OLIVE STUFFING MACHINE

Inventor: William W. Smith, Los Gatos, Calif.
Assignee: FMC Corporation, San Jose, Calif.

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References Cited
UNITED STATES PATENTS
2,597,933 5/1952 Hungate

ABSTRACT

An olive stuffing machine includes a spiral cutting blade with a helical configuration for simultaneously slicing freeze-dried pimiento held in a feed cartridge and advancing the pimiento for the next cut. A synchronized pusher stuffs the sliced pimiento into aligned pitted olives before the olives are packed in a salt water solution for reconstitution of the freeze-dried pimento.

6 Claims, 7 Drawing Figures
OLIVE STUFFING MACHINE


BACKGROUND OF THE INVENTION

Prior to the present invention the only feasible procedure for stuffing olives has been by hand. Hand stuffing requires a worker to pick up a pitted olive and insert, usually with a specially designed hand tool, a folded strip of pimiento into the pit cavity. The folded strip of pimiento has a slippery texture and is very difficult to guide into the small cavity, therefore, several attempts at stuffing a single olive are frequently necessary. It is apparent that due to the time consuming manual process and the cost of labor, hand stuffing is very expensive and in some labor markets, uneconomical.

Attempts have been made at automating or mechanizing the olive stuffing process but to the applicant’s knowledge, no one has devised a machine that is capable of successfully and economically inserting pimiento pieces into the small cavity of a pitted olive. Firstly, the pimiento is hard to handle because of its flexible and slippery texture and secondly, because of its flexibility, it is very difficult to stuff into the small olive pit cavity.

DESCRIPTION OF THE PRIOR ART

Applicant is aware of the following three patents disclosing machines for stuffing raw or cooked pimiento into pitted olives; U.S. Pat. No. 2,567,590 issued to G. W. Ashlock, Jr. on Sept. 11, 1951; U.S. Pat. No. 2,597,933 issued to W. Hungate on May 27, 1952; and U.S. Pat. No. 2,637,653 issued to G. W. Ashlock, Jr. on May 5, 1953.

SUMMARY OF THE INVENTION

The present invention generally concerns the stuffing of foods with freeze-dried or other edibles and in one preferred form concerns stuffing pitted olives with freeze-dried pimiento. For convenience the apparatus will be described in connection with the stuffing of pimiento pieces into previously pitted olives, it being recognized that other edibles could be stuffed into olives or other foods with substantially the same apparatus.

Heretofore, attempts at mechanically stuffing olives with pimiento have been unsuccessful because of the flexible and slippery texture of blanched pimiento and because of the inherent handling problems that accompany the process. Applicant has found that if the pimiento is freeze-dried it is stiffer, and of course, drier than it is in its blanched state and is very easy to handle. The pimiento can thus be readily cut into strips and mechanically stuffed into olives in a very reliable manner. After the olives have been stuffed they can be conventionally packed in cans or jars wherein the pimiento will be reconstituted in the salt water solution of the pack.

One embodiment of applicant’s apparatus includes a spiral rotating cutting blade for severing strips of folded freeze-dried pimiento or other edibles from a larger piece, and a pusher for synchronously pushing the severed strips into previously pitted olives. The apparatus can be adapted for use on existing pitting machines where the olives have previously been oriented so that the pit cavities all face in the same direction, or it can be used with an orienting apparatus that, by conventional means, takes randomly oriented pitted olives and aligns them with the core cavities uniformly directed. Accordingly, it is an object of the present invention to provide an apparatus for successfully stuffing olives with strips of pimiento.

It is another object to provide an apparatus for cutting freeze-dried pimiento into strips and stuffing the strips of freeze-dried pimiento into previously pitted olives.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of the olive stuffing apparatus with parts broken away for clarity.

FIG. 2 is a fragmentary plan view of the apparatus of FIG. 1 to illustrate the spiralling feature of the cutting blade.

FIG. 3 is a fragmentary side elevation with parts in section, of the apparatus of FIG. 1 to illustrate the helical configuration of the cutting blade.

FIG. 4, 5, 6 and 7 are operational views in plan of the apparatus of FIG. 1 to show the synchronization between the cutting blade and the pusher.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In preparing pimiento P for use in the present invention, raw pimiento is cored and laid open before it is put through conventional washing and blanching processes. After being so treated each portion of pimiento meat is cut into relatively large pieces, each piece being folded over and freeze-dried according to known freeze-dry techniques. Preferably the pimiento meat is freeze-dried until its moisture content is approximately 1 percent. This is a variable figure, however, inasmuch as it is only important that the pimiento be dried to a state wherein it is easy to handle.

The freeze-dried pimiento meat is very stiff and brittle when first removed from the freeze-dry apparatus, but readily absorbs moisture from the atmosphere and becomes desirably textured and easy to work with. It is first trimmed into a rectangular shape and folded with the aforementioned fold preferably extending in the longitudinal direction and, in the embodiment of the invention illustrated in FIGS. 1 to 7, the folded pimiento P is placed in a feed cartridge 10 (FIG. 1) of a stuffing apparatus 12 so as to protrude from the bottom thereof. It is to be understood that other edibles raw, cooked or freeze-dried such as celery, carrots, cheese, etc., could be placed in the cartridge 10 if it were desired to stuff the olives with any of these other edibles. The cartridge 10 is a rectangular box having its two opposite ends open and adapted to guide the pimiento as it is advanced, by means disclosed below, longitudinally through the cartridge.

The stuffing apparatus 12 includes a unique rotary cutting disc 14 disposed beneath the cartridge 10 and in partially underlying relationship with the freeze-dried pimiento P protruding from the bottom opening of the cartridge. The cutting disc 14 is rigidly fixed on the upper end of a vertical rotating shaft 18 which shaft has its longitudinal axis laterally spaced from but parallel to the folded pimiento P. The lower end of the shaft 18 carries a fixed drive pulley 19 which is linked to a gear housing 20 by a V-belt 22. The gears in housing 20 are driven through V-belt 24 by a motor 25.
The cutting disc 14 when viewed in plan as in FIG. 2, can be seen to have a spiral cutting edge 16. The cutting edge 16 begins at 16a with a small radius and spirals outwardly to its largest radius at its terminus 16b. The radius of the leading edge 16a is just sufficient to reach the nearest flat side of the laterally displaced pimiento P while the terminus 16b of the cutting edge has a radius sufficient to extend completely through the pimiento. As the disc 14 is rotated in the direction of the arrows in FIGS. 1, 2 and 4 to 7, the cutting edge 16 of the disc penetrates deeper into the pimiento, slicing from the flat side of the pimiento nearest to the shaft 18 through to the flat side furthest from the shaft. As best seen in FIG. 3, the cutting edge 16 is also of helical configuration with the leading edge 16a of the cutting edge 16 above the terminal edge 16b. It is apparent that as the disc 14, which cannot move vertically, makes a complete revolution with the cutting edge 16 penetrating deeper into the pimiento P, the helical lower face 14L of the disc 14 will push downwardly on the pimiento P, advancing the pimiento downwardly through the pimiento cartridge 10. Therefore, as the terminal edge 16b is completing a cut through the pimiento, as best seen in FIGS. 2 and 3, the leading edge 16a is beginning a subsequent cut at a level above the cut being completed. Thus, each severed piece of pimiento will have a thickness equivalent to the vertical displacement of the leading edge 16a from the terminal edge 16b. The severed pieces of the pimiento drop into a chute 27 where they can be readily stuffed into pitted olives O which are sequentially passing in alignment with the chute 27 in a manner to be explained more fully later. Synchronized and cooperating with the cutting disc 14 is a pimiento pusher 26. The pusher 26 is part of a crank mechanism generally designated 28 that is geared to have a time-cycle equivalent to that of the cutting disc 14. The pusher 26 has a head portion 30 for engaging the severed strips of pimiento P lying in the chute 27, and a push rod portion 32 that is pivotally connected to a rocking link 34. The push rod 32 of the pusher is slidably supported by a guide block 36, anchored to plate 37, to assure linear reciprocating movement of the pusher. The end of the link 34 not connected to the push rod is pivotally connected to one end of a crank arm 38 which has its opposite end fixedly secured to a rotating shaft 40. The shaft 40 is driven through pulleys 42, 43, V-belt 44 and gear housing 20, by the motor 25.

As shaft 40 rotates, the crank arm 38 is rotated causing link 34 to simultaneously rock up and down and back and forth effecting a linear reciprocating movement of the push rod 32 through the guide block 36. This reciprocating movement of the push rod causes the head 30 of the pusher 26 to slide back and forth in the chute 27. As seen in FIG. 3, in full line representation, when the head 30 of the pusher 26 is fully retracted, it will not obstruct the free fall of a severed strip of pimiento P into the chute 27, and in its fully extended position, shown in phantom lines in FIG. 3, it is disposed so that a strip of pimiento in front of the head will be fully stuffed into a pitted olive O with a desirable slight overhang as at 46 (FIG. 1).

As stated above, the cutting disc 14 and pusher 26 have the same time cycles and are synchronized to cooperatively sever strips of pimiento from that held in the cartridge 10 and stuff the severed strips into pitted olives O. This synchronization and cooperation is best illustrated by reference to FIGS. 4 to 7. In FIG. 4 the pusher 26 is fully retracted and the cutting disc is at the point in its cycle where the terminal edge 16b of the cutting edge 16 is just completing a cut through the pimiento P to drop a first pimiento strip into the chute 27, and the leading edge 16a is beginning a subsequent cut at a point higher up on the pimiento. The severed strip of pimiento drops into the chute 27 and is in position to be stuffed by the pusher 26 into an aligned and pitted olive O. When the disc has rotated through 90° as depicted in FIG. 5, the pusher head 30 has begun to move the severed pimiento strip along chute 27 toward the awaiting pitted olive. An additional 90° rotation of the cutting disc 14 leaves the elements in the position shown in FIG. 6, with the cutting edge 16 more than half way through the pimiento in the cartridge and the pusher fully extended having stuffed the severed strip of pimiento into the aligned olive. After an additional 90° rotation (FIG. 7) the next cut is almost completed and the pusher 26 is in its retracting stroke repositioning itself, to the position of FIG. 4, for the following cycle. It is seen that, as the cutting disc 14 passes through a complete revolution, the pusher 26 completes a full cycle and is repositioned to begin a subsequent identical cycle.

In operation, pimiento meat which has been cored, treated, folded and freeze-dried as discussed above is placed in cartridge 10 so as to protrude from the bottom thereof. Olives O which have been previously pitted and oriented so that their open ends are uniformly directed, are placed on a continuously running conveyor belt 48 disposed so as to convey the olives on a path normal to the path followed by the pusher 26. The conveyor belt 48 has retaining caps 50 to hold the olives in their prearranged position. The conveyor belt 48 is continuously driven by the motor 25 and V-belt 52 through a gear box 54 and synchronized with the cutting disc 14 and pusher 26 so that pitted olive is always aligned with the chute 27 as the pusher 26 completes its extending or stuffing stroke. In the event the stuffing apparatus 12 is adapted for use with a pitting machine, the belt 48 would, of course, be driven by the motor on the pitting machine which would of necessity need to be synchronized with the stuffing apparatus. The pusher 26 operates so rapidly that the pimiento can be stuffed into the olive without momentarily stopping each olive at the end of the chute 27.

On the first revolution of the cutting disc 14 a strip of pimiento is severed from the bottom thereof as described above. While the strip is being severed, the bottom surface 14L of the cutting disc is pushing the pimiento in the cartridge 10 downwardly thus positioning it for the subsequent cut. It should be pointed out at this point that the pimiento remaining in the cartridge 10 is supported by the upper surface 14U (FIG. 3) of the cutting disc 14 at all times. Just as the severed strip of pimiento drops into chute 27, the pusher 26 begins its extending stroke and stuffs the severed strip into the aligned olive O positioned at the end of the chute 27. As a subsequent strip of pimiento is being cut, the pusher 26 is retracted and the conveyor belt 48 continues to advance the next pitted olive into a position to be stuffed. This sequence is repeated until the desired number of olives have been stuffed. It is evident that the cartridge 10 can be replenished with folded pieces of freeze-dried pimiento as the stuffing process is con-
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continued so that the apparatus need be stopped only when the desired number of olives have been stuffed. Once the olives have been stuffed they are discharged from the conveyor belt 48 and conventionally packed in jars of salt water wherein the freeze-dried pimiento is reconstituted leaving the stuffed olive in the desired edible state.

It is recognized that the embodiment of the stuffing apparatus herein disclosed is capable of stuffing olives with many varieties of edibles, as set forth above, and applicant does not wish to be limited to stuffing with pimiento only. It is also recognized by applicant that edibles other than pimiento which are hard to handle, such as anchovies, can be freeze-dried before being placed in the feed cartridge thereby making them more manageable and improving the efficiency of the apparatus.

Although the best mode contemplated for carrying out the present invention has been herein shown and described, it will be apparent that modification and variation may be made without departing from what is regarded to be the subject matter of the invention.

What I claim is:

1. In an olive stuffing apparatus wherein pitted olives are aligned for stuffing, the improvement comprising means for retaining an elongated quantity of pimiento, cutting means for simultaneously cutting a strip of pimiento from the elongated quantity and advancing the elongated quantity for the next cut, and pusher means for stuffing the said cut strip of pimiento into an aligned olive.

2. The apparatus of claim 1 wherein said cutting means has a three-dimensionally expanding peripheral cutting edge, said cutting edge continuously and simultaneously expanding longitudinally along, azimuthally about and radially away from an axis parallel to the direction of advancement of the elongated quantity of pimiento within the retaining means so that as the cutting means is rotated adjacent one end of the elongated quantity of pimiento, the cutting edge slices deeper into the advancing pimiento.

3. The apparatus of claim 1 wherein said cutting means includes a rotating helical conveyor so that the pimiento is advanced unidirectionally while the cut is being made.

4. In an olive stuffing apparatus wherein pitted olives are aligned for stuffing, the improvement comprising means for retaining an elongated quantity of pimiento, cutting means for simultaneously cutting a strip of pimiento from the elongated quantity and advancing the elongated quantity for the next cut and pusher means for stuffing the said cut strip of pimiento into an aligned olive, said pusher means being synchronized with said cutting means so that each time a strip of pimiento is cut from the elongated quantity of pimiento, the strip is stuffed into an aligned olive during the cutting of a subsequent strip.

5. In an olive stuffing apparatus wherein pitted olives are aligned for stuffing, the improvement comprising means for retaining an elongated quantity of pimiento, means defining both a helical conveyor and a cutter and including a cutting edge continuously expanding from the major axis thereof, means for rotating said last named means for simultaneously cutting a strip of pimiento from the elongated quantity of pimiento as the remainder of said elongated quantity of pimiento is advanced and supported for a succeeding cut, and pusher means for stuffing the strip of pimiento into an aligned olive.

6. In an olive stuffing apparatus wherein pitted olives are aligned for stuffing, the improvement comprising means for retaining an elongated quantity of pimiento, cutting means for simultaneously both cutting a strip of pimiento from the elongated quantity and also unidirectionally advancing the strip, and pusher means for receiving the strip and for stuffing the strip of pimiento into an aligned olive.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,772,982
DATED : November 20, 1973
INVENTOR(S) : WILLIAM W. SMITH

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 39 after "that" insert --a--.

Signed and Sealed this fourteenth Day of October 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks