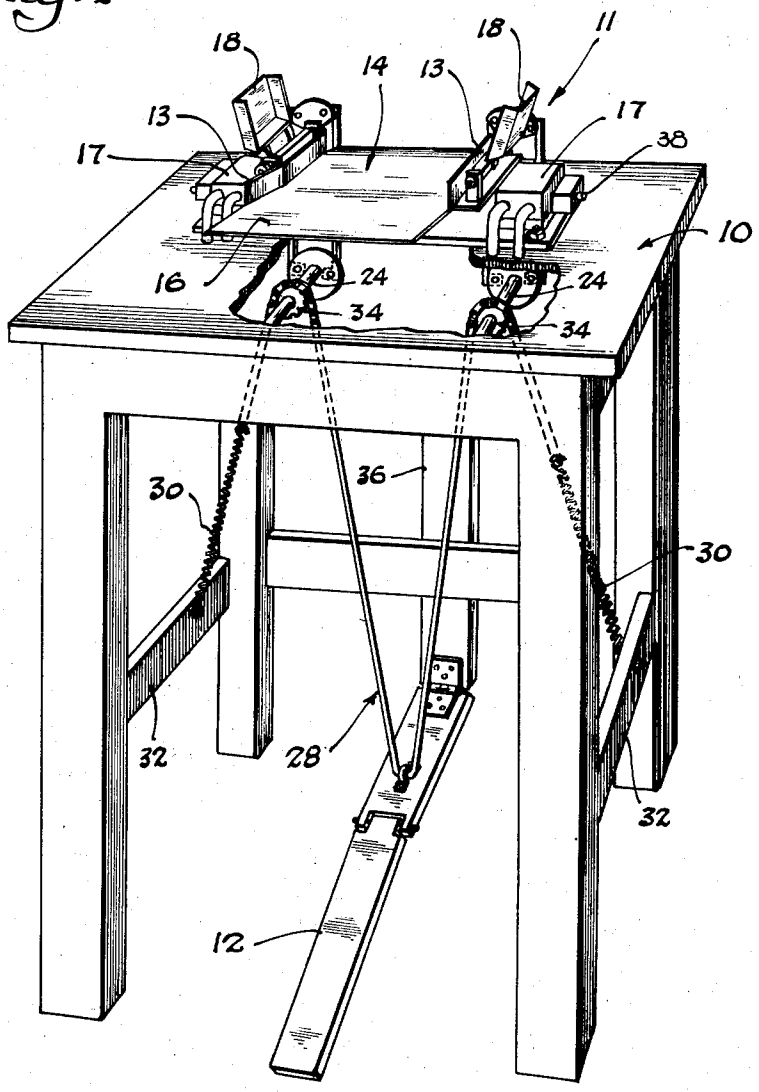
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POULTRY PACKAGING MACHINE

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Fig. 1




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Fig. 2

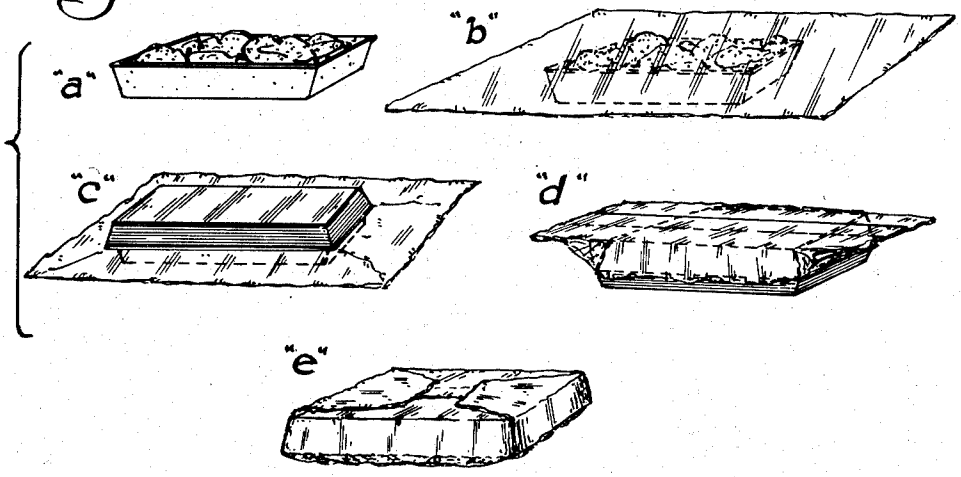
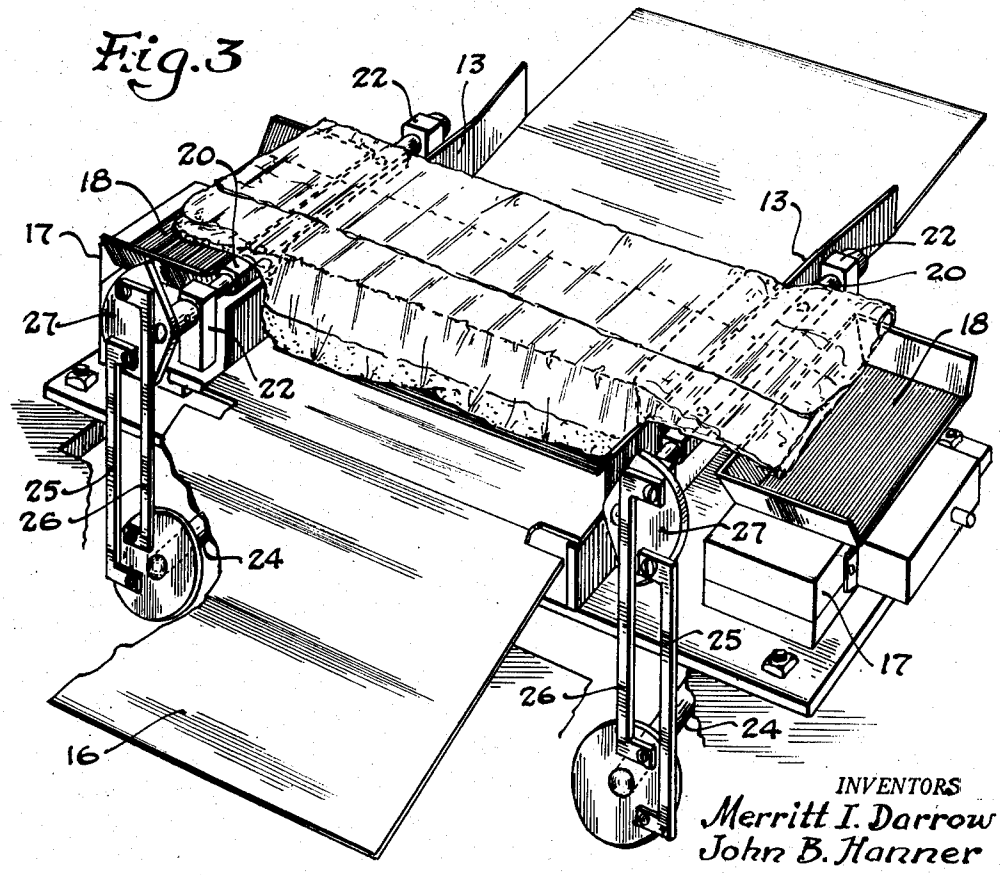



Fig. 3




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Fig. 4

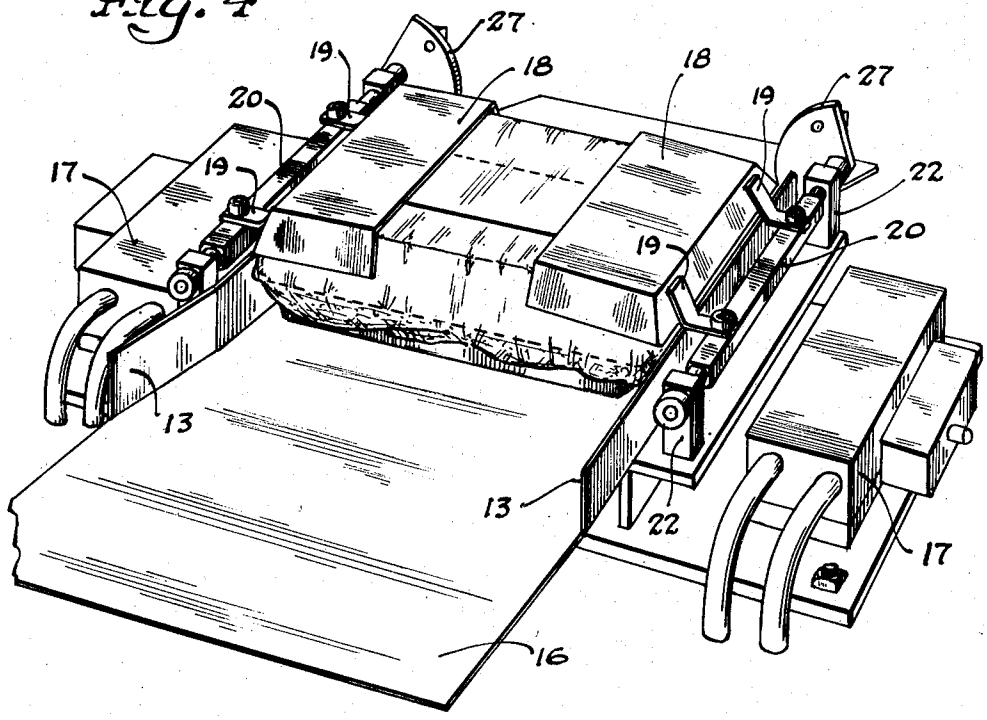



Fig. 6

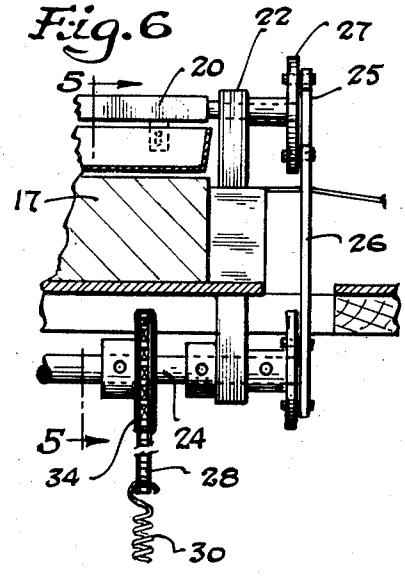
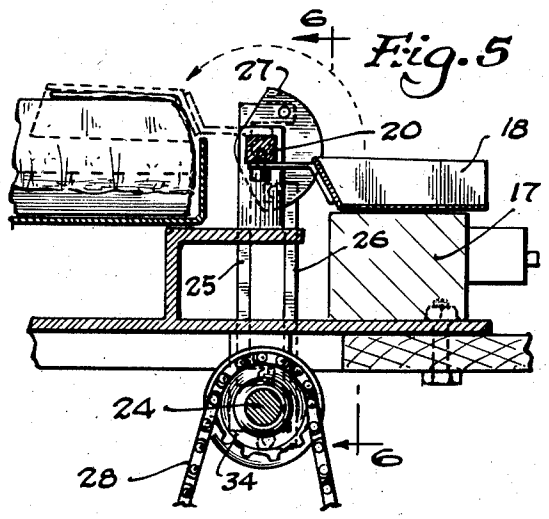



Fig. 5




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2,787,103

# POULTRY PACKAGING MACHINE

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4 Claims. (Cl. 53—219)

This invention relates in general to packaging and in particular provides methods and apparatus that may be used to an advantage in packaging trays of food and other items.

Today there is a wide practice of dispensing and selling many commodities in trays, particularly in the meat line, which trays, after filling, are wrapped with a thermoplastic film material to permit visual inspection of the wrapped commodity by the customer. In large plant operations, e. g., in large-scale packaging of dismembered chicken, the closing of such packages is unduly time-consuming, and frequently the packages are inadequately sealed.

Large losses have occurred due to the thermoplastic film becoming unsealed in transit or not having been adequately sealed in the closing operation; thus, there has arisen a demand for an improved method of closing tray-type packages. The apparatus and methods of our invention satisfies this demand and are particularly adapted to large-scale operations.

It is an object of our invention to provide apparatus and methods which will impart speed and simplicity to the closing and sealing of tray-type packages.

It is a further object of our invention to provide equipment and methods which will assure sealing that will remain closed with normal handling.

Other objects of the invention will become apparent from the following description.

Broadly speaking, the method of our invention contemplates in the closing of a tray-type package the steps of first placing a relatively large thermoplastic film over the open side of the filled tray to form a large margin of film along each edge thereof. An inverted second tray is then placed over the filled first tray and the positions of the two trays are interchanged to place the second tray beneath the first. The film margins along two opposing edges of the first tray are folded into contact with the outside bottom of the first tray and secured thereto. The remaining two margins are next folded against the outside bottom and thereafter the later folded margins are heat-sealed to close the tray package.

In our preferred operation, after interchanging the position of the two trays to place the outside bottom of the first tray facing upward, the film margins along two opposing edges of the first tray are folded upwardly and inwardly into contact with the outside bottom of that tray. These two margins are then heat-sealed in overlapped position against the outside bottom. The remaining two margins are likewise folded upwardly and inwardly and against the first-folded two margins. Thereafter the later-folded margins are heat-sealed to the first-folded margins to complete the closing of the first tray.

Generally speaking, the apparatus of our invention comprises in combination a frame or table with two spaced heating elements placed thereon. Two heat-sealing members are hinged to the frame with each of the sealing members being normally in contact with a single one of the two heated elements. Means are provided for moving the sealing members away from their respective heating elements and into contact with the thermoplastic material of the tray package placed therebetween.



In a preferred embodiment of the apparatus of our invention, two parallel guide members are spaced apart on the top of the table to receive a package placed therebetween with two heating elements also located on top of the table and respectively disposed outwardly of different guide members. Two heat-sealing members are individually hinged to the table top with their respective hinges being disposed between different ones of the guide members and the outwardly-lying heating elements. Each of the sealing members is spring-loaded into contact with separate ones of the heating elements and may be moved in an inward arc away from its respective heating element and over the adjacent guide member into contact with the thermoplastic material of the package held between the guide members. Means are provided to enable the operator to move the sealing members away from the heating elements.

In the drawings:

Fig. 1 is a perspective view, partially cut away, of a preferred embodiment of the sealing apparatus of our invention;

Fig. 2 is a series of views, illustrating various stages in the closing of a tray package in accordance with the method of the invention;

Fig. 3 is a rear perspective view, illustrating the top portion of our sealing apparatus, with the sealing pans in their normal position against the heaters;

Fig. 4 is a front perspective view with the sealing pans illustrated in sealing position against the thermoplastic material of a package placed within the machine;

Fig. 5 is a partial longitudinal section of the apparatus of Fig. 4; and

Fig. 6 is a partial cross section along line 6—6 of Fig. 5.

The machine illustrated in Fig. 1 is made up of a frame or table 10 which carries on its upper surface the closing and sealing mechanism 11 that is actuated through the depression of a foot pedal 12 located beneath the table.

Two spaced, parallel guide members 13 together with a bottom member 16 define a chute 14 for holding the package being closed and sealed. The bottom member of this chute may be bent upwardly at one end and downwardly, as illustrated, at the other end to promote speed in large-scale operations. Two electrical heating elements 17 are located on opposite sides of the chute and are spaced equidistant therefrom to receive on their upper surfaces two sealing pans 18 which are respectively fastened by short brackets 19 (Fig. 4) to two horizontal shafts 20. Each of the two shafts is disposed between the chute and one of the outwardly-lying heating elements and is pivotally mounted (longitudinally of the chute) in appropriate vertical journals 22. The sealing pans are spring-loaded into contact with the heating elements (as shown in Fig. 3), and upon movement of their respective shafts through depression of the foot pedal, the pans swing in an inward arc away from the heating elements and over the guide members of the chute into contact with the package placed in the chute as illustrated in Fig. 4. Upon release of the foot pedal, the pans move again into contact with their respective heating elements.

The sealing pans have the general contours of the outside bottom of the package being sealed, with one side of the pans being open, so that upon being moved into contact with the tray disposed in the chute, the sealing pans fit snugly against the tray to heat the thermoplastic material of tray and with the application of pressure to effectively seal. Preferably, the sealing surfaces of the pans are coated with a fluorocarbon plastic, such as Teflon, to

forestall sticking of the thermoplastic material to the heated pans.

With reference to Figs. 3, 5, and 6, it is seen that the two shafts **20** have disposed directly beneath them two lower shafts **24** which run parallel to and directly beneath their upper counterparts. Each of the lower shafts is coupled through two arms **25, 26,** to a plate **27** secured to the end of the above-lying upper shaft.

As best illustrated in Fig. 1, the two lower shafts are coupled together through an M-shaped spring-chain linkage **28**. The lower portions of the two outer legs of the M linkage are springs **30** which are fastened at their lower ends to braces **32** of the table frame. The rest of the M linkage is composed of a link chain which chain at the two junctures of the outer and inner legs of the M meshes with the teeth of appropriate gears **34** fixed to each of the two lower shafts. The chain at the juncture of the two inner legs of the M is fastened to the foot pedal. It will be seen that the two springs **30** of the linkage urge the two sealing pans into contact with their respective heating elements. Through depression of the foot pedal the pans may be moved away from the heating elements.

The foot pedal, which is hinged to a downwardly extending brace **36** at the back of the table, slants forwardly and downwardly from the hinge into contact with the floor beneath the table. The pedal is broken crosswise approximately midway of its length and hinged at the break to permit depression of the pedal.

In using the packaging machine described above, the operator places the package in the chute, with the loose ends of the film transparency extending over the sides of the chute above the sealing pans as illustrated in Fig. 3. When the operator actuates the foot pedal, the heated sealing pans move into the position shown in Fig. 4 to close the package. With the depression of the foot pedal by the operator, the chain linkage through the two gears **34** revolves the two lower shafts **24**. The lower shafts, which are connected to the upper shafts through arms **25, 26,** rotate the two upper shafts, and the two sealing pans attached to the upper shafts move toward each other in an inward arc and into engagement with the package disposed in the chute. The operator by application of a moderate amount of force through further depression of the pedal seals the package. Each of the heaters is provided with an appropriate switch **38** as illustrated.

In closing a tray-type package in accordance with our invention, the filled tray is first covered with a relatively large sheet of thermoplastic film to form a large margin of film along each edge of the tray as illustrated in *b* of Fig. 2. A shallow inverted second tray, preferably made of a metal, is placed over the film-closed top of the first tray (*c* of Fig. 2). The two trays are flipped over to place the second tray beneath the first tray, with the outside bottom of the first tray facing upward. The film margins along two opposing edges of the first tray are then folded upwardly and inwardly into an overlapping position (*d* of Fig. 2) against the outside bottom of the first tray. These overlapped margins then may be spot-sealed with a hand-sealing iron. The package, as illustrated in *d* of Fig. 2, is then placed in the machine as shown in Fig. 3. The foot pedal of the sealing machine is depressed by the operator to fold the remaining two margins upwardly and inwardly into contact with the first-folded two margins as illustrated in Fig. 4 and *e* of Fig. 2. The sealing pans heat-seal the later-folded margins to the first-folded margins, thus completing the packaging operation of our method.

Obviously, many modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

We claim:

1. In an apparatus for sealing thermoplastic materials in the closing of a package, the combination of a table, two spaced heating elements on the top of the table, two heat-sealing members, each of said sealing members being respectively hinged to the table and normally in contact with different ones of said heating elements, and means for moving said sealing members away from said elements and into contact with the thermoplastic material of the package placed therebetween.



2. In an apparatus for heat-sealing thermoplastic materials in the closing of a package, the combination of a table, two spaced guide members disposed on the top of the table to define the sides of a chute and adapted to receive the package therebetween, two heating elements located on the top of the table, each of said heating elements being respectively disposed on opposite sides of said chute, two heat-sealing members individually hinged to the table with their respective hinges being disposed between the chute and different ones of the outwardly-lying heating elements, each of said sealing members being normally in contact with one of the heating elements and adapted to move in an inward arc away from its respective heating element and over one of the guide members into contact with the package, and means for moving said sealing members away from said heating elements.

3. In an apparatus for heat-sealing thermoplastic materials in the closing of a package, the combination of a frame, two spaced guide members on the top surface of the frame for receiving the package placed therebetween, two heating elements respectively located on the top of the frame and outwardly of the guide members, two heat-sealing members, each pivotally mounted longitudinally of the guide members and spring-loaded into contact with one of said heating elements and adapted to swing in an inward arc away from the respective heating elements and over the respective guide members into contact with the package, and means for moving said sealing members away from their respective heating elements and into contact with the package.

4. In an apparatus for heat-sealing thermoplastic materials in the closing of a package, the combination of a table, two spaced guide members for receiving the package therebetween disposed on the top surface of the table, two heating elements located on the top of the table and outwardly disposed respectively of the two guide members, two upper shafts, each of said shafts being pivotally mounted longitudinally of the guide members and located between one of said guide members and its outwardly-lying heating element, a sealing member fastened to each of said shafts and adapted to engage the upper surface of one of the heating elements and upon movement of its shaft to swing in an inward arc away from the respective heating element and over the adjacent guide member into contact with the package, two lower shafts beneath the top surface of the table, each of said lower shafts being pivotally mounted longitudinally of one of said upper shafts, means coupling each of the upper shafts to its lower counterpart, a linkage coupling the lower shafts together, said linkage being spring-loaded to urge the sealing members into contact with their respective heating elements, a foot pedal fastened to the linkage and adapted upon depression to move the sealing members away from their heating elements.


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