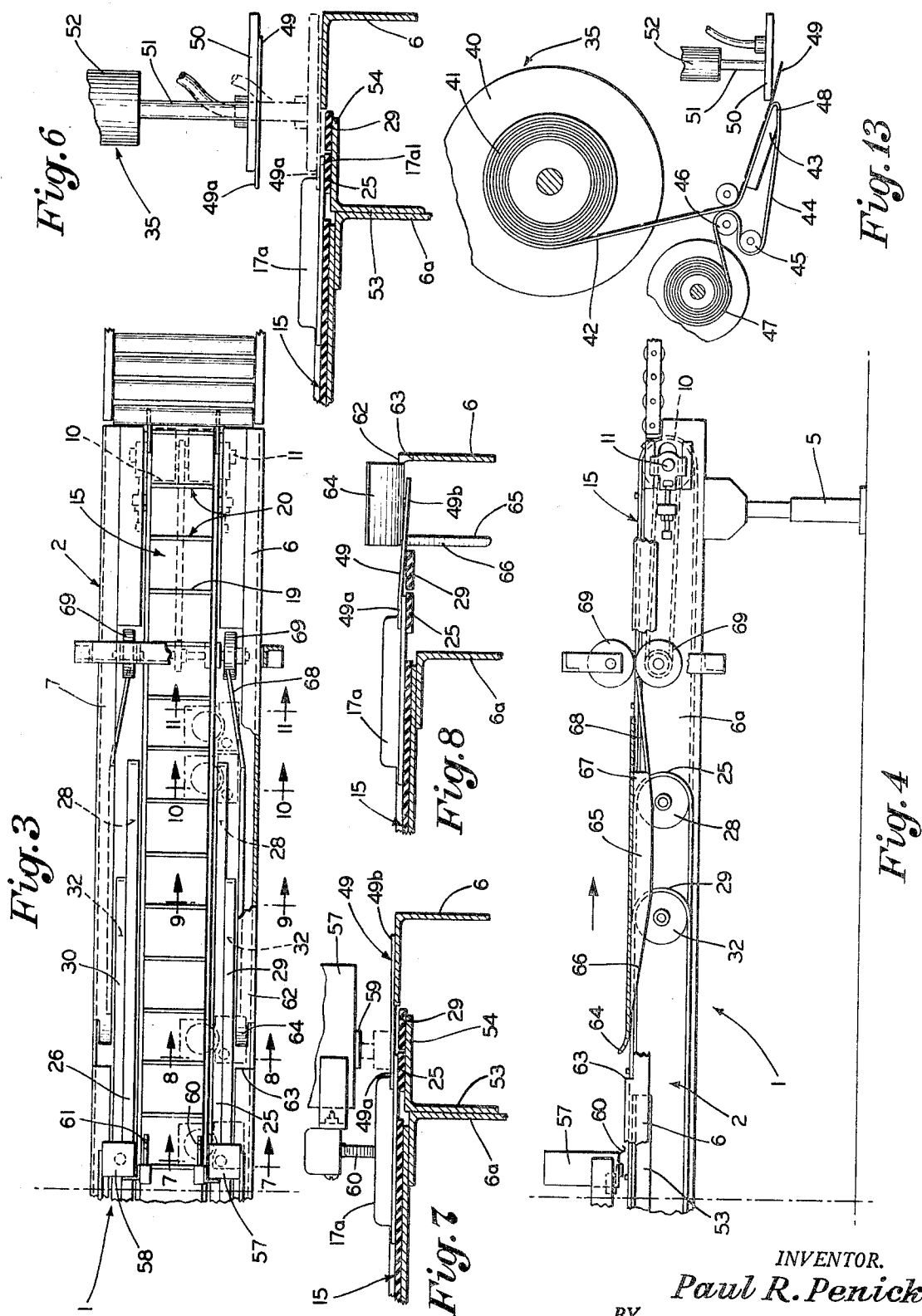
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CONTINUOUS EQUIPMENT FOR LABELING MEAT PACKAGES

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3 Sheets-Sheet 2



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CONTINUOUS EQUIPMENT FOR LABELING MEAT PACKAGES

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3 Sheets-Sheet 3

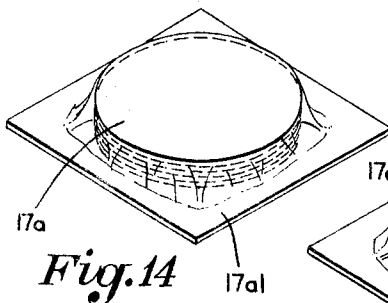


Fig. 14

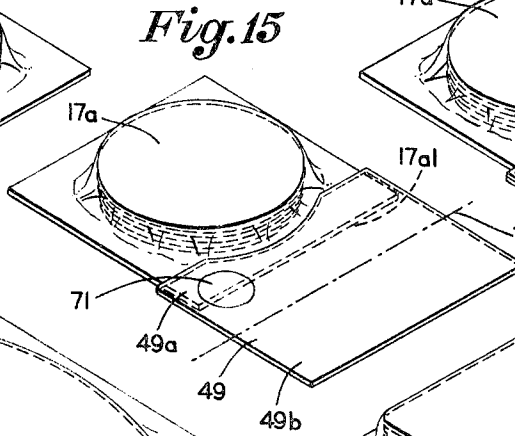


Fig. 15

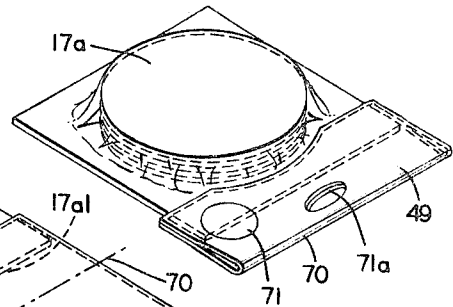


Fig. 16

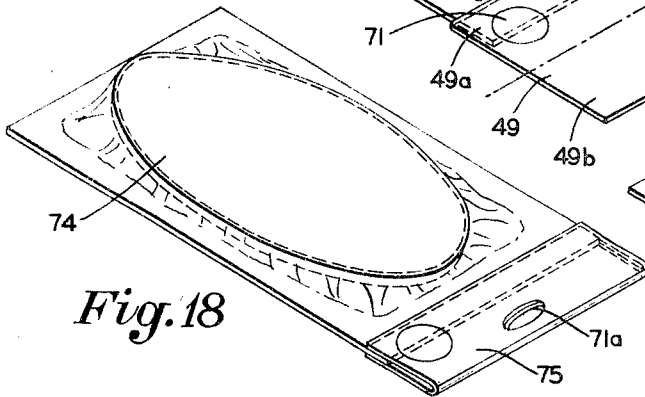


Fig. 18

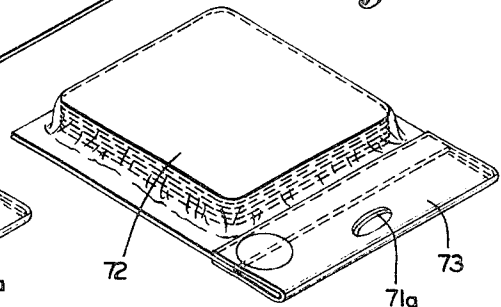


Fig. 17

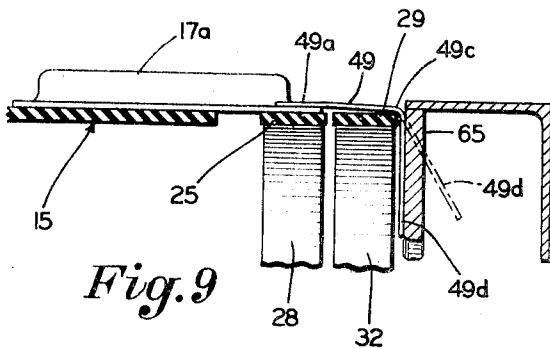


Fig. 9

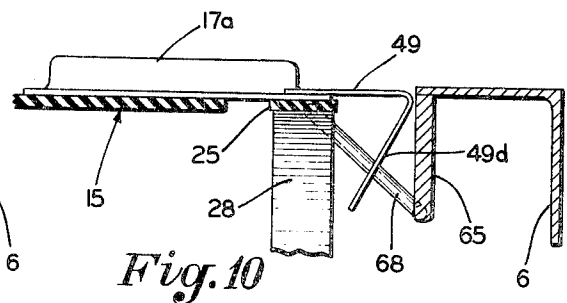


Fig. 10

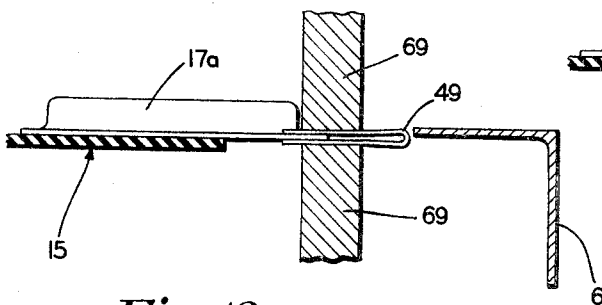


Fig. 12

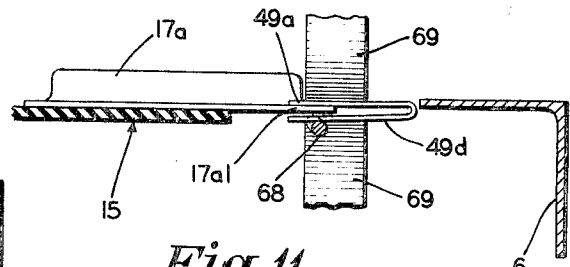


Fig. 11

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CONTINUOUS EQUIPMENT FOR LABELING MEAT PACKAGES

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10 Claims

ABSTRACT OF THE DISCLOSURE

Continuous labeling equipment for labeling meat products packages, each having a package edge flange, with a folded pressure-sensitive label adhering to the surfaces of the flange. A main conveyor belt supports the moving packages. A pair of secondary endless belts are adjacent the edges of the main belt and a pair of outer belts are adjacent the edges of the secondary belts. All of the belts are moved in one direction with synchronized movement. The package edge flanges overlie one secondary belt, and label applying means for applying one edge zone of a pressure-sensitive label to the upper surface of each flange overlies the same secondary belt. Means for printing indicia on the label overlies the secondary and outer belts. There is means for folding the label to U-shape to locate an outer label edge zone beneath the package flanges and means for pressure-sealing the edges of the label to both sides of the flange.

The invention relates to continuous equipment for applying labels to packaged meat products; and more particularly to continuous equipment for applying a folded pressure-sensitive label to a package flange of packaged meat products so that the label projects from one edge of the meat package and in folded condition presents label information visible from either side or face of the package, and so that the folded label provides hanger means for displaying meat products on hanger pins at meat counters of stores or supermarkets.

Various types of labeling equipment are available and have been used for applying a pressure-sensitive label to the top or face of a package, such as a sealed package containing meat products. Machines for applying pressure-sensitive labels to such meat packages have been coordinated in operation with continuous belt production line equipment so that a label is applied to the top of each of successive packages on the belt which successively pass a label-applying station.

However, such prior labeling and continuous belt equipment cannot apply a label folded upon itself about a package flange projecting from the packaging material of a meat products package, so that the folded label overlies and adheres to both faces of the flange, and so that the folded label projects from one edge of the package and is adapted for use as hanger means for the package.

There have been unsuccessful attempts prior to the present invention to construct and satisfactorily operate continuous belt production line equipment which could apply a label and fold the label upon itself about a package flange projecting from packaging material during continuous movement of such packages and packaging material on the continuous belt equipment. Such procedures involve difficulties in handling a pressure-sensitive label after a portion thereof has been positioned to adhere to a package, and in then proceeding with folding operations while supporting some portions of the label and leaving other portions free to be folded, all during continuous endwise movement of the packages to which the labels are applied.

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Such prior constructions sought to use continuous belt means overlying the main belt conveyor for positioning and holding the packages being labeled and portions of labels being applied during the folding operation. These arrangements, however, were unsatisfactory.

Repeated alterations of such prior equipment in attempts to control the various stages of the label folding procedures were unsuccessful in producing satisfactory operation. Then equipment, hereinafter described in detail, including positive label directing and folding structures, was evolved and arranged as set forth, which resulted in satisfactory and successful operation.

Accordingly, objectives of the invention are to provide new continuous equipment for applying to a projecting packaging-material flange of a meat product package folded labels presenting labeling information at both faces of the folded label; to provide continuous equipment for labeling meat products packages with a folded label projecting from an edge of the meat package which may be used as a hanger for meat package display; and to provide new continuous labeling equipment adapted for efficient production-line operation to achieve the many new advantages and results hereinafter described in detail, and having characteristics which eliminate difficulties, solve problems and satisfy needs existing in the art.

These and other objects and advantages apparent to those skilled in the art from the following description may be obtained, the stated results achieved and the described difficulties overcome by the structures, devices, arrangements, apparatus, combinations, parts, elements and sub-combinations which comprise the present invention, the nature of which is set forth in the following general statement, a preferred embodiment of which—illustrative of the best mode in which applicant has contemplated applying the principles—is set forth in the following description and shown in the drawings, and which are particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

The nature of the improved continuous labeling equipment for labeling meat products packages with folded labels, preferably pressure-sensitive labels applied to a package end flange, may be stated generally as including a main flexible articulated endless conveyor web or belt; a pair of secondary endless web belts adjacent the edges of the main belt; a pair of outer web belts adjacent the edges of the secondary belts; means for moving the belts in one direction with synchronized movement; means for positioning packaged meat products at equal intervals on the main belt with each package having a package edge flange located in a predetermined position overlying one of the secondary belts; label applying means for applying one edge zone of a pressure-sensitive label to the upper surface of the package edge flange overlying said secondary belt; preferably means for printing indicia on the applied label on a label portion overlying the secondary and outer belts; means for folding the label to U-shape to locate an outer label edge zone beneath said package flange; and means for pressure-sealing the applied edges of the label to both faces of the package flange.

By way of example, improved continuous equipment for labeling meat products packages with folded labels is shown somewhat diagrammatically in the accompanying drawings forming part hereof in which:

FIG. 1 is a plan view diagrammatically showing a portion of a production line incorporating the improved labeling equipment;

FIG. 2 is a diagrammatic side elevation of the equipment shown in FIG. 1;

FIG. 3 is a plan view similar to FIG. 1 showing the remainder of the labeling equipment in the continuous production line extending to the right of FIG. 1;

FIG. 4 is a view similar to FIG. 2 showing the remainder of the equipment illustrated in FIG. 3;

FIG. 5 is an enlarged sectional view looking in the direction of the arrows 5—5, FIG. 1;

FIG. 6 is an enlarged fragmentary sectional view looking in the direction of the arrows 6—6, FIG. 1;

FIG. 7 is an enlarged fragmentary sectional view looking in the direction of the arrows 7—7, FIG. 3;

FIG. 8 is a view similar to FIG. 7 but taken on the line 8—8, FIG. 3;

FIG. 9 is a sectional view similar to FIG. 8 taken on the line 9—9, FIG. 3;

FIG. 10 is a view taken on the line 10—10, FIG. 3 showing a further stage in the label folding procedure;

FIG. 11 is a view similar to FIG. 10 taken on the line 11—11, FIG. 3 illustrating a still further stage in the label folding procedure;

FIG. 12 is a view similar to FIG. 11 showing the folded label passing between pinch rolls which apply the final label sealing pressure;

FIG. 13 is an enlarged diagrammatic view of one of the label applying units shown in FIGS. 1 and 2 with a label being peeled from a label feed strip;

FIG. 14 is a perspective view of a meat products package of one form to be labeled;

FIG. 15 is a view of the package of FIG. 14 showing the initial label applying operation;

FIG. 16 is a view similar to FIGS. 14 and 15 illustrating the label completely folded to U-shape and pressure sealed to the packaging-material flange of the meat package;

FIG. 17 is a view similar to FIG. 16 illustrating a different shape of packaged meat; and

FIG. 18 is a view similar to FIGS. 16 and 17 showing still another form of packaged meat.

Similar numerals refer to similar parts throughout the various figures of the drawings.

The improved continuous labeling equipment generally indicated at 1 preferably includes base frame members generally indicated at 2 supported by legs or stands 3, 4 and 5. The base frame members 2 preferably comprise longitudinal outer angle members 6 and 7 and inner angle members 6a and 7a laterally spaced apart (FIG. 5) on which entry conveyor drum 8 is mounted on shaft 9 (FIGS. 1 and 2) at one end of the equipment 1, and on which discharge conveyor drum 10 is mounted on shaft 11 at the other end of the equipment 1.

Drum 8 may be driven in the usual manner by a chain drive 12 (FIG. 2) from a counter shaft 13 which in turn is driven by chain 14 from a suitable source of power.

A main flexible web or articulated belt conveyor of any usual or desired endless construction, indicated generally at 15, is engaged over drums 8 and 10 and is driven thereby so that the top flight of the main web 15 travels in the direction of the arrow 16 in FIG. 2. Packaged meat products indicated generally at 17 in FIG. 1 are delivered by chute 18 to the main conveyor web 15 from usual packaging or bagging equipment (not shown) where the desired meat product with a selected number of slices or weight of product is packaged and preferably sealed in a plastic material package or bag in a usual manner.

The improved equipment illustrated is designed to apply labels to substantially square meat packages traveling along conveyor web 15 in two parallel paths of package travel. Since the construction and operation of the labeling equipment is similar for applying labels to packages adjacent each edge of main conveyor web 15, only the line of equipment units at the lower portion of FIGS. 1 and 3 or at the right hand of FIGS. 5, 6, 7 and 8 will be described in detail.

Conveyor belt 15 preferably is provided with a series of spaced cleats 19 forming successive pockets 20 (FIG. 1) between adjacent laterally extending cleats 19 for receiving pairs of meat packages 17 such as indicated at 17a and 17b in FIG. 1. Movement of the conveyor belt thus

moves pairs of meat packages 17a and 17b trapped in pockets 20 at uniform intervals along main conveyor web 15 in the direction of the arrow 16, or from left to right in FIGS. 1, 2, 3 and 4. The moving edge portions of main web 15 preferably are supported at 21 and 22 on flanges 23 and 24 of frame members 6a and 7a along the length of travel of belt 15.

Secondary endless web belts 25 and 26 are trained about rolls 27 at the entry end of equipment 1 and about rolls 28 (FIG. 4) spaced from drum 10 adjacent the discharge end of equipment 1. Secondary belts 25 and 26 are driven at the same speed synchronously with main belt 15 preferably by mounting rolls 27 on drive shaft 9 for drum 8. Secondary belts 25 and 26 thus are located adjacent the edges of main belt 15, and the upper flights of secondary belts 25 and 26 travel in the same horizontal plane as the plane of the path traveled by main belt 15 (FIG. 5).

Outer belts 29 and 30 also are trained endlessly around rolls 31 also carried by drum shaft 9 and around rolls 32 journaled on frame 2 spaced from rolls 28 (FIG. 4). The pair of outer belts 29 and 30 (FIG. 5) also are driven in synchronism with belts 15, 25 and 26, and their upper flights travel in the same plane as traveled by the upper flights of belts 15, 25 and 26.

Guide plates 33 and 34 are mounted respectively on angle members 6 and 7 (FIG. 5) extending longitudinally along the path of travel of belts 25 and 29, and 26 and 30, respectively. Longitudinal portions of guide plates 33 and 34 project inward from members 6 and 7 respectively and overlie and are spaced from belts 25 and 29, and 26 and 30.

Meat products packages 17a and 17b respectively have a flange 17a1 or 17b1 of the packaging material which projects laterally from the edge of each package. Flange 17a1 of successive packages 17a carried along conveyor 15 lies on secondary belt 25 and moves beneath the inner longitudinal edge 33a of guide plate 33 (FIG. 5). As each package 17a moves along the equipment, the package is pushed preferably by hand laterally so that the package portion 17a2 engages the inner edge 33a of guide plate 33, thus locating the package flange 17a1 laterally in a desired predetermined position overlying belt 25.

The package flange 17b1 of each package in the line of packages 17b is similarly located by the inner edge 34a of guide plate 34 in predetermined position above secondary belt 26 as shown in FIGS. 1 and 5.

Label applying units 35 and 36 are located beyond guides 33 and 34 and toward the exit end of the equipment. Label applying units 35 and 36, respectively, serve the paths of conveyor travel of the packages 17a and 17b (bottom and top package lines of FIG. 1). Label appliers 35 and 36 are similar and may be any one of a number of standard types of label applier mechanisms. The units 35 and 36 are mounted on a scaffold frame 37 carried by the pedestal 4 and frame 2 so that each label applier head 38 may be accurately located by adjustments 39 with respect to the secondary conveyor belts 25 and 26.

Label applier mechanism 35 includes a reel 40 (FIGS. 2 and 13) on which is mounted a coil 41 of a label feed strip 42 on which pressure-sensitive labels are adhesively but peelably carried. Feed strip web 42 passes over an anvil 43 (FIG. 13) where its direction of travel is reversed at 44 and then passes around tensioning rolls 45 and 46 to a windup reel 47 for the feed strip 42. As feed strip web 42 passes reversely over the nose 48 of anvil 43, pressure-sensitive labels 49 are peeled from web 42. Labels 49 are held by suction on the underface of movable applier head 50 (FIGS. 6 and 13). Head 50 moves downward to the position shown in dot-dash lines in FIG. 6 by movement of piston 51 in cylinder 52 to engage an edge portion 49a of label 49 against the packaging material flange 17a1 of package 17a, supported by secondary web 25.

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The equipment zone in the region of label applier 35 is provided with an angle support member 53 (FIGS. 2 and 6) mounted on member 6a and having an outturned flange 54 extending beneath the belts 25 and 29, thereby providing a support for belt 25 against which the edge 49a of pressure-sensitive label 49 may be pressed for adherence of the label portion 49a to the package flange portion 17a1.

The operation of label applier 35 and its components may be triggered and synchronized with belt and package movement by a trigger finger 55 (FIG. 2) engaging a package 17a, which operates the label applier 35 to press a label 49 against a package 17a beneath applier head 50 every time that a package on the main conveyor belt is located in proper position beneath the applier head 50.

The label applier mechanism 36 operates in the same manner to apply labels to the packages 17b traveling in the other or upper line (FIG. 1) of package travel. Label applier 36 is triggered for actuation by the trigger finger 56 (FIG. 2) engaging packages 17b.

If desired, printer mechanisms 57 and 58 are mounted above each of the paths of movement of packages 17a and 17b (FIGS. 3, 4 and 7) which may be used to print any desired indicia such as a date or a price on the labels. The printer head is indicated in full lines in retracted position in FIG. 7 at 59, and also is shown in dot-dash lines in actuated position to print the desired indicia on the top face of label 49 whose edge portion 49a adheres to the upper surface of a package flange at one edge of package 17a. Here again support angle 53-54 provides packing for conveyor webs 25 and 29 against which the printing head 59 reacts. The operation of printer 57 may be triggered by a finger 60 engaging a package 17a as shown in FIG. 7. Similarly, printer 58 for the line of packages 17b may be triggered by a trigger finger 61 for operation.

The top flange 62 of frame angle member 6 is notched at 63 and curved upward at 64 (FIGS. 3, 4 and 8) so as to direct the outer half 49b of label 49 which projects beyond belt 29, below the angle flange 62 as shown in FIG. 8 as the packages 17a move continuously along the conveyor. Upper flange 62 of member 6 is formed with a downturned folder flange 65 at the inner edge of flange 62 extending longitudinally alongside of outer belt 29. Flange 65 is tapered upward toward the entry end of equipment 1 as indicated at 66 in FIG. 4.

As a package 17a continues to move from printer 57 along equipment 1 to the right in FIGS. 3 and 4, the outer portion 49b of a label 49 (FIG. 8) beneath flange 62 engages the tapered portion 66 of folder flange 65 to fold the outer portion 49b of label 49 downward at a 90° angle (FIG. 9) along a fold line 49c defined by the outer edge of outer belt 29. The 90° fold is just completed as the outer belt 29 passes over belt roll 32 (FIGS. 3, 4 and 9) as shown by the full line position 49d of the outer half of the label 49 in FIG. 9.

The forward end 67 of guide-folder flange 65 is extended by fold rod 68 which is directed upward and inward (FIGS. 4 and 3) from guide end 67 toward the bite of pressure pinch rolls 69. This fold rod 68 continues to direct and fold label portion 49d inward and upward (FIG. 10 to the U-shaped position shown in FIG. 11 after the package 17a passes beyond the roll 28 and the end of travel of the secondary belt 25 (FIG. 10) to the region just ahead of pinch rolls 69 (FIG. 11). Space is available permitting this U-fold because the end of the secondary belt 25 is spaced to the left of pinch rolls 69 (FIG. 4).

Label 49, having been formed to U-shape so that the portion 49d underlies the portion 49a beneath the package material flange 17a1 of the package 17a, is now in position to be completely sealed to package flange 17a1 as the package 17a passes on belt 15 past the pinch rolls 69 (FIG. 12). At this location the pinch rolls 69 complete the sealing of the label 49 to the package 17a.

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FIGS. 15, 16 and 17 show the package 17a which may contain round slices of cold meat, such as bologna, with a projecting edge flange 17a1 to which the label will be secured. Package 17a illustrated in FIG. 15 shows the condition of the parts after label 49 has had its edge portion 49a applied to package flange 17a1 as in FIG. 6, the label fold line being illustrated by a dot-dash line 70. The area where the label may be printed with indicia is indicated at 71.

FIG. 16 illustrates label 49 completely formed to U-shape and secured to the package 17a. If desired, label 49 may be formed with holes 71a extending through the folded portions which may be engaged over a hanger pin to display the package at a retail counter. Thus, label 49 also serves as hanger means for the package 17a.

FIG. 17 illustrates a package 72 with a folded label 73 applied thereto in which the sliced meat in the package may have a rectangular form rather than round. Two lines of packages 72 may be served by the labeling equipment 1 in the same manner described with references to the packages 17a and 17b.

FIG. 18 illustrates a package 74 of meat products of longer oval shape to which a label 75 is secured. Such an elongated package 74 may be served by the labeling machine with the package 74 extending substantially entirely across main belt 15 and the label 75 applied by either label applier 35 or 36.

Accordingly, the improved labeling equipment provides a construction that may be used to apply folded labels to packaged meat products in a continuous production line in a very simplified manner with the folded label projecting from one edge of the meat package so that the label presents label information visible from both sides or faces of the package and so that the folded label also provides hanger means for package display purposes; incorporates standard label applier units in the construction and operation of the continuous edge labeling equipment; provides for ease of operation and control; and provides a construction which eliminates difficulties, achieves the stated objects and solves problems existing in the art.

In particular, one important aspect of the invention is the open access to the packages travelling along the conveyor at all times except when the packages travel under the label appliers 35 and 36. This not only facilitates inspection but enables quick removal by monitors of any improperly labeled package.

Another important aspect of the invention is the positive directing, moving and support of the portions of a label which project from packages as such projecting portions are being folded. This prevents fouling of the equipment by sticky improperly applied or folded labels.

I claim:

1. In continuous labeling equipment for labeling meat products packages each having a package edge flange provided with upper and lower surfaces with a folded pressure-sensitive label projecting from and adhering to the upper and lower package edge flange surfaces; the combination of main conveyor belt means having side edges, a receiving end, and a discharge end; a secondary conveyor belt means adjacent each main belt side edge and extending from said receiving end to a secondary belt terminal spaced from said discharge end; an outer conveyor belt means adjacent each secondary belt means extending from said receiving end to an outer belt terminal spaced from the secondary belt terminal; means for moving said main, secondary and outer belt means synchronously generally in a common plane and in one direction from said receiving end to the respective discharge and terminal ends thereof; means for positioning meat products packages at spaced intervals on the main belt means with the edge flange of each package located in a predetermined position overlying one of the secondary belt means; means on the main belt means engageable with each package to move the package in ac-

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cordance with synchronized belt movement; label applying means for applying one edge zone of an adhesive face of a pressure-sensitive label, having an adhesive face and a display face, to the upper surface of said package edge flange overlying said secondary belt means; means for folding the label to U-shape to locate an outer label edge zone beneath said package edge flange with an outer adhesive face edge zone facing the lower package edge flange surface; and means for pressure-sealing the adhesive face edge zones of the folded label to the upper and lower package flange surfaces.

2. The construction defined in claim 1 in which frame means is provided on which the conveyor belt means are mounted; and in which a support member is provided along which the secondary and outer belt means travel with the support member located to support the secondary belt means while a pressure-sensitive label is being applied to the upper surface of a package edge flange overlying said secondary belt means.

3. The construction defined in claim 1 in which means is provided for printing indicia on the display face of a label after one edge zone of the label has been adhesively applied to the upper surface of a package edge flange.

4. The construction defined in claim 3 in which support means is provided below the secondary and outer belt means located to support the label in fixed position on the belt means during printing.

5. The construction defined in claim 1 in which the means for positioning meat products packages on the main belt means with the edge flange of each package located in a predetermined position overlying one of the secondary belt means includes a guide plate extending longitudinally of the conveyor belt means overlying and spaced above the secondary and outer belt means at each side of the main belt means, and in which the guide plate has a guide edge adapted to be engaged by a package shoulder as a meat package is moved on the main belt means from the receiving end toward the main conveyor belt discharge end.

6. The construction defined in claim 1 in which two label-applying means units are provided, one unit located and operative to apply labels from above the secondary belt means at one side edge of the main belt means, and the second unit located and operative to apply labels from above the secondary belt means at the other side edge of the said main belt means; and in which support means is provided located beneath each secondary belt means and below each label-applying unit.

7. The construction defined in claim 1 in which support means is provided on which the conveyor belt means are mounted; in which the label-folding means includes a

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folding flange mounted on the support means extending longitudinally of and spaced from the outer belt means at each side of the main belt means, and in which said folding flange cooperates with its respective outer belt means to engage an outer label edge zone and fold the same downward at a 90° angle while the remainder of the label with an edge zone applied to a package flange is supported on and travels with the secondary and outer belt means.

8. The construction defined in claim 7 in which means is provided for further folding the outer label edge zone upwardly and inwardly toward the applied label edge zone while the applied label edge zone and package flange is supported by the secondary belt means and after the package moving on the main belt means passes beyond the terminal end of the outer belt means.

9. The construction defined in claim 8 in which means is provided for completing the folding of the label to U-shape after the package moving on the main belt means passes beyond the terminal end of the secondary belt means.

10. In continuous labeling equipment for labeling meat products packages each having a package edge flange provided with upper and lower surfaces with a folded pressure-sensitive label projecting from and adhering to the upper and lower package edge flange surfaces while the packages are disposed horizontally and moving on conveyor means in a continuous path of travel; the combination of adjacent second conveyor means supporting an edge flange of a continuously moving package; means for flatwise applying one edge zone of an adhesive face of a pressure-sensitive label, having an adhesive face and display face, to the upper surface of said moving supported package edge flange; means for folding the label to U-shape to position an outer label edge zone with its adhesive face beneath the lower package flange surface while the package is continuously moving; and means for pressure-sealing the adhesive face edge zones of the folded label to the upper and lower package flange surfaces.

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U.S. Cl. X.R.

53—137; 156—479