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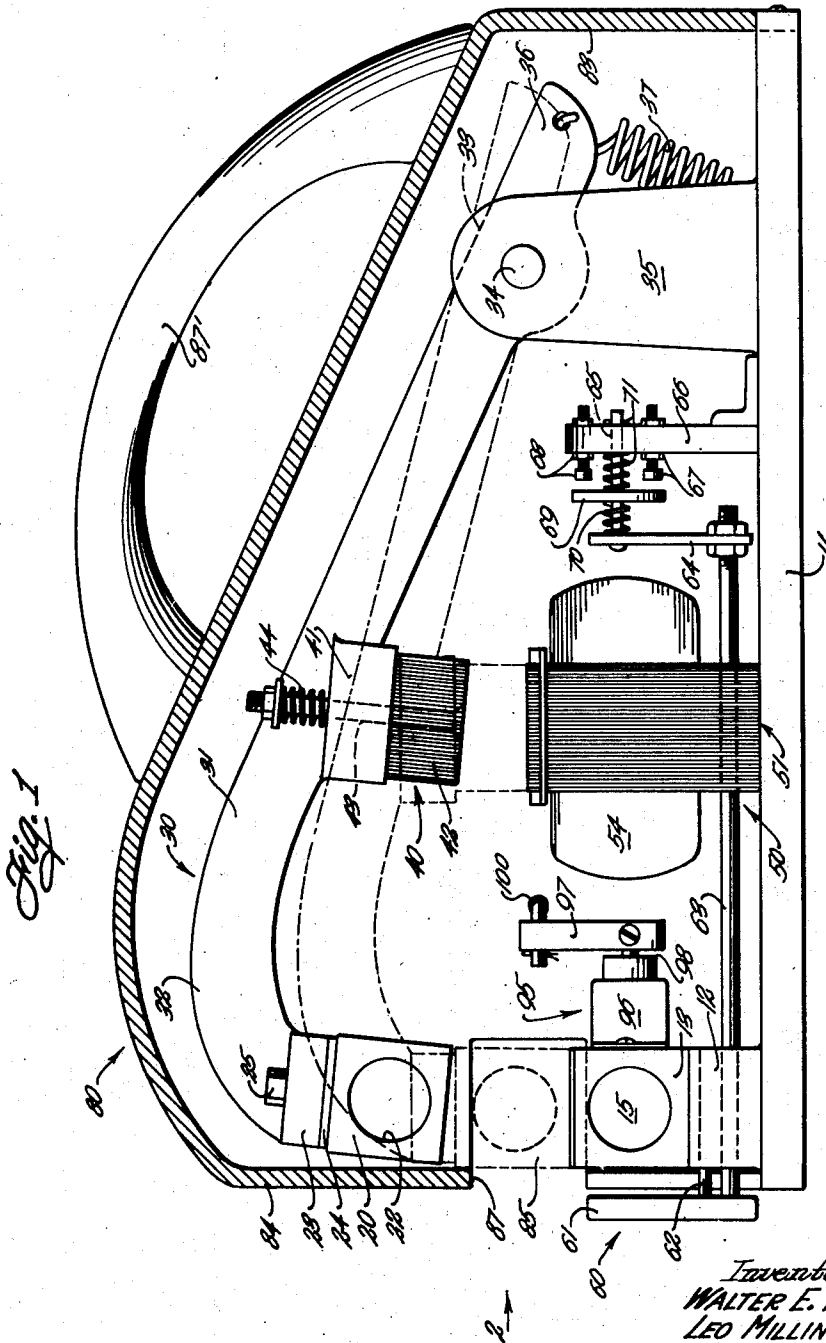
W. E. KENNEY ET AL

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ELECTRIC CELLOPHANE BAG SEALER

Filed Dec. 20, 1939

2 Sheets-Sheet 1



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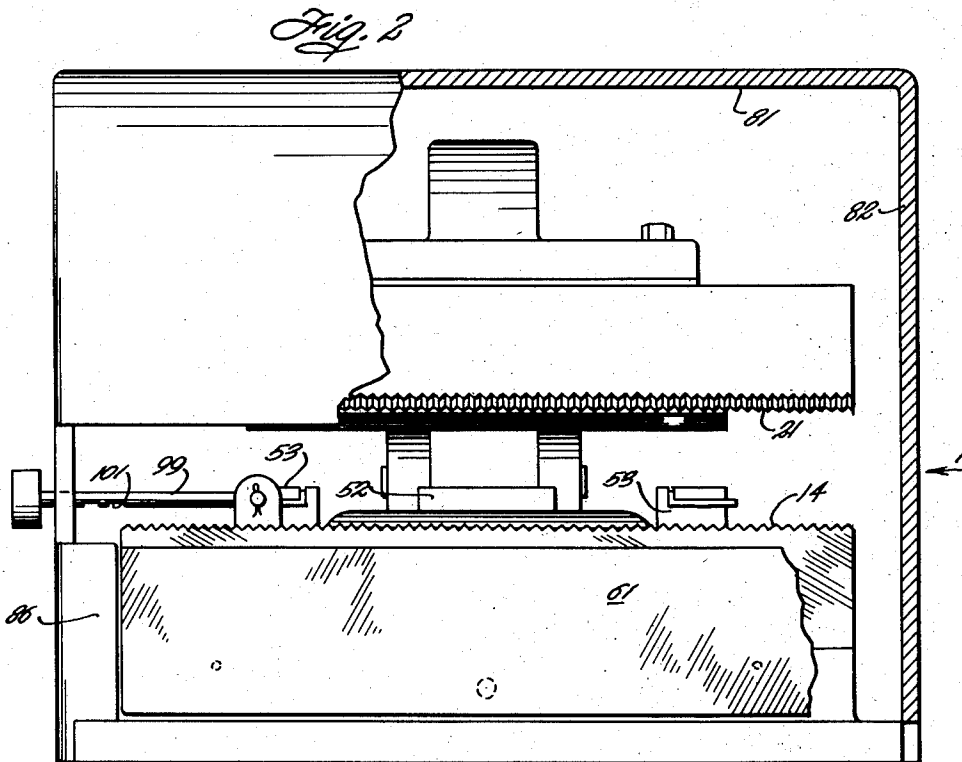
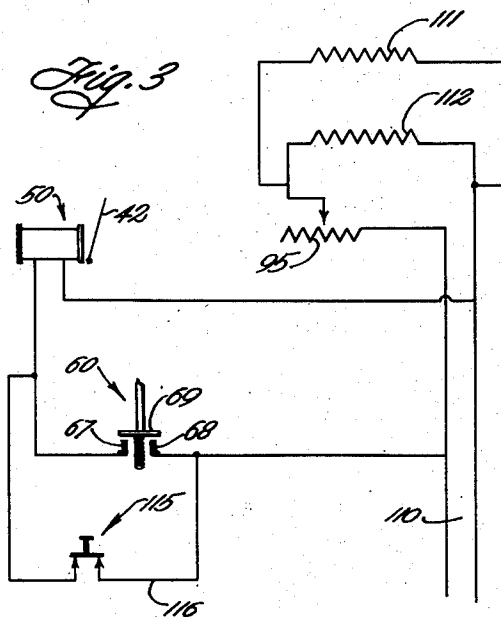
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UNITED STATES PATENT OFFICE

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ELECTRIC CELLOPHANE BAG SEALER

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3 Claims. (Cl. 226—56)

Our invention pertains to a type of machine for sealing the open end of Cellophane bags or Cellophane structures of a similar nature in which two electrically heated jaws press the bag ends together and retain the pressure for a sufficient length of time to heat the contacting surfaces of Cellophane and thus form a seal.

A number of these types of machines have been used on Cellophane and similar bags or for sealing Cellophane tubes with articles enclosed between the sealed ends of the tubes. Also, machines of a general type have been used for forming bags from Cellophane tubes in which the permanently closed end is sealed between electrically heated jaws, however apparently none of the machines are for sealing bags so constructed that the jaws may be operated by electrical or equivalent equipment but most of the jaws are manually manipulated as by a foot treadle or a hand operated pressure. Such construction is quite disadvantageous, being much slower than our machine in its operation and frequently causing the bags to be held between the jaws either an insufficiently short time to form a proper seal or for such a long time period that the bag becomes overheated and thus the sealing properties of the Cellophane destroyed. In addition with certain of the machines there has been great danger of the operators having their fingers caught between the jaws during the sealing operation and thus subject to injury.

An object and feature of our invention is in a machine of the above general type and for the purpose designated to seal the bags between electrically heated jaws which contact and press the ends of the bag while subjected to the heat together with an electro-magnetic operated structure which brings the jaws together and holds them in contact so long as a manually operated switch for the magnet circuit is closed. Therefore the operator has control of a practically instantaneous type through the closing and opening of the electric switch.

A further and more detailed object of our invention is the provision of a machine which may be considered as having a base with a fixed jaw mounted thereon, a pivoted lever arm and a movable jaw connected to such arm, both of the jaws being electrically heated. The electro-magnet is mounted on the base and the armature connected to the pivoted arm. In this construction it is preferable to have a retraction spring for elevating the arm, the heated jaw and the armature, hence by using the manually operated closure switch in the magnet circuit the substan-

tially instant energizing of the magnet circuit gives a downward reaction to the armature, and the lever arm and in effect strikes a perceptible blow against the parts of the bag entered between the fixed and the moving jaw. This action of the blow causes a smoothing out of the parts of the bag and as it is desirable to have the seal of a crinkle type, it forms these crinkles or corrugations in the Cellophane prior to the time period that the heat operates on the Cellophane. Manifestly with this construction, so long as the switch is closed, the armature holds the moving jaw in contact with the material and thus the bag is subjected to heat from both the stationary and moving jaw.

Another feature of our invention relates to a safety factor in the operation of the switch and enabling the operator to manually place the bag in proper position as to the jaws at the same time the switch is operated. Our invention further comprehends the use of a sliding switch operating panel located in front of the fixed jaw, the machine having a housing with an opening only of sufficient size to enter the end of the bag to be sealed between the two jaws, hence as the operator places the bag between the jaws and at the same time while holding the bag shifts the panel towards the movable jaw, the switch is operated to the closed circuit position. Therefore as it is necessary for the operator to at the same time hold the bag and operate the panel, there is but little danger of injury from the moving and heated jaws. Our invention also comprehends an auxiliary foot operated switch to be used in circumstances where the operator does not desire to actuate the panel control switch. In view of the fact that in constructions of this nature it is necessary to control the heat, we employ a finger actuated rheostat in the jaw heating circuits. This has a novel construction of operating device giving the desired temperature control of the jaws and operated without danger of the operator of the machine receiving burns from the electrically heated jaws.

Our invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation taken in the direction of the arrow 1 of Fig. 2 with the cover broken away on a vertical section.

Fig. 2 is a front elevation taken in the direction of the arrow 2 of Fig. 1 with the front portion of the cover broken away.

Fig. 3 is an electrical wiring diagram.

In the drawings the main portion of the ma-

chine is provided with a base plate 11 having provision for bolting or otherwise fastening to a work bench or table. This base has a front pedestal 12 formed integral therewith on which is supported the fixed jaw 13. Such jaw is rectangular in cross section shown in Fig. 2 and is provided with a serrated upper edge 14 and has a center longitudinal perforation 15 in which is located the electrical heating element for heating such jaw. The upper jaw 20 is of the same general construction being rectangular in cross section and provided with serrations 21 on its lower surface, note Fig. 2. This also has a central longitudinal perforation 22 for the electrical heating unit. The upper jaw is secured to a jaw holding cross bar 23, there being a heat insulating pad 24 between the bar and the jaw and the jaw being secured in place by set screws or the like 25. The operating arm or lever assembly 30 includes a substantial metal arm 31, the outer end preferably being formed integral with the bar 23. Such bar may have an upwardly curved portion 32 to give underneath clearance and has a hub section 33 mounted by means of a pivot shaft 34 on brackets 35 extending upwardly from the base 11 and preferably formed integral therewith. A coil tension spring 37 hooked between the base and the extension end 36, normally maintains the arm and the upper jaw in an elevated position.

The jaw is provided with the electrical components for moving such upper jaw, this being indicated as the armature assembly 40. For this purpose a transverse supporting block 41 is attached to or formed integral with the metal arm 31. The armature 42 which is built up of laminated iron plates secured together is attached to the block 41 by means of a bolt 43 extending through a perforation in the block and having a coil spring 44 bearing against a washer held in place by a nut or the like. Thus when the armature is attracted by the electro-magnet hereunder described, there is a slight yielding action due to the sliding motion of the bolt slightly compressing the spring as the arm is flexibly swung downwardly.

The magnet assembly 50 may have a structure of a conventional type but is indicated as having poles 51 of a three-pole type, there being a center pole 52 and two marginal poles 53 made up of laminated iron and secured in any suitable manner to the base 11. The electric winding 54 is illustrated as wound on the center core. This likewise may be a conventional construction.

The manually operable switch assembly 60 includes a panel 61 located at the front end of the machine in front of the lower jaw 13. This is in part guided by guide pins 62 sliding in guide perforations in the front pedestal 12. An operating rod 63 is secured to the panel preferably at the center portion and adjacent the lower edge. This operates through a perforation in the pedestal 12 and either through a guide opening in the center core of the magnet or a suitable guide below such magnet. An arm or plate 64 is adjustably connected to the rod 63 and through this plate extends a slip pin 65 which has an end mounted in a bracket 66 secured to the base 11. This bracket forms the mounting for two terminals 67 and 68, each being adjustably mounted and insulated from the bracket and the base. These terminals are engaged by a bridging plate 69 which is loosely mounted on the pin 65 and urged in its movement by a compression spring 70 on one side reacting against the arm 64 and

another compression spring 71 reacting between the bridging plate and the bracket 66. Therefore by pressing the panel 61 inwardly, that is, towards the lower jaw, the sliding movement of the rod 63 shifts the plate 64 hence the bridging plate 69 to form a bridging contact between the terminals 67 and 68, thus closing the circuit to the winding of the electromagnet, hence on energizing the armature 50 the armature 40 is pulled downwardly thus giving a striking blow of the upper jaw against material placed on the lower jaw.

For purposes of a safety factor and being able to readily shift the machine, I provide a molded cover 80. This has a top 81, two sides 82, a rear end 83, a front end 84 which is provided with a complete transverse opening 85 and below such opening there is an intumed front edge 86, there being a clearance between these edges and the panel 61. The cover is secured to the base in any suitable manner as by set screws and has a lifting handle 87. It will be seen therefore that the only exposed portion of the operating mechanism is this opening 85 between the sides 82, the lower edge 87 of the front, the upper edge of the side panels 82 and the upper edge of the switch panel 61. This is of ample size to allow a person to insert the bag ends between the jaws but hardly sufficient to permit a person to insert the fingers with the possibility of having them caught between the jaws.

The manually operated rheostat control for the heaters of the jaws designated by the assembly numeral 95 has a rheostat 96 preferably attached to and mounted on the back of the fixed jaw 13. A crank 97 attached to a rotatable shaft 98 of the rheostat has in its turn an operating rod 99 connected thereto, this extending outwardly through a perforation 100 in one of the side walls 82 of the cover. The rod is provided with notches 101 for engagement with the side of the cover and thus retain the rod and the rheostat in the adjusted position. A finger grip button or the like on the exposed end of the rod allows for manually adjusting the rheostat and hence the temperature of the two jaws.

The wiring diagram and connections may be substantially as shown in Fig. 3. In this diagram various elements have been given numbers corresponding to that of the detail drawings. The supply circuit is usually from an alternating current source, the supply wires being indicated at 110. The heating coils 111 and 112 for the jaws are illustrated as having a parallel connection with the common rheostat 95. The electro-magnet assembly 50 has a parallel connection to the supply leads, in one of which is the manually controlled switch assembly 60 of which the terminals 67 and 68 are connected in the electric lead and the bridging plate 69 closes the circuit when the panel 61 is pressed inwardly as above described. As an alternative closing switch we also may employ a foot operated switch 115 which is of conventional design and may be placed on the floor convenient to the operator. This when pressed downwardly closes the circuit through the parallel connection 116 between the supply lines and to the electro-magnet assembly. By this construction it will be seen that the magnet may either be energized through the medium of the foot pedal or the hand operated panel 61. However, this latter is preferably the usual procedure as the operator can press the panel while holding the bag in position.

The manner of operation and functioning of

our invention is substantially as follows: The operator usually sits or stands at a work bench in front of the machine picking up the bags filled with produce to be sealed into such bags. The open end of the Cellophane bag is then inserted between the jaws which are normally in the elevated position as shown in Figs. 1 and 2. In this movement of inserting the bag ends the operator presses the panel 61 inwardly with the fingers, then incidentally the electro-magnet is energized attracting the armature and giving a downward movement to the arm assembly 30, thus producing somewhat of a striking blow on the material of the bag between the moving and the stationary jaws. This blow is operative to press the material of the bag tightly into the serrations of the two jaws. At the same time as the jaws are heated the heat from the jaws penetrates the Cellophane material of the bag causing the adherence and sealing of the two layers of the portion of the bag inserted between the jaws. The operator judges the time period necessary to hold the jaws in contact and on removing the finger from the panel 61 the reaction of the springs of the switch forces the panel outwardly thus opening the circuit between the contacts 67, 68 and the bridging plate 69. This causes an opening of the magnet circuit. The reaction spring 37 hence elevates the movable jaw, therefore allowing withdrawal of the sealed bag and insertion of the next. Manifestly by maintaining the jaws at the desired high temperature, the operation may be very rapid, the sealing being practically as fast as the operator can insert the bags and move the panel 61. As above mentioned, when it is desired the switch may be closed by the foot operated pedal 115. This is not illustrated in the assembly views of Figs. 1 and 2 as these foot operated switches are conventional in a number of different types of machine. Also as above mentioned the operator may readily adjust the thermostat which is in effect a manually controlled rheostat to regulate the temperature of the heating elements in the two jaws. It will thus be seen that the operator has complete control of the temperature and the rapidity of the action of sealing of the bags.

On account of the armature 42 having in effect a bolt and spring connection to the arm 31, the initial energizing of the electro-magnet first attracts the armature and the moving armature through the reaction of the spring 44 swings the arm hence the jaw downwardly. This action develops a certain resiliency to the movement of the upper jaw and avoids the necessity of accurately adjusting the two jaws and the armatures for various thicknesses of Cellophane or folds of the bag material.

Various changes may be made in the details of

the construction without departing from the spirit or scope of the invention as defined by the appended claims.

We claim:

1. A bag sealer comprising a fixed jaw, a movable jaw, a pivoted lever on which the movable jaw is mounted, spring means normally holding the pivoted lever so that the movable jaw will be disposed in spaced relation to the fixed jaw, means for heating the jaws, a solenoid, an armature for the solenoid yieldably mounted upon said lever adapted to be attracted by the solenoid so as to move the movable jaw into bag sealing engagement with the fixed jaw, and a switch controlling the circuit through the solenoid.

2. A bag sealer comprising a fixed jaw, a movable jaw, a pivoted lever on which the movable jaw is mounted, spring means normally holding the pivoted lever so that the movable jaw will be disposed in spaced relation to the fixed jaw, means for heating the jaws, a solenoid, an armature for the solenoid yieldably mounted upon said lever adapted to be attracted by the solenoid so as to move the movable jaw into bag sealing engagement with the fixed jaw, a switch controlling the electric circuit through the solenoid, and means for closing the switch located forwardly of the fixed jaw whereby upon application of a bag to be sealed to the fixed jaw the last mentioned means may be simultaneously engaged to close the switch for the solenoid circuit and by moving the movable body into bag sealing engagement with the fixed jaw.

3. A bag sealer comprising a housing having an opening in its forward wall, a fixed jaw disposed within the housing adjacent said opening, a lever pivotally mounted within the housing carrying a movable jaw, spring means normally holding the lever in a position wherein the jaws are disposed in spaced relation, means for heating the jaws, an electromagnet mounted within the housing, an armature for the electromagnet yieldably mounted upon the lever adapted to be attracted by the electromagnet when the circuit therein is closed so as to move the movable jaw into bag sealing engagement with the fixed jaw, a switch controlling the electric circuit through the electromagnet, and means disposed on the forward side of the housing forwardly of the fixed jaw for operating the switch whereby, upon application of a bag to be sealed through the opening in the housing to the fixed jaw, the last mentioned means may be simultaneously engaged to close the switch of the circuit of the electromagnet and move the movable jaw into bag sealing engagement with the fixed jaw.

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