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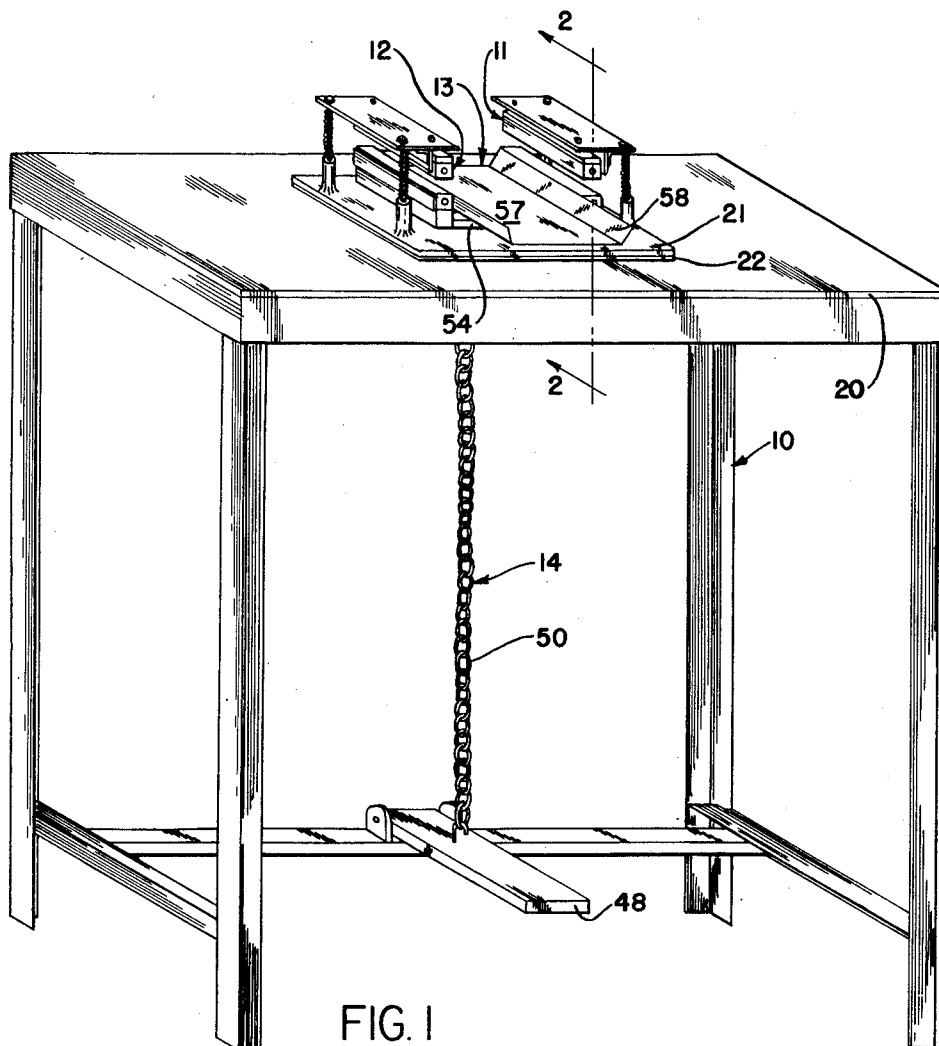
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2,641,304

SEALING MACHINE

Filed March 24, 1952

2 Sheets-Sheet 1



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FIG. 2

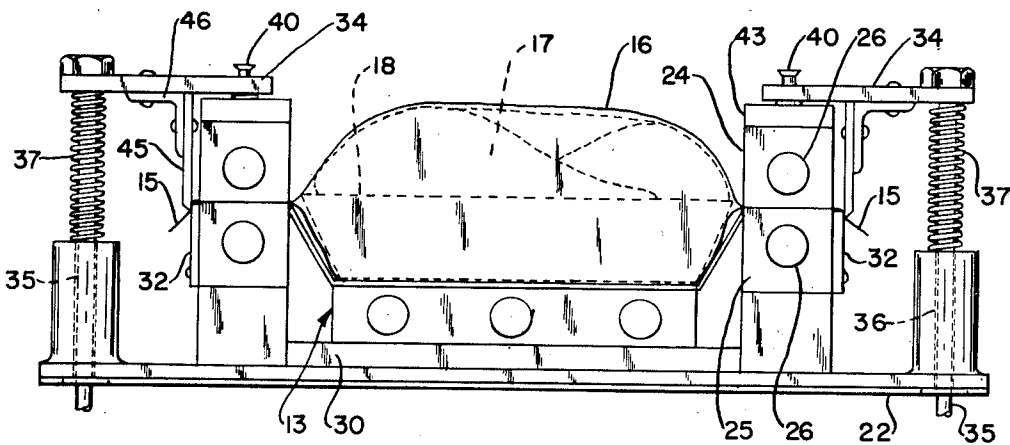
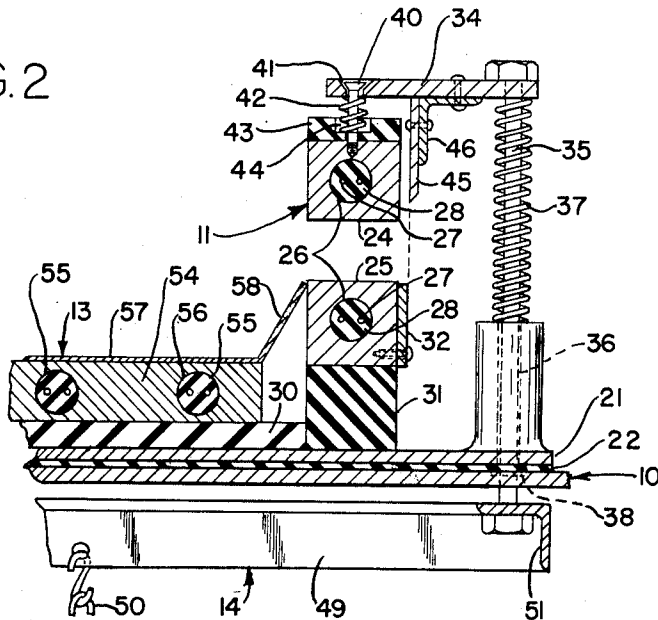


FIG. 3

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SEALING MACHINE

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6 Claims. (Cl. 154—42)

1

The present invention relates to a device for sealing the thermoplastic wrapper of a package.

Because of commercial requirements, it is desirable or necessary that certain products be packaged in individual sealed containers. As one example, the growth of self-service stores has made this more and more a commercial necessity in the food field. Many of these products are irregularly shaped and difficult to wrap and seal by ordinary methods or without using an exorbitantly large container.

Automatic or semi-automatic machines have been devised to do such packaging jobs, but, obviously, these machines will be relatively intricate and expensive. In order to justify the substantial investment involved, it is necessary that the volume of product to be handled be large. Many plants cannot afford to purchase such machines in view of their smaller outputs. Yet these same plants must put out product in a sealed package in order to compete with others in the market.

The principal object of the present invention is to provide a device by which an operator can turn out a substantial volume of attractively wrapped and sealed packages despite the irregularity of shape that may be present in the object to be packaged. An advantage of the device is that the amount a worker can turn out is greatly increased over what it would be if the operations were conducted solely by hand yet the capital investment involved is so nominal that the acquisition of the device is justified by only a relatively small volume plant capacity or output.

A second object of the invention is to provide a device in which the operator's hands are not needed to control the action of the machine. This leaves the operator's hands free to hold the wrapping in place about the object to be packaged which enables the operator to turn out a neat, attractive package.

A further advantage arising from the simplicity of the device is that maintenance problems are negligible. Not only is there little to get out of order, but any defects in operation will be readily apparent and can be remedied by one having only a rudimentary knowledge of machinery.

An additional object is that no skill is needed to enable an inexperienced person to do a proficient and speedy job of preparing sealed packages. There is nothing intricate in the involved operations or anything which would require extended explanations and practice before a new worker could do the job and turn out satisfactory packages.

Further objects and advantages will become

2

apparent from the following description taken in conjunction with the drawings in which:

Fig. 1 is a perspective view of an embodiment of the invention;

Fig. 2 is a partial section taken at line 2—2 of Fig. 1; and

Fig. 3 is an enlarged view of the sealing head showing the preparation of a package.

The embodiment illustrated in Fig. 1 comprises a frame generally 10, a pair of sealing jaws generally 11 and 12, a bottom sealing plate generally 13, and actuating means generally 14 for the jaws 11 and 12. In use the actuating means 14 is used to close the jaws 11 and 12 about the projecting sides 15 of a thermoplastic wrapping material 16 covering an object to be packaged, in this case a cut-up fowl 17 resting in a cardboard tray 18.

Obviously, the frame may take many forms. In the illustrated embodiment is a wooden table 20 upon which rests a metal base plate 21 separated from the table top by an insulator 22.

The jaws 11 and 12 are substantially identical and the structure of each will be readily understood from a description of the right-hand jaw 11 which is shown in section in Fig. 2. In each instance, there is an elongated upper and lower jaw member 24 and 25 respectively, each of which has a longitudinal circular opening 26 therein. The circular openings 26 accommodate electrical heating elements made up of resistance wires 27 imbedded in an insulator 28. The resistance wires are connected to a source of electrical power in a manner well known in the art.

Lower jaw 25 is fixedly mounted on base plate 21 and spaced therefrom by an insulator 30 and a spacer-block 31. Along the outer face of the lower jaw 25 is a strip or hardened material 32 forming one-half of a shear to trim the ends of the wrapping material 16 after the sealing thereof has taken place.

Upper jaw members 24 are supported from arms 34 projecting inwardly from the upper ends of vertical rods 35. Rods 35 slide vertically through openings 36 in base member 21 and are urged upwardly by spring 37. The extent of the upper movement is limited by pin 38 which passes through a lower portion of rod 37 and contacts the bottom side of base member 21. Bolts 40 slide through openings 41 adjacent the inner end of arms 11 and are threaded into the upper side of jaw members 24. About bolts 40 are expansion springs 42 which bear against the lower side of arms 34 and insulator blocks 43 on top of jaw members 24. Preferably springs 42 seat down into recesses 44 in insulator blocks 43.

An upper shear blade is welded to an angle

46 which in turn is riveted to arm 34. As will be seen in Fig. 2, the bottom of upper jaw 24 (when hanging free) is slightly lower than the bottom of shear blade 45.

Actuating means 14 comprises a treadle 48 pivotally mounted on frame 10. The treadle 48 is connected to a crossbar 49 by means of a chain 50. Crossbar 49 is attached to an interconnecting angle 51 running at right angles thereto. Angle 51 is secured to the bottom ends of each of rods 35 so that as the treadle 48 is depressed pulling down crossbar 49, all four rods 35 are simultaneously lowered.

Bottom sealing plate 13 comprises a heating block 54 having a plurality of circular openings 55 horizontally disposed therein. Within each of openings 55 is an electrical heating element 56 similar to the heating elements described in connection with jaw members 24 and 25. Heating block 54 is attached to insulator 30.

A pan 57 overlies heating block 54 and is in contact therewith. The pan has outwardly and upwardly projecting sides 58. Preferably pan 57 extends forwardly of the sealing device to facilitate the wrapping of the packages as will hereinafter be described. In some embodiments, it will be found to be necessary to have the forwardly extending portion of the pan separately supported and insulated from the portion of the pan heated by block 54 in order that there be no softening of the thermoplastic wrapping material before it is desired that a sealing actually take place.

To operate the sealing device, the operator places a sheet of the desired thermoplastic material on the forwardly extending portion of pan 57. Such wrapping material as sheets of rubber hydrochloride, which may be purchased under the trademark "Pliofilm," may be used. Tray 18 containing the product 17 to be wrapped is placed on the sheet of wrapping material 16 in such a manner that the end of the wrapping material will be under tray 18 after the wrapping has been completed. The sheet of wrapping material is sufficiently large so that it extends outwardly at either side of the tray to form projecting sides 15. Obviously, the wrapping may have been done previously and the wrapped, but unsealed, package transported to the operator of the sealing machine so that all the latter has to do is to make the seals.

The wrapped tray is then slid away from the operator and positioned so that the projecting ends 15 are centered between the open jaws 11 and 12. At this point, the tray rests on the sealing plate 13 which softens the end of the wrapping material 16 (which as previously mentioned is underneath the package) so that the end adheres to the remainder of the wrapper.

The operator depresses treadle 48 closing jaws 11 and 12 about the extending ends 15 of the wrapper. As the jaws close, the first contact with the wrapper is made by jaw members 24 and 25 which grip the wrapper and commence softening the thermoplastic material for sealing. Subsequent lowering of the supporting rods 35 for the upper jaws 24 compresses springs 42 and displaces upper jaw members 24 with respect to arms 34. Thus, while the jaw members 24 and 25 securely grip the ends 15 of the wrapping material, the shears composed of lower shear plate 32 and upper shear plate 45 pass beside and in contact with each other to snip off the excess material beyond the point at which the

seal takes place. The cutting of the ends produces a neat, attractive package.

The sealing time will be dependent upon the heat applied, the material used, etc., and is a subject about which the workers in the art are thoroughly conversant. After the seal has been made, the treadle 48 is released and the wrapped and sealed package withdrawn from the machine.

Various modifications will be apparent to those skilled in the art and such modifications are deemed to be within the scope of the invention as defined by the appended claims. For example, other forms of heat generation may be used. The shears for trimming the ends of the package may be dispensed with, etc. While we prefer to seal the bottom of the package, if this is not necessary or desirable the bottom heating plate will not be needed. The description of a specific embodiment is for the purpose of complying with Section 4888 of the Revised Statutes and should not be construed as imposing unnecessary limitations upon the appended claims.

We claim:

1. A device for sealing the extending sides and end of a sheet of thermoplastic material wrapped about an object, said device including a frame, a hot plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, heating means for said plate, a pair of jaws to either side of said plate to seal the extending sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member, an upper jaw member, heating means for each of said members, one of said jaw members being attached to said frame, mounting means for the other jaw member, the other jaw member being attached to said mounting means, said mounting means being supported on said frame for linear movement of said other jaw member toward and away from said one jaw member, and resilient means urging said other of said jaw members away from said one jaw member, said jaw closing means including a foot treadle to close the jaw after the wrapped object has been inserted and is being held in place by the operator's hands.

2. A device for sealing the extending sides and end of a sheet of thermoplastic material wrapped about an object, said device including a frame, a hot plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, heating means for said plate, a pair of jaws to either side of said plate to seal the extending sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member, an upper jaw member, heating means for each of said members, one of said jaw members being attached to said frame, mounting means for said other jaw member, the other jaw member being attached to said mounting means, said mounting means being supported on said frame for linear movement of said other jaw member toward and away from said one jaw member, and resilient means urging said other of said jaw members away from said one jaw member, said attachment of a first of said jaw members being loose to permit that jaw member to move toward and away from the second jaw member a limited distance, resilient means urging that first jaw member toward the second member, a pair of cutter blades, one of said blades being positioned to the other side of each of said jaw members

5

from said plate, the blade for each jaw member being attached to the same part of the device as is the respective jaw member, said blades being positioned slightly farther apart than are the respective jaw members whereby the ends of the material will be clipped after the jaw members are brought together, said jaw closing means including a foot treadle to close the jaw after the wrapped object has been inserted and is being held in place by the operator's hands.

3. A device for sealing the extending sides and end of a sheet of thermoplastic material wrapped about an object, said device including a frame, a hot plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, heating means for said plate, a pair of jaws to either side of said plate to seal the extending sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member and an upper jaw member, each of said jaw members having a sealing face, being elongated in one dimension and positioned with said dimension generally parallel to the sides of said plate and with said faces parallel to each other, the lower jaw member being attached to said frame, rod means mounted in said frame for reciprocal movement along a straight line generally normal to said faces, the upper jaw member being attached to the upper end of said rod means, resilient means urging said rod means into a position at which said faces are spaced from each other, said jaw closing means being connected to said rod means.

4. A device for sealing the extending sides and end of a sheet of thermoplastic material wrapped about an object, said device including a frame, a hot plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, heating means for said plate, a pair of jaws to either side of said plate to seal the extending sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member and an upper jaw member, each of said jaw members having a sealing face and positioned with said faces parallel to each other, the lower jaw member being attached to said frame, rod means mounted in said frame for reciprocal movement along a straight line at an angle with respect to said faces, said rod means being mounted in said frame in a portion thereof spaced to the other side of said lower jaw member from said plate and having an inwardly extending portion to position the upper jaw member over the lower jaw, said upper jaw member being attached to said inwardly extending portion, resilient means urging said rod means into a position at which said faces are spaced from each other, said jaw closing means being connected to said rod means.

5. A device for sealing the extending sides and end of a sheet of thermoplastic material wrapped about an object, said device including a frame, a hot plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, heating means for said plate, a pair of jaws to either side of said plate to seal the extending

6

sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member and an upper jaw member, each of said jaw members having a sealing face and positioned with said faces parallel to each other, the lower jaw member being attached to said frame, rod means mounted in said frame for reciprocal movement along a straight line, said rod means being mounted in said frame in a portion thereof spaced to the other side of said lower jaw member from said plate and having an inwardly extending portion to position the upper jaw member over the lower jaw member, said upper jaw member being attached to said inwardly extending portion, resilient means urging said rod means into a position at which said faces are spaced from each other, said attachment of a first of said jaw members being loose to permit that jaw member to move toward and away from the second jaw member a limited distance, resilient means urging said first jaw member toward said second jaw member, a pair of cutter blades, one of said blades being positioned to the other side of each of said jaw members from said plate, the blade for each jaw member being attached to the same part of the device as is the respective jaw member, said blades being positioned slightly farther apart than are the respective jaw members whereby the ends of the material will be clipped after the jaw members are brought together, said jaw closing means being connected to said rod means.

6. A device for sealing the extending sides of a sheet of thermoplastic material wrapped about an object, said device including a frame, a plate on which said wrapped object may be placed with the end of the material against the plate, said plate being mounted on said frame, a pair of jaws to either side of said plate to seal the extending sides of the material, and means to close said jaws about said sides, each of said jaws comprising a lower jaw member and an upper jaw member, each of said jaw members having a sealing face and positioned with said faces parallel to each other, the lower jaw member being attached to said frame, rod means mounted in said frame for reciprocal movement along a straight line at an angle with respect to said faces, said rod means being mounted in said frame in a portion thereof spaced to the other side of said lower jaw member from said plate and having an inwardly extending portion to position the upper jaw member over the lower jaw, said upper jaw member being attached to said inwardly extending portion, resilient means urging said rod means into a position at which said faces are spaced from each other, said jaw closing means being connected to said rod means.

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