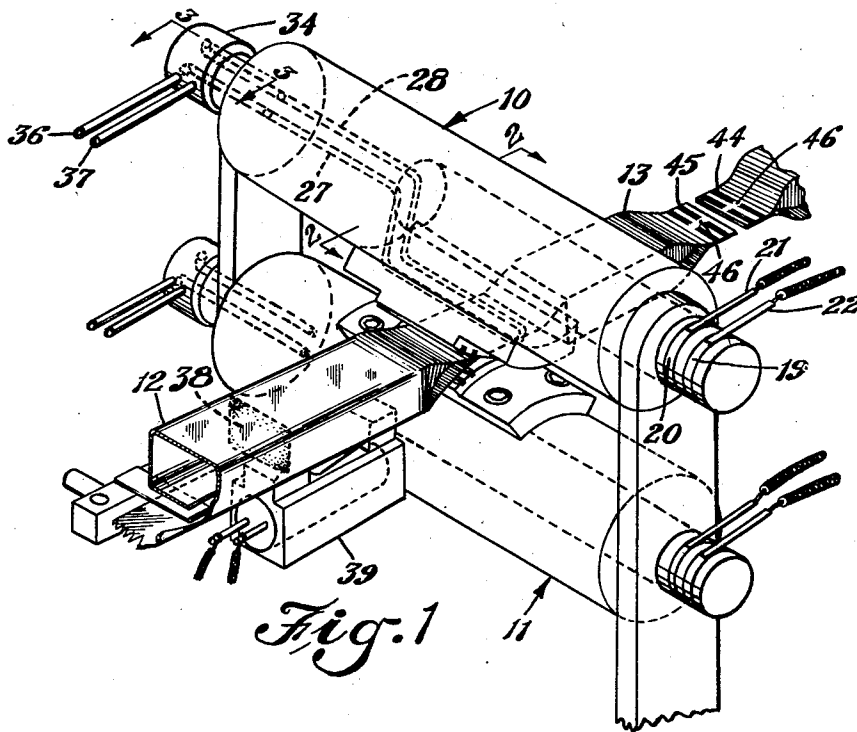


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PACKAGING MEATS, VACUUM
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PACKAGING MEATS, VACUUM

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7 Claims. (Cl. 53—182)

The present invention relates to an improvement in apparatus for use in the automatic packaging of product wherein the atmospheric conditions within the package are controlled.

In certain types of automatic packaging, units of product are placed within a tube of heat-sealable material. The tube may be either formed about the units or the units may be inserted in a preformed tube. In any event, the units are positioned at spaced intervals along the tube whereupon the tube is partially sealed along two spaced lines across the tube, with the tube being severed between the two partial seals to form a partially formed package. The atmospheric conditions within the partially formed package are adjusted through the openings left at the line of partial seals at each end, whereupon the remaining portion of the end is sealed to maintain those atmospheric conditions within the package. This adjustment of the atmospheric conditions can be performed by means of needles or the like inserted through the unsealed portions of the ends, or by placing the partially formed package in an enclosed chamber in which the atmosphere is adjusted. In the described embodiment the latter procedure is employed.

One of the problems that has been encountered in such apparatus is an obstructing of the supposedly unsealed portions at each end of the package that are employed to gain access to the interior of the package to adjust the atmospheric conditions therein. The principal object of the present invention is to provide an apparatus to eliminate the obstruction of these openings so that good communication is maintained with the interior of the package through the unsealed portions to permit the adjustment of the atmospheric conditions therein.

Other objects and advantages will be apparent from the following description taken in conjunction with the drawings, in which:

Figure 1 is an isometric view of an embodiment of the invention;

Figure 2 is a section taken at line 2—2 of Figure 1; and

Figure 3 is a partial section taken at line 3—3 of Figure 1.

The general type of machine in which the present invention is employed is illustrated in United States Patent No. 2,546,721. In the structure illustrated and described in this patent a tube is formed about units of product, with the atmospheric conditions being adjusted in the tube as it is formed about the product. The tube then passes between a pair of rollers which make two seals across the ends of the package and sever the tube between the seals to separate the unit.

In modified versions of this machine the same apparatus is employed to form a tube about the product, but no effort is made to adjust the atmospheric conditions within the package as it is formed. The rotary sealing heads illustrated are modified to the extent that a seal is not made all the way across the width of the tube, with said vents being left through which the atmospheric conditions

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may subsequently be adjusted. It will be obvious that this is done merely by modifying the size and shape of the sealing members on the rolls of the apparatus. After the packages have been partially sealed and severed with this apparatus, the conveyor of the apparatus takes the partial packages to a vacuum chamber such as that illustrated and described in United States Patent No. 2,676,440, wherein the atmospheric conditions are adjusted within the package and a final seal is made across the unsealed portions of the ends of the package to maintain the atmospheric conditions after the package has been removed from the chamber.

Referring to Figure 1, the present invention comprises a roller generally 10 which cooperates with a second roller generally 11 in making the partial seals across the width of the tube 12 and at the same time cuts the tube into partially formed packages 13. The two rollers are mounted in the machine and driven in the same manner as the rollers illustrated in Patents Nos. 2,546,721 and 2,676,440.

Roller 10 has a pair of sealing heads 14 and 15, each of which heads consists of a plurality of parallel bars 16. A heating element 18 heats the portion of the roller in which the sealing heads 14 and 15 are located, which heat is conducted through the material of the roller to bars 16. The electrical heating element is connected to a pair of commutators 19 and 20 to which the electricity is conducted by means of brushes 21 and 22. Each of bars 16 of sealing heads 14 and 15 has a gap therein such as is shown at 23 in sealing head 14 so as to leave a portion of the width of the tube unsealed during the sealing process for the subsequent adjustment of the atmosphere within the package.

A cutter 25 is mounted on roller 10 between sealing heads 14 and 15. The cutter is surrounded by a thermal-insulating material 26 to eliminate, or at least reduce, the heat transfer from heater 18 to cutter 25. The block from which cutter 25 is formed has a pair of passageways 27 and 28 which are connected together at end as shown at 29. The passageways 27 and 28 have radial openings 30 and 31 at the opposite end of roller 10 from commutators 19 and 20, which radial openings correspond with slots 32 and 33 in cap 34. Packing members 35 at each side of slots 32 and 33 provide a seal about the periphery of roller 10. A pair of pipes 36 and 37 connected to cap 34 communicate with slots 32 and 33 and provide means for circulating a coolant through passageways 27 and 28 to reduce the temperature of cutter 25.

Rollers 10 and 11 are identical and the foregoing description of the structure of roller 10 adequately describes the structure of roller 11.

In operation a film of heat-sealable material such as a polyethylene coated cellophane is formed into a tube about units 38 of product. The overlapping edges of the film are sealed together by a sealing unit generally 39 to finish the film into a tube 12. The tube is then fed between rollers 10 and 11 with the sealing heads 14 and 15 and the cutters 25 of each roller coming together with the respective elements of the opposite roller between each unit of product. Sealing heads 14 of each roller form a seal 44 across part of the tube, while sealing units 15 form a similar seal 45 partially across an adjacent portion of the tube. In each case the gaps 23 in the bars 16 leave a gap 46. The cutters 25 sever the tube into semi-finished packages intermediate the two areas in which the seals 44 and 45 are placed. The important feature of the present invention is the maintaining of cutters 25 at a reduced temperature. In the preferred embodiment I do this both by circulating a coolant through the passageways associated with cutters 25 and by providing a thermal insulation between the cutters and the adjacent sealing heads. However, in some embodiments one or the other of these may be

eliminated. The maintaining of the cutters at a reduced temperature prevents the cutters from tacking together the edges of the gap 46 in seals 44 and 45. Since there is no tacking together of these edges, no problem is encountered in subsequently adjusting the atmospheric conditions within the package when it is placed in a vacuum chamber of the type illustrated in Patent No. 2,676,440.

The foregoing detailed description is only for clearness of understanding and for the purpose of complying with 35 U. S. C. 112, and I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

I claim:

1. A device for use with a controlled atmosphere packaging device of the type wherein a tube of heat-sealable material is formed with the units of product to be packaged inside said tube at spaced intervals with said tube being severed beyond each end of each unit to form a partially finished package which is put in a chamber wherein the atmosphere is controlled and the ends sealed to form a completed package, said device comprising a member having heated portions for sealing the tube intermediate said units and partially across the width of the tube and a cutter between said heated portions to sever the tube into partially finished packages, said cutter being cooled whereby it does not cause the edges to cohere thereby preventing the subsequent adjusting of the atmosphere.

2. The device as in claim 1 including a coolant passageway within the cutter in communication with a supply of coolant.

3. A device for use with a controlled atmosphere packaging device of the type wherein a tube of heat-sealable material is formed with the units of product to be packaged inside said tube at spaced intervals with said tube being severed beyond each end of each unit to form a partially finished package which is put in a chamber wherein the atmosphere is controlled and the ends sealed to form a completed package, said device comprising a member having heated portions for sealing the tube intermediate said units and partially across the width of the tube and a cutter between said heated portions to sever the tube into partially finished packages,

said cutter being thermally insulated from said heated portions.

4. The device as in claim 3 including a barrier of material of low thermal conductivity between the cutter and said heated portions.

5. A device for use with a controlled atmosphere packaging device of the type wherein a tube of heat-sealable material is formed with the units of product to be packaged inside said tube at spaced intervals with said tube being severed beyond each end of each unit to form a partially finished package which is put in a chamber wherein the atmosphere is controlled and the ends sealed to form a completed package, said device comprising a member having heated portions for sealing the tube intermediate said units and partially across the width of the tube and a cutter between said heated portions to sever the tube into partially finished packages, said cutter being thermally insulated from said heated portions and being cooled whereby it does not cause the edges to cohere thereby preventing the subsequent adjusting of the atmosphere.

6. The device as in claim 5 including a barrier of material of low thermal conductivity between the cutter and said heated portions, and a coolant passageway within the cutter in communication with a source of coolant.

7. A device for use with a controlled atmosphere packaging device of the type wherein a tube of heat-sealable material is formed with the units of product to be packaged inside said tube at spaced intervals with said tube being severed beyond each end of each unit to form a partially finished package which is put in a chamber wherein the atmosphere is controlled and the ends sealed to form a completed package, said device comprising a power driven, cylindrically shaped member, said member having at least two spaced heated sealing heads positioned parallel to the longitudinal axis of said member, said heads being constructed and positioned to seal only a portion of the width of said tube, a cutter on said member intermediate said heads and parallel to the longitudinal axis of said member to sever the tube between the seals made by said heads, said cutter being thermally insulated from said heads and being cooled whereby it does not cause the edges to cohere thereby preventing the subsequent adjusting of the atmosphere.

No references cited.