Aug. 8, 1939. J. G. VERGOBBI 2,168,543

CONTAINER FORMING MACHINE

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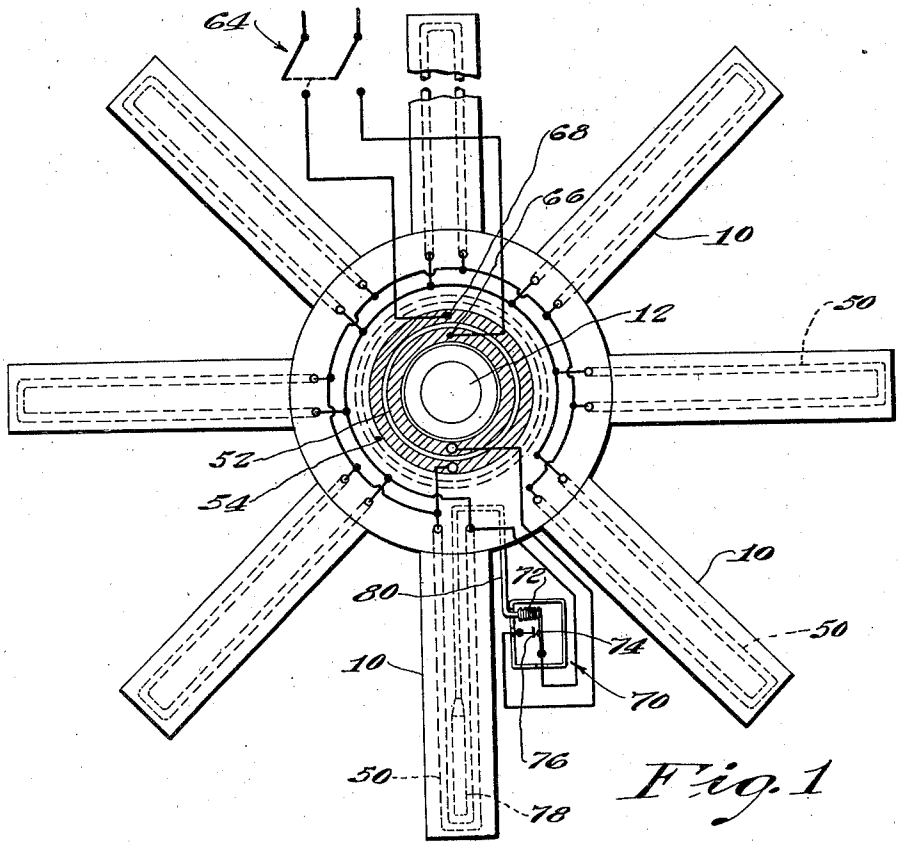


Fig. 1

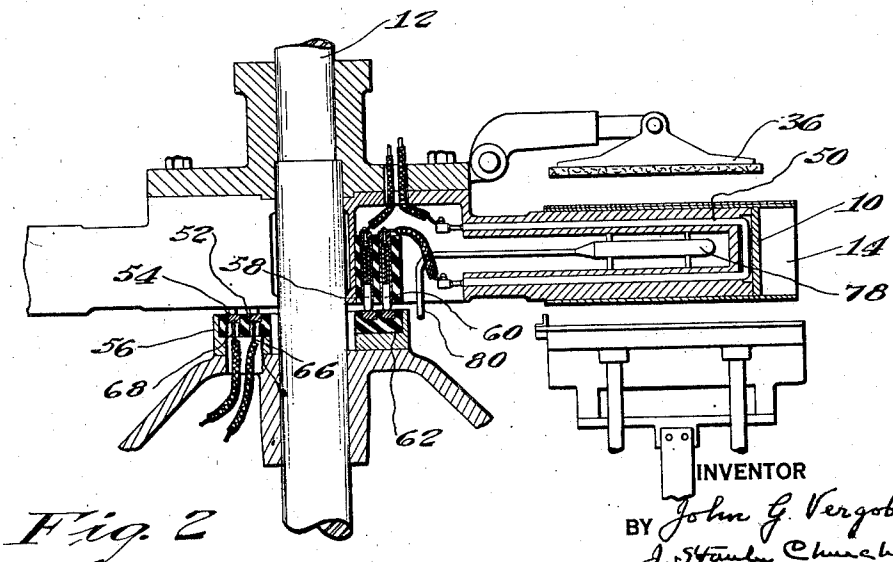


Fig. 2

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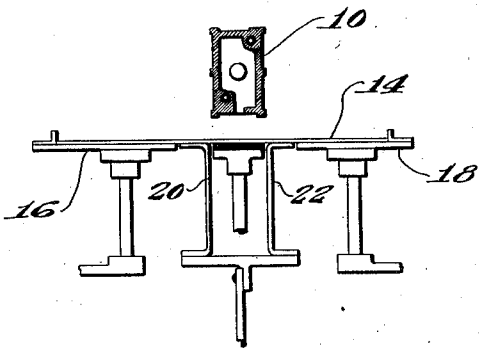
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Fig. 3



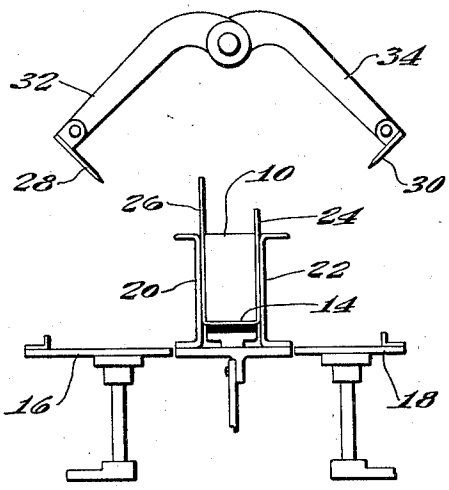
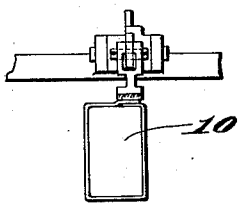


Fig. 4

Fig. 5



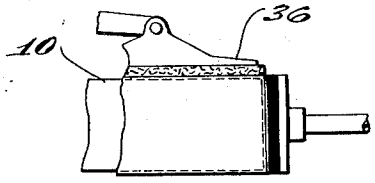


Fig. 7

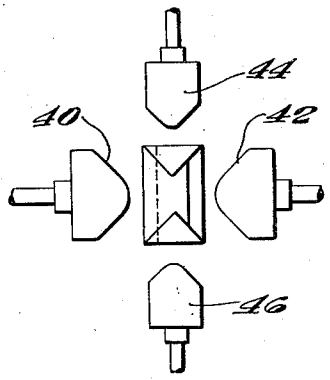


Fig. 6

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UNITED STATES PATENT OFFICE

2,168,543

CONTAINER FORMING MACHINE

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Application November 2, 1936, Serial No. 108,828

3 Claims. (Cl. 93—44.1)

This invention relates to a container forming machine, and particularly to a machine for the manufacture of paraffin bags and liners for cartons.

The object of the invention is to provide a novel container forming machine and particularly a novel bag or liner forming machine, which may be used with advantage in the manufacture of paraffin coated liners and bags, to produce paraffin coated bags and liners having maximum moisture resistance.

With this object in view and such others as may hereinafter appear, the invention consists in the container forming machine, in the bag or liner forming machine, and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is a plan view of a section of a machine for producing the paraffin coated bags or liners, showing the forming blocks and wiring connections to same; Fig. 2 is a sectional view through one of the forming blocks; Fig. 3 is an end view, partly in section, illustrating the method of wrappng a sheet about the formng block to produce a liner or bag; Fig. 4 is a view similar to Fig. 3 showing the parts in a different position of operation; Fig. 5 is an end view of a sheet wrapped about the forming block; Fig. 6 is an end view, diagrammatically illustrating the method of forming the bottom of the bag or liner on the forming block; and Fig. 7 is a partial side elevation of a forming block showing the pressers in contact with the overlapping portions of the lining.

In general, the present invention contemplates a container forming machine, and particularly a bag or liner forming machine, of the type having one or more forming blocks about which a paraffin coated sheet is wrapped in the manufacture of a container, such as a bag or lining. Provision is made for heating the block or blocks to cause overlapping portions of the container bag or liner to adhere to one another by the softening of the paraffin coating. Provision is made for automatically controlling the temperature of the forming block or blocks to prevent overheating of the paraffin coating. In the past, considerable difficulty has been experienced because of high temperatures in the forming blocks which have caused overheating of the paraffin coating of the sheet from which the container such as a bag or liner was formed, resulting, upon the application of pressure, in the complete dissipation of the paraffin in the overlapping portions of the bag or liner and a reduction of the moisture resistance of such portions of the bag or liner.

For purposes of illustration the different features of the invention have been shown as embodied in a machine for producing a paraffin coated liner or bag, having a plurality of forming blocks 10 secured to a central shaft 12. The shaft 12 is rotated intermittently so that the forming blocks are successively moved from one operating station to another in the production of a bag. The mechanisms for producing the liners or bags, except as will be pointed out, may comprise any of the well-known mechanisms embodied in the bag or liner forming machines now on the market, and inasmuch as these mechanisms per se form no part of the present invention, only sufficient portions thereof have been herein illustrated and will be hereinafter described as will enable the present invention to be understood.

Referring to Figs. 3 and 4, a sheet of paraffin coated paper 14 is wrapped about the forming block 10 by mechanism including a folding table upon which the blank sheet is placed. The sheet is supported upon stationary members 16, 18 and upon elevating and folding members 20, 22. Upon upward movement of the elevating members 20, 22 the sheet is wrapped about the sides of the forming block and then the extended edges 24, 26 may be folded down upon the top of the block by any of well-known instrumentalities such as folding plates 28, 30 mounted upon rocker arms 32, 34 respectively. After the described operations have been performed, a presser foot 36 is lowered upon the overlapping portions of the partly formed liner or bag. The pressure thus applied on the overlapping edges against the heated block causes the paraffin contained in the paper to melt or soften, causing the overlapping portions to firmly adhere together when the wax hardens again upon cooling.

After the above described folding operations have been performed the folding table returns to the position illustrated in Fig. 3 whereupon the forming blocks are rotated to the next station where the bottom of the paraffin paper tube or lining may be formed in any usual or preferred manner. As illustrated diagrammatically in Fig. 6, the side flaps are first folded over by folders 40, 42 and then the upper and lower side flaps are folded over by the folders 44, 46, it being understood that these folders may be actuated by any usual or preferred actuating means.

Referring now to Figs. 1 and 2, the forming blocks 10 are herein shown as comprising hollow metal tubes and each block is provided with an electrical heating element 50. The blocks are preferably constructed in skeletonized form to provide a minimum amount of metal to be heated. Connections are made to each heating element 50 from brass rings 52, 54, secured to a stationary collar 56 attached to the machine frame. Carbon brushes 58, 60 yieldably mounted within the blocks, and insulated therefrom, are arranged in sliding engagement with the brass rings 52, 54. The brass rings, which are insulated from the rest of the machine by an insulating ring 62, are energised from any suitable source of electric power through a switch 64 to connections 66, 68 on the brass rings.

In order to automatically control the temperature of the heated forming blocks the machine is provided with a thermostatic switch 70, of any usual or preferred form, herein shown as comprising an expandible bellows 72 which is arranged to open the electrical heating circuit at the contacts 74, 76. The bellows 72 is connected to a heat responsive element such as gas or liquid filled bulb 78 by a capillary tube 80. The bulb 78 is secured within one of the forming blocks and in operation the contacts 74, 76 are normally closed and when the temperature of the forming blocks rises to the point for which the thermostat 70 is set, the contacts are automatically opened. When the temperature falls, the contacts 74, 76 automatically reclose.

As herein shown the heating elements 50 in the different forming blocks 10 are all connected together in a parallel circuit from the thermostatic switch 70 so that the control of the temperature in one block is sufficient to open and close the circuit to all the blocks. From the above description it will be apparent that the thermostatic control of the heated forming blocks prevents damage to the paraffin or other adhesive which may be used in securing together the overlapping portions of the container, such as a bag or liner, and contributes to the production of most satisfactory containers.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In a machine for making carton liners, in combination, a forming block of a rectangular shape in section, mechanism for wrapping a wrapping sheet about the forming block with portions thereof overlapping, means for pressing the overlapping portions against the block to seal the same, means for heating the forming block to assist in sealing the overlapping portions of the wrapped sheet, and control mechanism for controlling the operation of said heating means to prevent over-heating of the forming block, including a heat responsive element disposed within said block.

2. In a machine for forming liners, in combination, a plurality of rotatable forming blocks each of rectangular shape in section, mechanism for wrapping a wrapping sheet about successive forming blocks with portions overlapping to form the side seam of the liner, electrical heating means for heating all of the blocks, a heat responsive element in one of the forming blocks, and connections between said heat responsive element and the electrical heating means for all of the blocks for controlling the heating of all of the blocks from the said heat responsive element.

3. In a liner forming machine, in combination, a skeletonized metal forming block of rectangular shape in section, a heating element mounted within said block, a heat responsive element within the block connected to the heating element to control the latter, wrapping means for wrapping a sheet about the block with portions overlapping to form a side seam of the liner, and means for pressing said overlapping portions against the forming block.

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