

United States Patent

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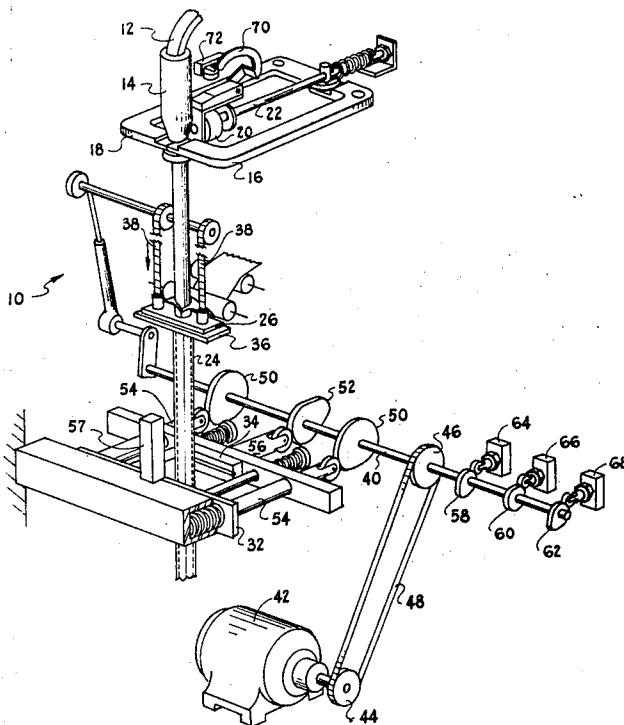
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[54] **COIN WRAPPING MACHINE**
5 Claims, 3 Drawing Figs.

[52] U.S. Cl..... **53/28,**
53/180, 53/212, 53/373, 219/243
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B65b 51/26
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182, 373; 156/583; 219/243

ABSTRACT: Method to provide low heat to the heat sealing jaws of a coin wrapping machine to ensure that the heat sealing jaws are at proper temperature for sealing coin bags when supplied high heat by electrical impulse to seal the coin bags.



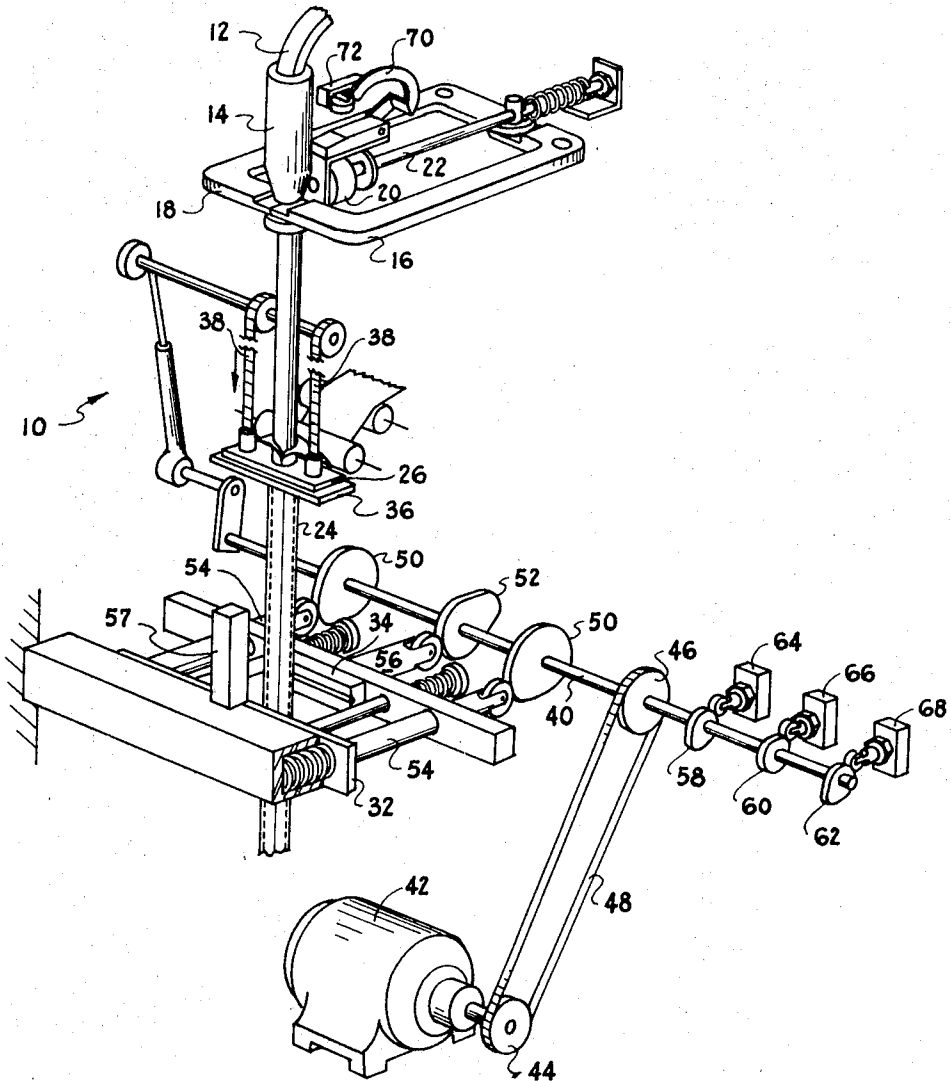


FIG.-1-

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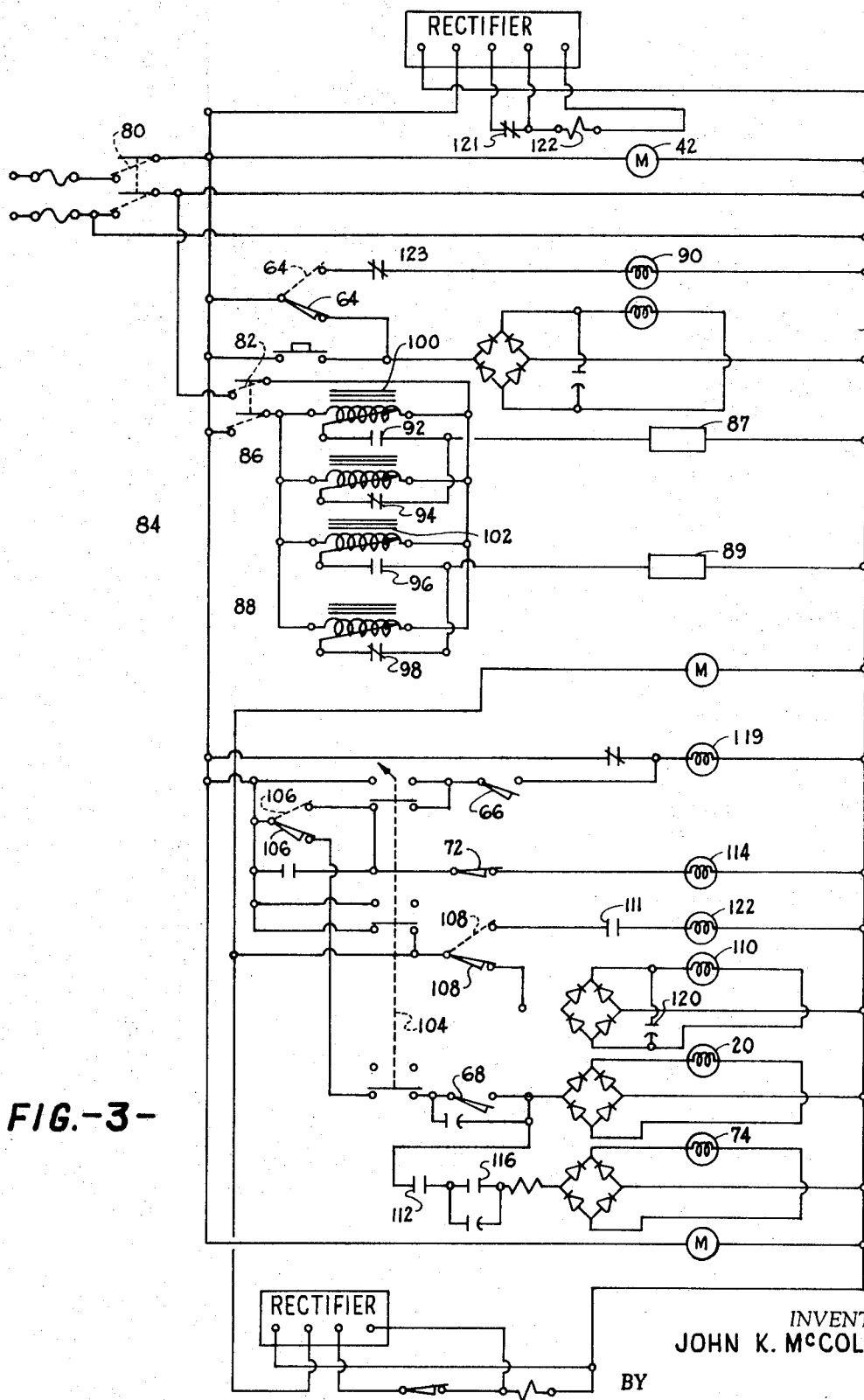


FIG.-3-

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COIN WRAPPING MACHINE

This invention relates generally to the automatic packaging of coins in a plastic container and in particular to the automatic packaging of a preselected number of coins in a thermoplastic heat shrinkable material.

It is therefore an object of the invention to provide a method to maintain the sealing jaws of a coin wrapping machine on low heat when they are not required to heat seal a coin package.

Other objects and advantages will become readily apparent as the specification proceeds to describe the invention with reference to the accompanying drawings, in which:

FIG. 1 is a schematic view of a coin wrapping machine when coins are being supplied to the coin collection tube;

FIG. 2 is a schematic view of the coin wrapping machine of FIG. 1 when the pallets have opened and coins have been delivered into the wrapping material; and

FIG. 3 is an electrical schematic diagram of the subject coin machine.

Looking now to FIGS. 1 and 2 there is schematically represented the pouch portion 10 of a coin wrapping machine which bags coins in a thermoplastic shrink film pouch and then automatically transports the filled pouches to a shrink oven (not shown) to shrink the shrink film down around the coins to provide a compact coin package.

Basically, coins are supplied through chute 12 into collection tube 14 onto the pallet members 16 and 18. When a preselected number of coins has been delivered from a coin counter (not shown) into the collection tube 14 solenoid 20 will be actuated and rod 22 will be pulled forward to open the pallet members 16 and 18 to the position in FIG. 2. The coins will drop into a tube of thermoplastic shrink film 24 supplied through the forming member 26 by rolls 28 and 30 from a roll of film (not shown) that has been previously sealed at the bottom by transverse sealing jaws 32 and 34. After the tube of material 24 has been filled by the correct number of coins the carriage 36 carrying the forming member 26 is let down by chains 38 suitably connected to the main drive shaft 40 which is driven by motor 42 through pulleys 44 and 46 and belt 48. The tube 24 is lowered until the top coin in the delivered stack is below the transverse sealing jaws 32 and 34. Then, as shown in FIG. 2, suitable cams 50 and 52 acting through spring loaded actuator members 54 and 56 move the transverse sealing jaws 32 and 34 together to press and seal the top of the filled portion of the tube 24 together and sever the filled pouch from the tube of material 24. Simultaneously therewith the longitudinal sealing member 57 is moved against the tube 24 to seal the longitudinal seam of the tube. Then the forming member moves upwardly, as shown in FIG. 2 while the counter (not shown) is preparing to start another cycle.

Located adjacent the main drive shaft 40 and actuated by suitable cams 58, 60 and 62 are switches 64, 66 and 68, respectively. Cam 58 and switch 64 control the impulse heat to the sealing jaws while cam 60 and switch 66 is a stop motion for the machine if the counter does not supply the predetermined number of coins. Cam 62 and switch 68 control the opening and closing of the pallet members 16 and 18. The cams 58, 60 and 62 are suitably designed and synchronized with the switches 64, 66 and 68 to perform the intended function at the appropriate time in each cycle.

Mounted to the rear of the collection tube is a jam detector which consists of a curved feeler arm 70 rotated by a rotary solenoid and switch 72 which is engaged by the feeler arm. The jam detector is actuated by actuation of the rotary solenoid, after the pallet members 16 and 18 have opened, to rotate the feeler arm 70 into an opening in the rear of the collection tube. On its forward motion into the collection tube 14 the feeler arm 70 engages the switch 72 and will release the switch 72 if no coins are jammed in the tube 14 allowing the feeler arm 70 to rotate all the way forward. If coins are jammed in the tube the feeler arm 70 will not allow the switch 72 to be energized thereby stopping the operation of the machine until the jam is eliminated by the operator.

OPERATION

Looking now to FIG. 3 in conjunction with FIGS. 1 and 2 the operation of the coin wrapping machine will be explained.

To connect power to the machine, drive switch 80 is turned to the dotted line position to energize the drive motor 42 and heat seal switch 82 is turned to the dotted line position to supply power to the control circuit 84 for the heat sealing jaws 32, 34 and 57. When the heat seal switch 82 is turned on, transformers 86 and 88 which provide low heat to the heat sealing jaws 32, 34 and 57 are energized since relay coil 90 for contacts 92, 94, 96 and 98 is not energized thereby supplying low heat current through closed contacts 94 and 98 to end seal and longitudinal seal electric heaters 87 and 89. When the machine cycles and switch 64 is actuated by cam 58 indicating that it is the proper time to seal the tube 24, it will assume the dotted line position and energize the relay coil 90 which opens contacts 94 and 98 and closes contacts 92 and 96 to supply current to transformers 100 and 102 to provide high impulse heat to the electric heaters 87 and 89 to supply high heat to the heat sealing jaws 32, 34 and 57 to seal the tube 24. Then as soon as the cam 58 rotates further, switch 64 opens and deenergizes the relay coil 90 to reverse contacts 92, 94, 96 and 98 to once again supply low heat to the heat sealing jaws.

The control circuit has a three position selector 104 which in one position allows single cycle operation and in a second position allows the machine to run empty with the counter off. In the third position, as shown in the circuit diagram, the machine cycles normally. If the coin counter has not completed the coin count switch 106 will be in the dotted line position so that the circuit to the pallet solenoid 20 will be open keeping the pallet members 16 and 18 closed. When the counter has completed the coin count the switch 106 is automatically moved to the solid line position so that switch 68 can be closed by cam 62 to energize the pallet solenoid 20 to open the pallet members 16 and 18 and drop coins into the tube 24 below the pallet members.

When the pallet members open, pallet switch 108 transfers to the solid line position energizing relay coil 110 to close contacts 111 and 112 to energize jam detector solenoid 74 to cause the feeler arm 70 to move into the collection tube 14. If the tube 14 is clear of coins the feeler arm 70 completes its stroke allowing switch 72 to be opened thereby deenergizing relay coil 114 to open switch 116. The opening of switch 116 deenergizes the jam detector solenoid 74 thereby retracting the feeler arm from the collection tube. As the feeler arm 70 moves out of the tube, switch 72 again closes but does not energize the relay coil 114 since switch 118 is open. If the feeler arm does not complete its stroke, switch 72 will not open and will then complete a circuit through switch 66 when it is closed by cam 60 to energize the relay coil 119 to open the contacts 121 to break the circuit to open the circuit to the clutch 123 and stop the transmission of power to the machine.

Switch 66 also energizes the relay coil 119 to open the circuit to the clutch 123 if the coin count switch 106 is in the dotted line position, indicating that the count is not complete thereby preventing the packaging of an improper amount of coins in any package.

The pallet members 16 and 18 remain open as long as cam 62 holds switch 68 closed. When the cam 62 releases switch 68 pallet solenoid 20 becomes deenergized thereby closing the pallet members for the next cycle. When this happens, pallet switch 108 transfers to the dotted line. Relay coil 110 remains energized for a fraction of a second because of the charge built up the capacitor 120 thereby energizing the counter start solenoid 122 since switch 111 is still closed. Once the counter is restarted the switch 111 opens deenergizing the counter start solenoid 122.

As soon as the counter starts the new count switch 106 transfers to the dotted line position to once again energize the relay coil 114 closing contacts 116 and 118 so that when the counter finishes its count relay coil 114 remains energized through switch 118 and switch 72. The above cycle then repeats itself.

The herein disclosed method provides a coin wrapping machine which maintains the sealing jaws at a proper selected temperature until it is necessary to supply high or impulse heat to heat and sever the package from the tube of thermoplastic shrink film.

Although I have described in detail the preferred embodiment of my invention I contemplate that many changes may be made without departing from the scope or spirit of my invention and I desire to be limited only by the claims.

That which I claim is:

1. A method of packaging a preselected number of coins in a machine having at least one pair of heating sealing jaws with at least one jaw of said pair of jaws having an electric heater comprising the steps of: forming a sheet of thermoplastic material into a tube, supplying a first electrical potential to said electric heater to maintain said jaw at a preselected low temperature, flat pressing said tube and at substantially the same time interrupting said first electrical potential and supplying a second higher electrical potential to said electric heater to momentarily raise the temperature of said jaw to

form a first transverse seal, stopping the supply of said second electrical potential and supplying said first electrical potential to said electric heater, supplying a predetermined number of coins into said tube above said first transverse seal, bringing said jaws together above said coins interrupting said first electrical potential and supplying said second electrical potential to said electric heater to form a second seal above said coins to form a pouch of coins and sever said formed pouch from said tube.

2. The method of claim 1 wherein the high heat supplied is impulse electrical heat.

3. The method of claim 1 wherein the overlapped edges of said tube are sealed together.

4. The method of claim 3 wherein the overlapped edges of said tube are heat sealed simultaneously with said second transverse seal.

5. The method of claim 4 wherein high impulse heat is supplied to heat seal the overlapped edges of said tube.

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