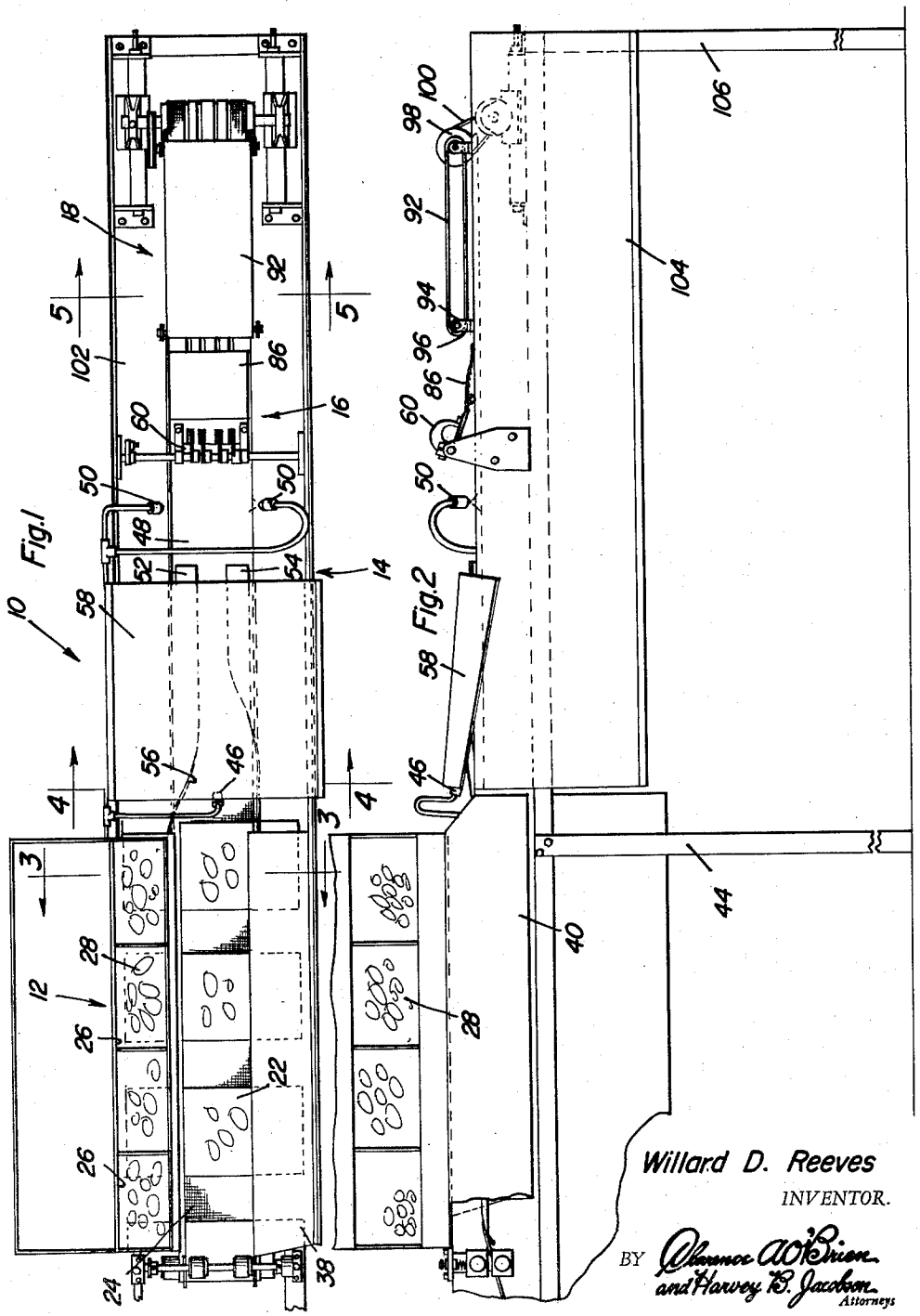
July 16, 1963 W. D. REEVES 3,097,464

GIBLET WRAPPING MACHINE

Filed Feb. 7, 1961 4 Sheets-Sheet 1



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GIBLET WRAPPING MACHINE

Filed Feb. 7, 1961 4 Sheets-Sheet 2

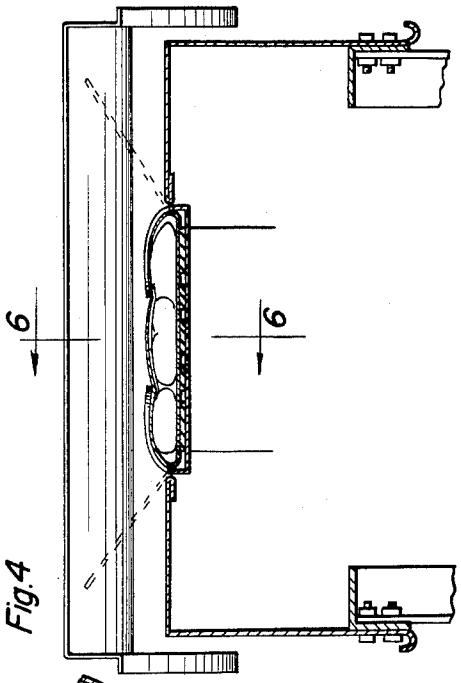


Fig.4

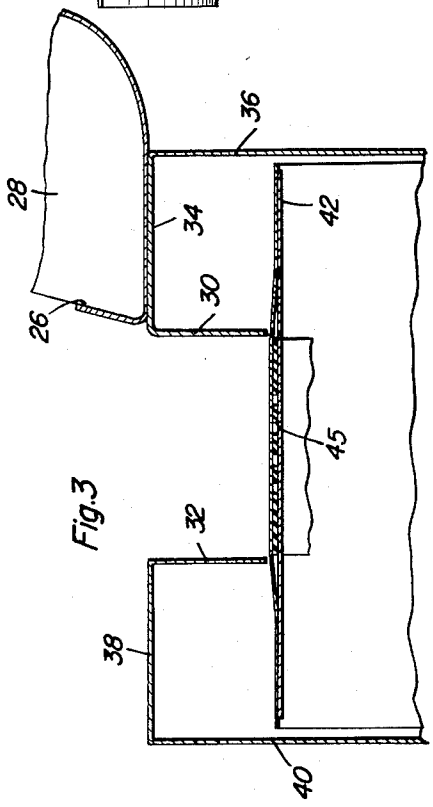


Fig.3

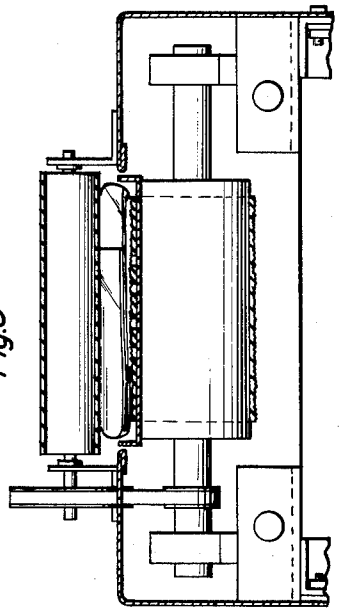


Fig.5

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GIBLET WRAPPING MACHINE

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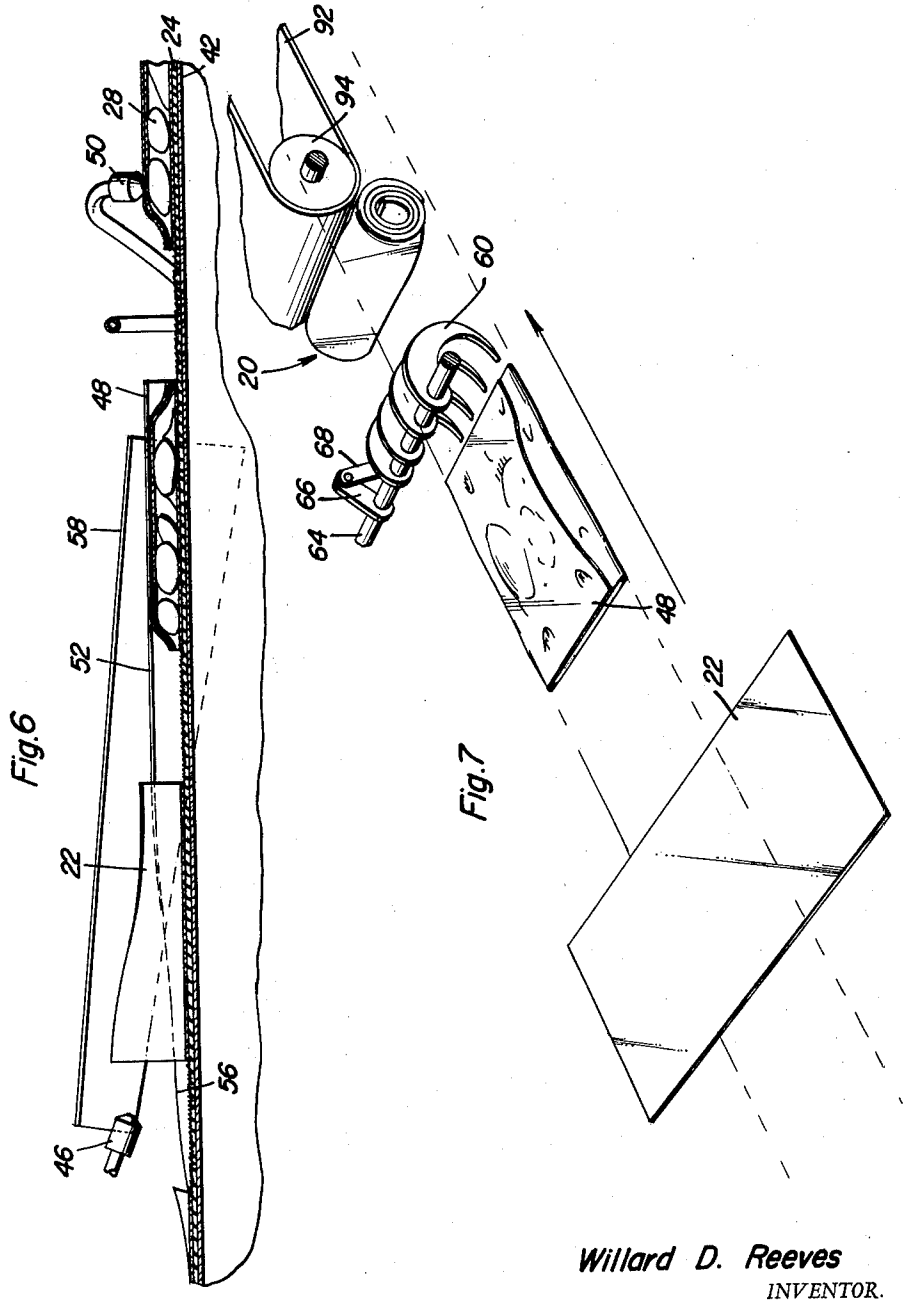


Fig.6

Fig.7

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GIBLET WRAPPING MACHINE

Filed Feb. 7, 1961 4 Sheets-Sheet 4

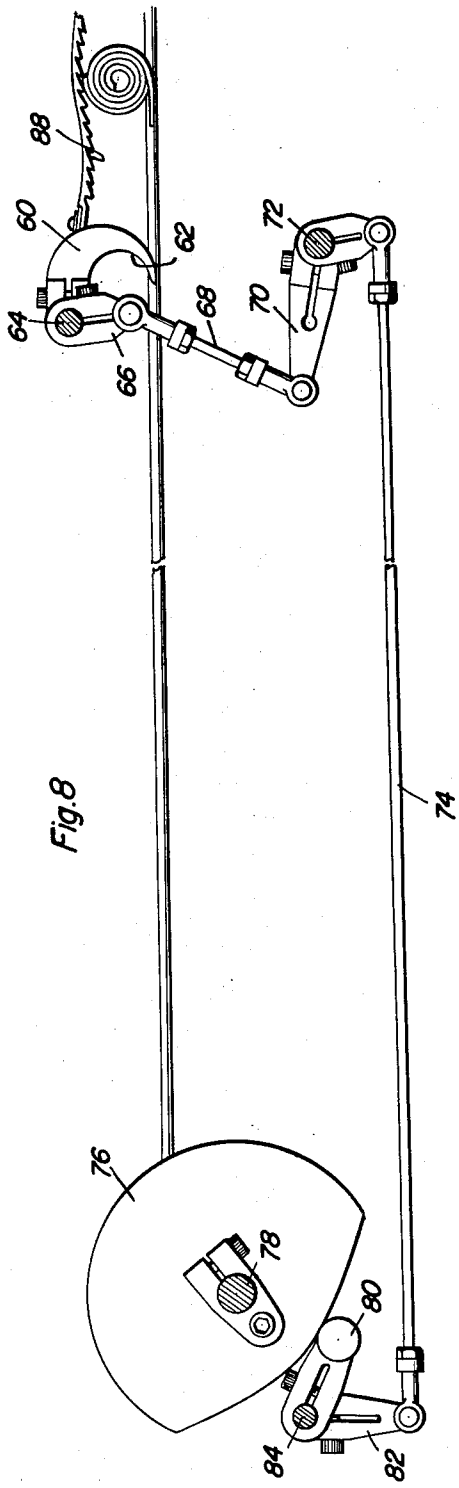


Fig.8

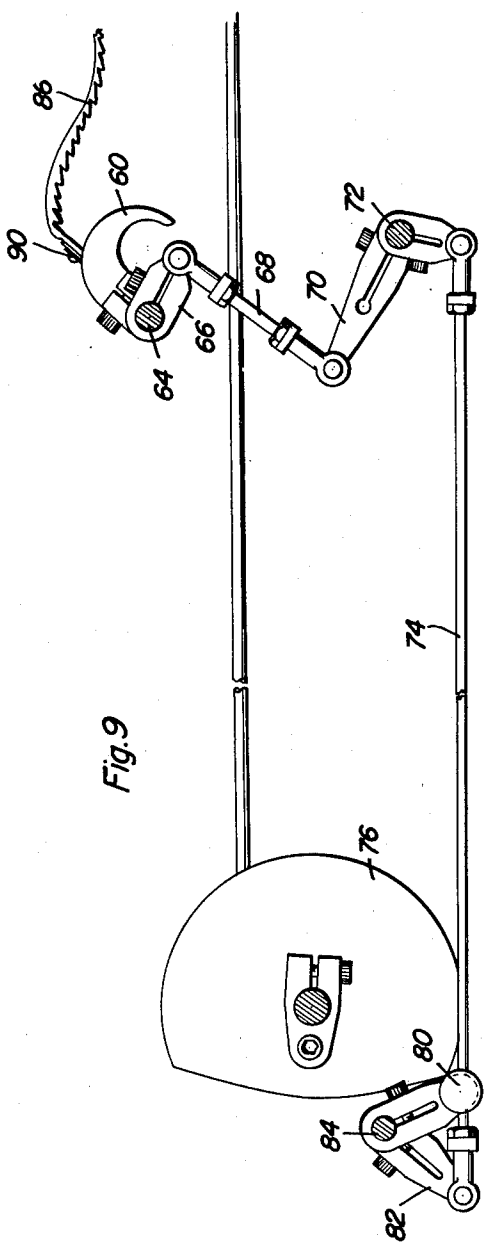


Fig.9

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United States Patent Office 3,097,464 Patented July 16, 1963

3,097,464

GIBLET WRAPPING MACHINE

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Filed Feb. 7, 1961, Ser. No. 87,603
7 Claims. (Cl. 53—209)

The present invention generally relates to a packaging machine and more particularly to such a machine for use in a poultry processing plant for packaging giblets.

In present practice, giblets are normally packaged by employing a number of individual workers who physically wrap or bag the giblets which necessitates the use of either precut giblet wraps or bags. This is very inefficient from the standpoint of labor and also causes considerable waste in the wraps and considerable inaccuracy in packaging. It is desirable to consistently package a neck, liver, gizzard, and heart in each package and failure to package the giblets with one of each of the above mentioned items in each package can cause the lowering of grade of the poultry involved. Therefore, it is the primary object of the present invention to provide a giblet wrapping machine which will effect a considerable saving in labor, enable the use of bulk rolls of wrapping paper, enable the placing of the individual giblets on the wraps by individual employees thereby obtaining an accurate count and further provide a machine which will automatically completely wrap each group of giblets in a separate wrapping as the wrap with the giblets thereon moves through the machine.

A very important object of the present invention is to provide a giblet wrapping machine including means forming the side folds initially and then forming the end folds by the use of curved fingers and further spirally winding the giblets and wrap by novel structural conveyor arrangement including a top and bottom conveyor moving at unequal linear speeds for rolling the package in a spiral manner.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, an in which:

FIGURE 1 is a top plan view of the wrapping machine of the present invention;

FIGURE 2 is a side elevational view of the construction of FIGURE 1;

FIGURE 3 is a transverse, sectional view taken substantially upon a plane passing along section line 3—3 of FIGURE 1 illustrating the conveyor, the giblets and the wraps prior to the side folds being formed;

FIGURE 4 is a transverse, sectional view taken substantially upon a plane passing along section line 4—4 of FIGURE 1 illustrating the manner in which the side folds are formed;

FIGURE 5 is a transverse, sectional view taken substantially upon a plane passing along section line 5—5 of FIGURE 1 illustrating the relationship of the upper and lower conveyors for rolling the package;

FIGURE 6 is a longitudinal, vertical sectional view taken substantially upon a plane passing along section line 6—6 of FIGURE 4 illustrating further structural details of the package with the side folds formed thereon;

FIGURE 7 is an exploded group perspective view illustrating the stages in forming the package;

FIGURE 8 is a schematic view in side elevation illustrating the end fold starting mechanism in operative position for receiving the end of a package to be spirally rolled; and

FIGURE 9 is a view similar to FIGURE 8 but illustrating the mechanism in package releasing position.

Referring now specifically to the drawings, the numeral 10 generally designates the giblet wrapping machine of the present invention which includes a giblet placing station generally designated by the numeral 12, a side fold station generally designated by the numeral 14 and an end fold station generally designated by the numeral 16. There is also provided a final rolling station 18 to form a spirally wrapped package which is relatively tightly wound with the spirally wrapped package designated generally by the numeral 20.

There is provided a paper roll supply mechanism which stores a large supply spool of paper of the correct width which is fed from the spool and cut transversely at suitable spaced intervals thereby providing a plurality of longitudinally spaced wraps 22 which moves along the upper run of an endless conveyor belt 24. The mechanism for supporting the paper reel or spool as well as the mechanism for cutting the paper is not disclosed and may take a suitable form and configuration since this specific structure does not form a part of the present invention except in its relationship to the remainder of the structure as disclosed.

At the giblet placing station, there is provided a plurality of bins 26 for receiving the various giblets 28. Extending above the edges of the conveyor belt 24 is a pair of vertical walls 30 and 32. The wall 30 is connected to a horizontal wall 34 extending under a bin 26 and terminating in a depending wall 36. The vertical wall 32 terminates in a horizontal wall 38 parallel and in alignment with the wall 34 and the wall 38 terminates in a depending front wall or apron 40. This structure enables a group of operators to stand alongside of the wall 40 and reach into the selective bins 26 and place the desired giblets 28 on each wrap 22 as it proceeds under the guide trough formed by the walls 30 and 32. The bins 26 are separated so that a different type of giblet is in each bin and there may be provided one employee responsible for placing one giblet from his assigned bin on each wrap 22 as it proceeds past the giblet placing station.

As illustrated in FIGURE 3, the wraps 22 are considerably wider than the distance between the walls 30 and 32 and extend beyond the conveyor belt 24. The conveyor belt 24 along with the outer edge portions of the wraps 22 are supported upon the top surface of a horizontal supporting member 42. All of the foregoing structure is supported by suitable depending support legs 44 or any other suitable mechanism. Also, the belt 24 is provided with longitudinal slots 45 therein for a purpose described hereinafter.

As the wraps 22 with the giblets 28 thereon leave the giblet placing station 12, they enter the side folding station and a water nozzle 46 discharges water thereon for purposes of maintaining the inwardly folded side edges 48 in overlapping relation and this is also accomplished by a pair of spray nozzles 50 after the side folds have been completely formed. The side folds are formed by plates 52 and 54 having curved entrance edges 56 turning the side edges of the wraps 22 upwardly into overlying relation as the package proceeds along with the conveyor belt 24. As illustrated in FIGURE 1, the inward folding plates 52 are in staggered relation to each other so that one side edge is folded inwardly prior to the other one and an overlying plate 58 is provided which prevents water spray from discharging laterally and also serves the purpose of aiding in the inward folding of the side edges. As the package is discharged from the side folding station 14, the nozzles 50 spray water thereon for retaining the side folded edges in contacting relation.

The conveyor belt 24 then carries the package with the side folded edges to the end folding station 16 which in-

cludes a plurality of curved teeth 60 which project through the slots 45 and have a concave edge 62 facing the approaching end of a package as it leaves the side folding station. As the end of the package engages the concave surface of the fingers 60, the end edge will roll around the inner surface of the fingers thus starting a spiral roll in the package.

The fingers 60 are mounted on a transverse supporting shaft 64 and the shaft 64 is provided with an offset arm 66 connected with an operating link 68. The operating link 68 has one end connected to a bell crank 70 supported on a transverse shaft 72 whereby oscillation of the shaft 72 will cause oscillatory swinging movement of the fingers 60 so that as the end edge of the package rolls up the concave edge of the fingers, the spiral wrap will begin and the wound or partially wound package is discharged from the fingers into the final wrapping station 18. Pivotal movement of the fingers 60 is effected by the offset arm 66, connecting link 68 and bell crank 70.

The bell crank 70 is connected with an elongated rod 74 extending back to the mechanism for cutting the wraps and the mechanism for driving the machine is provided with a cam 76 attached to the driving shaft 78. The cam 76 is in engagement with a follower 80 carried by a bell crank 82 supported at its apex by a pivot shaft 84 and having the other arm thereof connected to the rod 74 whereby rotation of the cam 76 will cause timed oscillation of the shaft 74 thus causing timed oscillation of the fingers 60 for moving the fingers into position for engagement by an end edge of the package having the side folds formed therein. As the fingers 60 are lifted, the partially formed spiral package will be discharged therefrom and be engaged by a flexible rubber plate 86 or the like having a roughened undersurface 88 and being attached to the fingers 60 by brackets 90 whereby the flexible panel 86 will serve to further partially roll the packages into a spiral manner for discharge into the final station 18 which includes an upper conveyor belt 92 disposed in opposition to the conveyor belt 24. The upper conveyor belt 92 is entrained over rollers 94 carried by brackets 96 and is driven by a pulley 98 and a V-belt 100 whereby the linear movement of the conveyor belt 92 is less than the linear speed of the belt 24 thus spirally completing and tightening the package 20 for forming a complete and neatly formed package having an accurately counted number of giblets therein.

The horizontal wall or table structure is continuous throughout the length of the device as designated by reference numeral 102 and this is also true of the vertical apron or wall 104 and the device may be supported by any suitable supporting legs 106 or the like. Suitable take-up mechanism is provided for the conveyor belt for maintaining the belt at a proper degree of tautness at all times and suitable brackets are provided for supporting the various nozzles and transverse shafts and other mechanism so that substantially all of the operating mechanism is concealed and the device is quite safe in use since the only manual operation involves the placing of the giblets on the wraps. Thereafter, the inward folding of the side edges into overlapping relation and the initial rolling of the end edge and complete spiral rolling and packaging performed by the overlying conveyor is all automatically carried out as the finished packages are discharged into any suitable receptacle, chute, or the like.

The three jets of water on the side fold arrangement allow the package to come out of the side fold arrangement in a wet, compact form and this aids in the end fold being made. One of the nozzles wets the wrap in the center and there is provided a nozzle on each side to wet the side of the wrap at the same time the side fold is being made. The end fold mechanism consists of the series of curved fingers fitting down into the grooves of the belt and the fingers are operated by an eccentric or cam on the main paper sheeter to synchronize operation of the fingers with the spacings between the sheets. After the end fold has been started, the package travels under the spiral roll belt where additional water sprays add more water to the wrap. This water aids in obtaining a tighter package and roll of giblets which will hold together and will not become unwound. Water sprays are also installed under the belt on the return side and add moisture to the belt which moisture in turn aids the cut sheets or wraps of paper to adhere to the belt for further loading and positioning. By employing the present arrangement, a single neck, liver, gizzard and heart may be placed on each wrap or sheet accurately since each individual component may be placed by a separate worker. This provides highly accurate packaging which is desirable. Use of the proper width of paper cut at a proper length will effect a considerable saving in paper. The guide rails on the side are shaped in order to make the side fold automatically and the end folds are also formed automatically by virtue of the specific structure provided.

The present invention also enables a smaller quantity of giblets being in process at all times thereby ensuring freshness and low bacteria count. The consolidation of the process and elimination of various small containers and many hand operations reduces the overall cost of packaging and also reduces the physical handling of the giblets thereby reducing the bacteria count and providing a more sanitary arrangement.

If desired, over each of the bins there is provided a separate or compartmented hopper for supplying the giblets to the bins. Also, the paper supporting and cutting mechanism may conveniently be housed in a stainless steel housing and this is also true of the side folding and end folding arrangements so that the water spray will be contained within the confines thereof.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A giblet wrapping machine comprising a conveyor belt for carrying a plurality of spaced sheets of wrapping material, a plurality of bins containing giblets adjacent one end of the conveyor belt whereby workers may place giblets on the sheets, means adjacent the conveyor belt for folding the edges of the sheets inwardly into overlying relation, means overlying the conveyor belt for engaging the end of the folded sheets and causing the end to move in a spiral manner for spirally rolling the folded sheet with the giblets therein, and water spray means provided for spraying water onto the folded sheet for maintaining the folded sheet in folded condition during the end rolling operation.

2. The structure as defined in claim 1 together with means overlying the conveyor belt for tightening the spirally wound package.

3. The structure as defined in claim 2 wherein said means for tightening the spirally wound package includes an endless conveyor belt overlying a short portion of the first conveyor belt and travelling at a lesser linear speed thereby further tightening the spiral wind of the package.

4. The structure as defined in claim 3 wherein said first conveyor belt is supported on a horizontal supporting plate, vertical walls defining the limits of transverse width of the first conveyor belt for retaining giblets on the sheets and forming a guide for placing the giblets thereon.

5. A wrapping machine comprising a conveyor belt for carrying a plurality of spaced sheets of wrapping material, means adjacent the conveyor belt for folding the edges of the sheets inwardly into overlying relation, and means overlying the conveyor belt for engaging the end of the folded sheets and causing the end to move in a spiral manner for spirally rolling the folded sheet, said

end spiralling means including a plurality of curved fingers, said fingers having a concave edge surface facing the folded sheet, said conveyor belt having recesses in the upper surface thereof receiving the fingers whereby the folded sheet may ride up onto the concave surface for starting a spiral, means oscillating the fingers in synchronization with the spacing of the sheets on the conveyor belt thereby elevating the fingers to an inoperative position after the spiralling of the folded sheet has begun, a flexible plate attached to the fingers, a roughened undersurface on said plate, said flexible plate engaging the partially rolled sheet and tending to hold the top portion of the partially rolled sheet while the conveyor belt moves the lower portion thereby completing the spiralling of the sheet.

6. The structure as defined in claim 5 including means for tightening the spirally wound sheet including an endless conveyor belt overlying a short portion of the conveyor just beyond the flexible plate and travelling at a lesser linear speed thereby further tightening the spiral wind of the sheet.

7. The structure as defined in claim 6 wherein water spray means is provided for spraying water onto the folded sheet for maintaining the folded sheet in folded condition during the end rolling operation.

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